Memo

Decisions on whether to direct certain local authorities to fluoridate some or all of their drinking water supplies

Date:	25 July 2022
To:	Dr Ashley Bloomfield, Director-General of Health
From:	Dr Andrew Old, Deputy Director-General, Public Health Agency
For your:	Decision

Purpose of report

1. To seek your decision on whether to issue directions under section 116E of the Health Act 1956 to one or more local authorities to fluoridate some or all of their water supplies.

Statutory context

2. Section 116E of the Health Act 1956 (the Act) gives you the power to issue directions to local authorities to fluoridate their drinking water supplies. In deciding whether to issue a direction, you must consider:

    a. the scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay

    b. whether the benefits of adding fluoride to drinking water outweigh the costs, taking into account:

        i. the state or likely state of the oral health of a population group or community where the local authority supply is situated

        ii. the number of people who are likely to receive drinking water from the local authority supply; and

        iii. the likely financial costs and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring.

3. You must also:

    a. seek and consider advice from the Director of Public Health on the scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay and the state or likely state of oral health of a population group or community where the local authority supply is situated.

    b. invite comments from the relevant local authority on the estimated cost of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring, and the date by which the local authority could comply with a direction.

4. If a local authority gives comments within the specified timeframe, you must have regard to the comments and, if you decide to make a direction in relation to a particular local authority, summarise and respond to the comments in the reasons for your decision to make that direction.

5. As soon as practicable after making a direction, you must publish on the Ministry of Health's (the Ministry's) website the direction and the reasons for the decision to make the direction.

Ministry of Health analysis and recommendation

6. The Ministry of Health has done an analysis of some un-fluoridated water supplies serving populations over 5000. In deciding which local authorities and water supplies to analyse for your active consideration for a potential direction to fluoridate, the Ministry considered a number of factors. These included a local authority's ability to implement fluoridation relatively swiftly, and the size and needs of the population served by the water supply.

7. The Ministry's analysis is set out in the Report to the Director-General of Health: potential directions to fluoridate (the Report), attached as appendix one for your consideration. The Report addresses each of the matters that under Section 116E you are required to consider before making a direction. It also includes advice from the Director of Public Health.

8. As required by section 116G, each relevant local authority was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Each relevant local authority responded within the required timeframe. A copy of each local authority's formal response is attached to the Report.

9. The table below states the local authorities, and the associated water supplies, the Ministry has analysed for your consideration for potential directions to fluoridate. It also includes each local authority's estimates of the costs of adding fluoridate to the drinking water of the water supplies under consideration, and of any additional financial costs of ongoing management and monitoring; and of the date by which the local authority could comply with a direction to fluoridate.

Local authority (LA)	Water Supply name	Population serviced by the Water Supply	LA's estimate of cost	LA's estimate of annual operating costs	LA's statement of date by which it could comply with a direction
Auckland Council / Watercare	Onehunga	25,507	$125,000	$33,000	30 June 2024
	Waiuku	8697	$1,500,000	$75,000	30 June 2026
Far North District Council	Kaitaia	5400	$400,000	$100,000	30 June 2024
	Kerikeri	6700	$400,000		30 June 2024
Hastings District Council	Hastings Urban	64,764	$240,000	$100,000	30 June 2023
Horowhenua District Council	Levin	20,000	$1,000,000	$40,000	9 months
Kawerau District Council	Kawerau	7721	$50,000	$5,000	3 months
Nelson City Council	Nelson	52,400	$750,000	$110,000	12-18 months from direction

New Plymouth District Council	New Plymouth	59,072	$120,000	n/a	6 – 9 months
Rotorua Lakes District Council	Rotorua Central	42,500	$722,000	$47,000	12-18 months
	Rotorua East	10,330	$618,000	$25,000	12-18 months
Tararua District Council	Dannevirke	6000	$318,850	n/a	30 June 2024
Tauranga City Council	Tauranga	146,097	$3,585,220	$175,500	24 months from direction
Waipa District Council	Cambridge	20,833	$480,000 (excludes GST)	$140,000	9 months after direction and funding received
Waitaki District Council	Oamaru	15,561	$367,500	n/a	n/a
Western Bay of Plenty District Council	Athenree	5125	$286,000	$26,000	24-36 months
	Wharawhara	5700	$280,000	$29,000	24-36 months
Whangārei District Council	Whangārei	56,530	$1,200,000	Over $100,000	31 Dec 2023 to 31 Dec 2025
	Bream Bay	14,800	$1,700,000		30 June 2024

10. Informed by the analysis in the Report (including the comments from relevant local authorities) and for the reasons set out in the draft letters attached as appendix two, Ministry officials recommend that you direct each local authority that is listed in the table to add fluoride to the drinking water at the water supply or supplies listed alongside it.

Your decisions as to whether to issue directions to fluoridate

11. Each decision you make regarding whether or not to issue a direction to fluoridate must concern a particular local authority and its particular affected water supply or supplies. If you decide to make a direction for a particular local authority regarding a particular water supply, the relevant local authority must be notified and the reasons for your decision must be published on the Ministry of Health's website. For this purpose, attached is a set of proposed 'direction letters' for your review and decision. Each of these letters is to a particular local authority, and each includes for that local authority the excerpted analysis from the Report that is specific to its populations and to its particular water supply or supplies.

12. Subject to your agreement case by case, each 'direction letter' communicates to a particular local authority your decision to direct it to fluoridate one or more particular water supplies in its area, and explains your process and reasoning in making this decision.

Recommendations

It is recommended that you:

1.	note	under section 116E of the Health Act 1956, the Director-General of Health may direct a local authority to add or not add fluoride to drinking water supplied through its local authority supply.	
2.	note	before making a direction under section 116E, the Director-General of Health must consider: a. scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay; and b. whether the benefits of adding fluoride to the drinking water outweigh the financial costs, taking into account: i. the state or likely state of oral health of a population group or community where the local authority supply is situated ii. the number of people who are reasonably likely to receive drinking water from the local authority supply; and iii. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring c. advice from the Director of Public Health on the matters above at (a) and (b)(i) d. comments from the relevant local authority on: i. the estimated financial cost of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and ii. the date by which the local authority would be able to comply with a direction.	
3.	note	as soon as practicable after making a direction, the Director-General of Health must publish the direction and the reasons for the decision to make the direction on the Ministry of Health's website; and in the reasons must summarise and respond to the comments from the relevant local authority.	

4.	note	the Report to the Director-General of Health: potential directions to fluoridate attached as Appendix One that contains: a. the Ministry of Health's analysis of some un-fluoridated water supplies serving populations over 5000 in relation to the criteria in section 116E of the Health Act b. the Director of Public Health's advice for the purpose of section 116E in relation to those water supplies; and c. each relevant local authority's comments in relation to adding fluoride to those water supplies for the purpose of section 116G of the Health Act.	Yes
5.	direct	pursuant to section 116E of the Health Act, Auckland Council to add fluoride to drinking water supplied through its Onehunga and Waiuku supplies for the reasons discussed in the draft letter to Auckland Council attached at appendix two.	Yes
6.	direct	pursuant to section 116E of the Health Act, Far North District Council to add fluoride to drinking water supplied through its Kaitaia and Kerikeri supplies for the reasons discussed in the draft letter to Far North District Council attached at appendix two.	Yes
7.	direct	pursuant to section 116E of the Health Act, Hastings District Council to add fluoride to drinking water supplied through its Hastings supply for the reasons discussed in the draft letter to Hastings District Council attached at appendix two.	Yes
8.	direct	pursuant to section 116E of the Health Act, Horowhenua District Council to add fluoride to drinking water supplied through its Levin supply for the reasons discussed in the draft letter to Horowhenua District Council attached at appendix two.	Yes
9.	direct	pursuant to section 116E of the Health Act, Kawerau District Council to add fluoride to drinking water supplied through its Kawerau supply for the reasons discussed in the draft letter to Kawerau District Council attached at appendix two.	Yes
10.	direct	pursuant to section 116E of the Health Act, Nelson City Council to add fluoride to drinking water supplied through its Nelson supply for the reasons discussed in the draft letter to Nelson City Council attached at appendix two.	Yes
11.	direct	pursuant to section 116E of the Health Act, New Plymouth District Council to add fluoride to drinking water supplied through its New Plymouth supply for the reasons discussed in the draft letter to New Plymouth District Council attached at appendix two.	Yes

12.	direct	pursuant to section 116E of the Health Act, Rotorua Lakes District Council to add fluoride to drinking water supplied through its Rotorua Central and Rotorua East supplies for the reasons discussed in the draft letter to Rotorua Lakes District Council attached at appendix two.	Yes
13.	direct	pursuant to section 116E of the Health Act, Tararua District Council to add fluoride to drinking water supplied through its Dannevirke supply for the reasons discussed in the draft letter to Tararua District Council attached at appendix two.	Yes
14.	direct	pursuant to section 116E of the Health Act, Tauranga City Council to add fluoride to drinking water supplied through its Tauranga supply for the reasons discussed in the draft letter to Auckland Council attached at appendix two.	Yes
15.	direct	pursuant to section 116E of the Health Act, Waipa District Council to add fluoride to drinking water supplied through Cambridge supply for the reasons discussed in the draft letter to Waipa District Council attached at appendix two.	Yes
16.	direct	pursuant to section 116E of the Health Act, Waitaki District Council to add fluoride to drinking water supplied through its Oamaru supply for the reasons discussed in the draft letter to Waitaki District Council attached at appendix two.	Yes
17.	direct	pursuant to section 116E of the Health Act, Western Bay of Plenty District Council to add fluoride to drinking water supplied through its Athenree and Wharawhara supplies for the reasons discussed in the draft letter to Western Bay of Plenty District Council attached at appendix two.	Yes
18.	direct	pursuant to section 116E of the Health Act, Whangārei District Council to add fluoride to drinking water supplied through its Whangārei and Bream Bay supplies for the reasons discussed in the draft letter to Whangārei District Council attached at appendix two.	Yes
19.	sign	the draft letter to be sent to each local authority receiving a direction to fluoridate attached in appendix two, and note that each such letter will also be published on the Ministry of Health's website once signed.	Yes

Signature _____ Date: 25 July 2022

Dr Ashley Bloomfield
Te Tumu Whakarae mō te Hauora
Director-General of Health

Report to the Director-General of Health: potential directions to fluoridate

Ministry of Health – Manatū Hauora

July 2022

Contents

Purpose of report

The purpose of this report (the Report) is to inform Director-General of Health decision-making on whether to issue a direction to certain local authorities to fluoridate one or more of its water supplies. The Report provides an analysis of some un-fluoridated water supplies serving populations of over 5000. In deciding which local authorities and water supplies to include in the analysis for a direction, the Ministry of Health (the Ministry) took into account a number of factors. These factors included a local authority's ability to implement fluoridation swiftly, and the size and needs of the population served by the relevant water supplies.

The statute (section 116E) states that for each drinking water supply the Director-General must consider:

1. The scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay (section 116E(3)(a)).
2. Whether the benefits of adding fluoride to the drinking water supply outweigh the financial costs, taking into account:
    a. the state or likely state of the oral health of the local community or population group associated with the water supply (section 116E(3)(b)(i))
    b. the number of people who are reasonably likely to receive drinking water from the local authority supply (section 116E(3)(b)(i))
    c. how much it is likely to cost, including ongoing management and monitoring costs and the savings of adding fluoride (section 116E(3)(b)(i)).

In addition to the above considerations, you must consider advice from the Director of Public Health (DPH) on 1 and 2a. DPH advice is included in this report.

As required by section 116G, each local authority was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which it would be able to comply with a direction. Each relevant local authority commented within the required timeframe. A summary of each local authority's comments is included in the Report. If you decide to make a direction in relation to a local authority, then in stating your reasons for your decision, you also need to summarise and respond to the comments of that local authority.

Analysis

The table below states the local authorities, and the associated water supplies, that the Ministry has analysed for your consideration for potential directions to fluoridate.

The following pages analyse each local authority and its associated water supplies that you are actively considering for potential directions to fluoridate. Each analysis of a local authority and its relevant water supplies presents information and analysis to inform your decision-making. It structures these in terms of the matters you are required to consider, in accordance with the Health Act 1956, Part 5A section 116(E) (2) and (3), and section 116G (3)(a).

Note that on some matters, the analyses draw on the most applicable district health board (DHB) data rather than on local authority data. They do this where the DHB data are more informative or reliable (eg, because the data set is larger), or because there are no local authority data on the matter that is being analysed.

Local Authority	**Water supply name**	**Water supply population**
Auckland Council (Watercare Services Ltd)	Waiuku	8697
	Onehunga	25507
Far North District Council	Kaitāia	5400
	Kerikeri	6700
Hastings District Council	Hastings Urban	64,764
Horowhenua District Council	Levin	20,000
Kawerau District Council	Kawerau	7721
Nelson City Council	Nelson	52,400
New Plymouth District Council	New Plymouth	59,072
Rotorua Lakes Council	Rotorua Central	42,500
	Rotorua East	10,330
Tararua District Council	Dannevirke	6000
Tauranga City Council	Tauranga	146,097
Waipa District Council	Cambridge	20,833
Waitaki District Council	Oamaru	15,561
Western Bay of Plenty District Council	Athenree	5125
	Wharawhara	5700
Whangārei District Council	Bream Bay	14,800
	Whangārei	56,530

Auckland Council: Waiuku and Onehunga water supplies

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**
Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Waiuku and Onehunga water supplies would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by each of these water supplies.
Advice of Director of Public Health	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Waiuku and Onehunga water supplies.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health)

	• data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.

Analysis	**Waiuku Water Supply:** The Waiuku water supply is situated within the previous Counties Manukau District Health Board area. 2020 data for children aged 0-12 in Counties Manukau District Health Board show: - overall, 62 percent of children had experienced tooth decay at age five - on average, children at age five have 3.20 decayed, missing or filled primary teeth, and at school year 8 have on average 0.55 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Counties Manukau District Health Board. For example, 72 percent of Māori children had experienced decay at age five compared to 47 percent for all other (non-Māori and non-Pacific) children. The 2017-2020 New Zealand Health Survey results for Counties Manukau District Health Board show: - 43.1 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease - 7.2 percent of adults (15+) had one or more teeth removed in the last 12 months due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Waiuku water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Waiuku water supply. The evidence indicates that fluoridation of the Waiuku water supply would make significant improvements to oral health outcomes for the communities it serves. Within the Waiuku area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, Waiuku West and Waiuku East are in decile 7, and South Waiuku is in decile 4. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.

	Onehunga Water Supply. The Onehunga water supply is situated within the previous Auckland District Health Board area. 2020 data for children aged 0-12 in Auckland District Health Board show: - overall, 54 percent of children had experienced tooth decay at age five - on average, children at age five have 2.72 decayed, missing or filled primary teeth, and at school year 8 have on average 0.50 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Auckland District Health Board. For example, 67 percent of Māori children had experienced decay at age five compared to 43 percent for all other (non-Māori and non-Pacific) children. The 2017-2020 New Zealand Health Survey results for Auckland District Health Board show: - 36.9 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease - 5.3 percent of adults (15+) had one or more teeth removed in the last 12 months due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of tooth decay in the communities serviced by the Onehunga water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Onehunga water supply. The evidence indicates that fluoridation of the Onehunga supply would make significant improvements to oral health outcomes for the communities it serves. Within the Onehunga area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, Onehunga ranges from decile 4 to decile 8. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.
Advice of Director of Public Health	Informed by the evidence and data sources listed above at 'Criterion 1 Evidence' and 'Criterion 2a Evidence', I have reviewed the state of oral health of the populations served by the Waiuku and Onehunga water supplies. In summary, my assessment is as follows. The Waiuku and Onehunga populations each presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to each of these two populations. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serves each of these communities would consequently improve oral health outcomes for each, and is likely also to reduce health inequities.
Criterion	**2b. the number of people who are reasonably likely to receive drinking water from the local authority supply**

<table>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
the Public Register of Drinking Water Suppliers</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>Waiuku</td><td>8697</td></tr><tr><td>Onehunga</td><td>25507</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015.
Auckland Council’s estimated costs, including ongoing management and monitoring costs (for more detail on Auckland Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:
an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
“We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care”
The Onehunga and Waiuku supplies each fit into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Auckland Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing over 10,000 people, Sapere 2015 estimated $347,004 for capital costs, and $8742 per annum for management and monitoring costs; while for the Onehunga supply servicing 25,507 people, Auckland Council estimated $125,000 for capital costs, and $33,000 per annum for management and monitoring costs. For water supplies servicing 5001 - 10,000 people, Sapere 2015 estimated $61,034 for capital costs and</td></tr>
</table>

$8742 per annum for management and monitoring costs; while for the Waiuku supply servicing 8697 people, Auckland Council estimated $1,500,000 for capital costs and $75,000 per annum for management and monitoring costs.

Water Supply	Population size	Auckland Council estimate of capital cost	Auckland Council estimate of management and monitoring costs (per annum)
Waiuku	8697	$1,500,000	$75,000
Onehunga	25,507	$125,000	$33,000
Total	**34,204**	**$1,625,000**	**$108,000**

Summary of the information received from Auckland Council

As required by section 116G, Auckland Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Auckland Council responded within the required timeframe. A copy of Auckland Council's formal response is attached to this Report as Appendix One.

For Auckland Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring, please see Criterion 2c above.

Waiuku Water Supply

Auckland Council stated that the date by which it would be able to comply with a direction for the Waiuku supply is 30 June 2026.

Onehunga Water Supply

Auckland Council stated that the date by which it would be able to comply with a direction for the Onehunga supply is 30 June 2024.

Far North District Council: Kaitāia and Kerikeri water supplies

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**
Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Kaitāia and Kerikeri water supplies would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by each of these water supplies.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Kaitāia and Kerikeri water supplies.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**

Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	Kaitāia and Kerikeri water supplies are situated within the previous Northland District Health Board area. 2020 data for children aged 0-12 in Northland District Health Board shows: - overall, 58 percent of children had experienced tooth decay at age five - on average, children at age five have 3.41 decayed, missing or filled primary teeth, and at school year 8 have on average 1.15 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Northland District Health Board. For example, 75 percent of Māori children had experienced decay at age five compared to 42 percent for all other (non-Māori and non-Pacific) children. The 2017-2020 New Zealand Health Survey results for Far North District Council show: - 58.6 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease - 11.8 percent of adults (15+) had one or more teeth removed in the last 12 months due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Kaitāia and Kerikeri water supplies. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Kaitāia and Kerikeri water supplies. The evidence indicates

<table>
<tr><td></td><td>that fluoridation of the Kaitāia and Kerikeri water supplies would make significant improvements to oral health outcomes for the communities it serves.

Within the Kaitāia and Kerikeri areas, there are significant areas of deprivation. In the 10-level score in which decile 1 has the least deprivation, Kaitāia is decile 10 and Kerikeri is decile 7. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.</td></tr>
<tr><td>Director of Public Health advice</td><td>Informed by the evidence and data sources listed above at ‘Criterion 1 Evidence’ and ‘Criterion 2a Evidence’, I have reviewed the state of oral health of the populations served by the Kaitāia and Kerikeri water supplies. In summary, my assessment is as follows. The Kaitāia and Kerikeri populations each presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to each of these two populations. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serves each of these communities would consequently improve oral health outcomes for each, and is likely also to reduce health inequities.</td></tr>
<tr><td>Criterion</td><td>2b. the number of people who are reasonably likely to receive drinking water from the local authority supply</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
the Public Register of Drinking Water Suppliers</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>Kaitāia</td><td>5400</td></tr><tr><td>Kerikeri</td><td>6700</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>We have considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015.
Far North District Council’s estimated costs, including ongoing management and monitoring costs (for more detail on Far North District Council’s comments see table below).</td></tr>
</table>

Analysis	The 2015 Sapere Report estimated that adding fluoride to New Zealand's water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted: - an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay - "We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care" The Kaitāia and Kerikeri supplies each fit into the category of supplies servicing over 5000 people (see further detail in Criterion 2b). The estimated costs provided by Far North District Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing 5001 - 10,000 people, Sapere 2015 estimated $61,034 for capital costs and $8742 per annum for management and monitoring costs; while for the Kaitāia supply servicing 5400 people and the Kerikeri supply servicing 6700 people, Far North District Council estimated it could cost $400,000 for each supply, and $100,000 per annum for management and monitoring costs for both supplies.

Water Supply	**Population size**	**Far North District Council estimate of capital cost**	**Far North District Council estimate of management and monitoring costs (per annum)**
Kaitāia	5400	$400,000	$100,000
Kerikeri	6700	$400,000	
Total	**12,100**	**$800,000**	**$100,000**

Summary of the information received from Far North District Council

As required by section 116G, Far North District Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Far North District Council responded within the required timeframe. A copy of Far North District Council's formal response is attached to this Report as Appendix One.

For Far North District Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above.

Kaitāia Water Supply

Far North District Council stated that the date by which it would be able to comply with a direction for the Kaitāia supply is 30 June 2024.

Kerikeri Water Supply

Far North District Council stated that the date by which it would be able to comply with a direction for the Kerikeri supply is 30 June 2024.

Hastings District Council: Hastings Urban water supply

	Analysis
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**
Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Ministers Chief Science Advisor and Royal Society of New Zealand Te Aparangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.

Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Hastings Urban water supply would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by this water supply.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Hastings Urban water supply.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	The Hastings Urban water supply is situated within the previous Hawke's Bay District Health Board area. 2020 data for children aged 0-12 in Hawke's Bay District Health Board show: - overall, 40 percent of children had experienced tooth decay at age five

	- on average, children at age five have 1.76 decayed, missing or filled primary teeth, and at school year 8 have on average 0.68 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Hawke's Bay District Health Board. For example, 57 percent of Māori children had experienced decay at age five compared to 27 percent for all other (non-Māori and non-Pacific) children. The 2017-2020 New Zealand Health Survey results for Hastings District Council show: - 50.2 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease - 7.9 percent of adults (15+) had one or more teeth removed in the past 12 months due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Hastings Urban water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Hastings Urban water supply. The evidence indicates that fluoridation of the Hastings Urban water supply would make significant improvements to oral health outcomes for the communities it serves. Within the Hastings area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, there are areas in Hastings that are in deciles 8-10. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.
Director of Public Health advice	Informed by the evidence and data sources listed above at 'Criterion 1 Evidence' and 'Criterion 2a Evidence', I have reviewed the state of oral health of the populations served by the Hastings Urban water supply. In summary, my assessment is as follows. The Hastings population presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to this population. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serves these communities would consequently improve oral health outcomes, and is likely also to reduce health inequities.
Criterion	**2b. the number of people who are reasonably likely to receive drinking water from the local authority supply**
Evidence	The Ministry has considered the following information: • the Public Register of Drinking Water Suppliers

<table>
<tr><td>Analysis</td><td>
<table>
<tr><th>Water supply</th><th>Population size</th></tr>
<tr><td>Hastings Urban</td><td>64,764</td></tr>
</table>
</td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015.
Hastings District Council’s estimated costs, including ongoing management and monitoring costs (for more detail on Hastings District Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:

- an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
- “We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care”

The Hastings Urban supply fits into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Hastings District Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing over 10,000 people, Sapere 2015 estimated $347,004 for capital costs, and $8742 per annum for management and monitoring costs; while for the Hastings Urban supply servicing 64,764 people, Hastings District Council estimated $240,000 for capital costs, and $100,000 per annum for management and monitoring costs.
<table>
<tr><th>Water Supply</th><th>Population size</th><th>Hastings District Council estimate of capital cost</th><th>Hastings District Council estimate of management and monitoring costs (per annum)</th></tr>
<tr><td>Hastings Urban</td><td>64,764</td><td>$240,000</td><td>$100,000</td></tr>
<tr><td>Total</td><td>64,764</td><td>$240,000</td><td>$100,000</td></tr>
</table>
</td></tr>
</table>

Summary of the information received from Hastings District Council
As required by section 116G, Hastings District Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Hastings District Council responded within the required timeframe. A copy of Hastings Council's formal response is attached to this Report as Appendix One. For Hastings District Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above. **Hastings Urban Water Supply** Hastings District Council stated that the date by which it would be able to comply with a direction for the Hastings Urban supply is 30 June 2023.

Horowhenua District Council: Levin water supply

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**
Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an

	up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Levin water supply would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by this water supply.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Levin water supply.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	The Levin water supply is situated within the previous MidCentral District Health Board area. 2020 data for children aged 0-12 in MidCentral District Health Board show: - overall, 42 percent of children had experienced tooth decay at age five - on average, children at age five have 1.89 decayed, missing or filled primary teeth, and at school year 8 have on average 1.10 decayed, missing or filled adult teeth

<table>
<tr><td></td><td>
- Māori and Pacific children have significantly worse outcomes than other children within MidCentral District Health Board. For example, 59 percent of Māori children had experienced decay at age five compared to 37 percent for all other (non-Māori and non-Pacific) children.

The 2017-2020 New Zealand Health Survey results for Horowhenua District Council show:
- 67.5 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease
- 7.9 percent of adults (15+) had one or more teeth removed in the past 12 months due to decay, an abscess, infection or gum disease.

From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Levin water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Levin water supply. The evidence indicates that fluoridation of the Levin water supply would make significant improvements to oral health outcomes for the communities it serves.

Within the Levin area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, Levin East and Levin North are in decile 9, and Levin South and Levin West are in decile 10. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.
</td></tr>
<tr><td>Director of Public Health advice</td><td>Informed by the evidence and data sources listed above at ‘Criterion 1 Evidence’ and ‘Criterion 2a Evidence’, I have reviewed the state of oral health of the populations served by the Levin water supply. In summary, my assessment is as follows. The Levin population presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to this population. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serve these communities would consequently improve oral health outcomes, and is likely also to reduce health inequities</td></tr>
<tr><td>Criterion</td><td>2b. the number of people who are reasonably likely to receive drinking water from the local authority supply</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
• the Public Register of Drinking Water Suppliers</td></tr>
<tr><td>Analysis</td><td>
<table>
<tr><th>Water supply</th><th>Population size</th></tr>
<tr><td>Levin</td><td>20,000</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015.
Horowhenua District Council’s estimated costs, including ongoing management and monitoring costs (for more detail on Horowhenua District Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:

- an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
- “We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care”

The Levin supply fits into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Horowhenua District Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing over 10,000 people, Sapere 2015 estimated $347,004 for capital costs, and $8742 per annum for management and monitoring costs; while for the Levin supply servicing 20,000 people, Horowhenua District Council estimated $1,000,000 for capital costs, and $40,000 per annum for management and monitoring costs.

<table>
<tr><th>Water Supply</th><th>Population size</th><th>Horowhenua District Council estimate of capital cost</th><th>Horowhenua District Council estimate of management and monitoring costs (per annum)</th></tr>
<tr><td>Levin</td><td>20,000</td><td>$1,000,000</td><td>$40,000</td></tr>
<tr><td>Total</td><td>20,000</td><td>$1,000,000</td><td>$40,000</td></tr>
</table>
</td></tr>
</table>

Summary of the information received from Horowhenua District Council
As required by section 116G, Horowhenua District Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Horowhenua District Council responded within the required timeframe. A copy of Horowhenua District Council's formal response is attached to this Report as Appendix One. For Horowhenua District Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring, please see Criterion 2c above. **Levin Water Supply** Horowhenua District Council stated that the timeframe by which it would be able to comply with a direction for the Levin supply is estimated to be up to 9 months.

Kawerau District Council: Kawerau water supply

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**
Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an

	up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Kawerau water supply would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by this water supply.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Kawerau water supply.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.

Analysis	The Kawerau water supply is situated within the previous Bay of Plenty District Health Board area. 2020 data for children aged 0-12 in Bay of Plenty District Health Board shows: - overall, 50 percent of children had experienced tooth decay at age five - on average, children at age five have 2.41 decayed, missing or filled primary teeth, and at school year 8 have on average 1.06 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Bay of Plenty District Health Board. For example, 65 percent of Māori children had experienced decay at age five compared to 36 percent for all other (non-Māori and non-Pacific) children. The 2017-2020 New Zealand Health Survey results for Bay of Plenty District Health Board show: - 50.5 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease - 6.8 percent of adults (15+) had one or more teeth removed in the last 12 months due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Kawerau water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Kawerau water supply. The evidence indicates that fluoridation of the Kawerau water supply would make significant improvements to oral health outcomes for the communities it serves. Within the Kawerau area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, Kawerau is in decile 10. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.
Director of Public Health advice	Informed by the evidence and data sources listed above at 'Criterion 1 Evidence' and 'Criterion 2a Evidence', I have reviewed the state of oral health of the populations served by the Kawerau water supply. In summary, my assessment is as follows. The Kawerau population presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to this population. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serves these communities would consequently improve oral health outcomes, and is likely also to reduce health inequities.
Criterion	**2b. the number of people who are reasonably likely to receive drinking water from the local authority supply**

<table>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
the Public Register of Drinking Water Suppliers</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>Kawerau</td><td>7721</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015.
Kawerau District Council’s estimated costs, including ongoing management and monitoring costs (for more detail on Kawerau District Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:
an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
“We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care”
The Kawerau supply fits into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Kawerau District Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing 5001 – 10,000 people, Sapere 2015 estimated $61,034 for capital costs and $8742 per annum for management and monitoring costs; while for the Kawerau supply servicing 7721 people, Kawerau District Council estimated $50,000 for capital costs and $5,000 per annum for management and monitoring costs.</td></tr>
</table>

	Water Supply	Population size	Kawerau District Council estimate of capital cost	Kawerau District Council estimate of management and monitoring costs (per annum)
	Kawerau	7721	$50,000	$5,000
	Total	7721	$50,000	**$5,000**

Summary of the information received from Kawerau District Council
As required by section 116G, Kawerau Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Kawerau District Council responded within the required timeframe. A copy of Kawerau District Council's formal response is attached to this Report as Appendix One. For Kawerau District Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above. **Kawerau Water Supply** Kawerau District Council stated that the timeframe by which it would be able to comply with a direction for the Kawerau supply is 3 months.

Nelson City Council: Nelson water supply

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**

Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Nelson water supply would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by this water supply.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Nelson water supply.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ)

	• 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	The Nelson water supply is situated within the previous Nelson Marlborough District Health Board area. 2020 data for children aged 0-12 in Nelson Marlborough District Health Board show: • overall, 42 percent of children had experienced tooth decay at age five • on average, children at age five have 1.83 decayed, missing or filled primary teeth, and at school year 8 have on average 0.74 decayed, missing or filled adult teeth • Māori children have significantly worse outcomes than other children within Nelson Marlborough District Health Board. For example, 56 percent of Māori children had experienced decay at age five compared to 37 percent for all other (non-Māori and non-Pacific) children. The 2017-2020 New Zealand Health Survey results for Nelson City Council show: • 50 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease • 6.5 percent of adults (15+) had one or more teeth removed in the last 12 months due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Nelson water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Nelson water supply. The evidence indicates that fluoridation of the Nelson water supply would make significant improvements to oral health outcomes for the communities it serves. Within the Nelson area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, there are areas in Nelson that are in deciles 8 – 9. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.
Director of Public Health advice	Informed by the evidence and data sources listed above at 'Criterion 1 Evidence' and 'Criterion 2a Evidence', I have reviewed the state of oral health of the populations served by the Nelson water supply. In summary, my assessment is as follows. The Nelson population presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to this population. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of

<table>
<tr><td></td><td>tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serve these communities would consequently improve oral health outcomes, and is likely also to reduce health inequities.</td></tr>
<tr><td>Criterion</td><td>2b. the number of people who are reasonably likely to receive drinking water from the local authority supply</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
the Public Register of Drinking Water Suppliers</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>Nelson</td><td>52,400</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015
Nelson City Council’s estimated costs, including ongoing management and monitoring costs (for more detail on Nelson City Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:
an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
“We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care”
The Nelson supply fits into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Nelson City Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing over 10,000 people, Sapere 2015 estimated $347,004 for capital costs, and $8742 per annum for management and monitoring costs; while for</td></tr>
</table>

	the Nelson supply servicing 52,400 people, Nelson City Council estimated $750,000 for capital costs, and $110,000 per annum for management and monitoring costs.

Water Supply	Population size	Nelson City Council estimate of capital cost	Nelson City Council estimate of management and monitoring costs (per annum)
Nelson	52,400	$750,000	$110,000
Total	**52,400**	**$750,000**	**$110,000**

Summary of the information received from Nelson City Council
As required by section 116G, Nelson City Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Nelson City Council responded within the required timeframe. A copy of Nelson City Council's formal response is attached to this Report as Appendix One. For Nelson City Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring, please see Criterion 2c above. **Nelson Water Supply** Nelson City Council stated that the timeframe by which it would be able to comply with a direction for the Nelson supply is approximately 12 to 18 months from the date of direction.

New Plymouth District Council: New Plymouth water supply

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**

Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the New Plymouth water supply would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by this water supply.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the New Plymouth water supply.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ)

	• 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	The New Plymouth water supply is situated within the previous Taranaki District Health Board area. 2020 data for children aged 0-12 in Taranaki District Health Board show: - overall, 36 percent of children had experienced tooth decay at age five - on average, children at age five have 1.09 decayed, missing or filled primary teeth, and at school year 8 have on average 0.60 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Taranaki District Health Board. For example, 59 percent of Māori children had experienced decay at age five compared to 29 percent for all other (non-Māori and non-Pacific) children. The 2017-2020 New Zealand Health Survey results for New Plymouth District Council show: - 52.1 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease - 9 percent of adults (15+) had one or more teeth removed in the last 12 months due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the New Plymouth water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the New Plymouth water supply. The evidence indicates that fluoridation of the New Plymouth water supply would make significant improvements to oral health outcomes for the communities it serves. Within the New Plymouth area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, there are areas in New Plymouth that are in decile 8-10. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.
Director of Public Health advice	Informed by the evidence and data sources listed above at 'Criterion 1 Evidence' and 'Criterion 2a Evidence', I have reviewed the state of oral health of the populations served by the New Plymouth water supply. In summary, my assessment is as follows. The New Plymouth population presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to this population. So too is the evidence that these benefits tend to be greater for populations that experience

<table>
<tr><td></td><td>higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serve these communities would consequently improve oral health outcomes, and is likely also to reduce health inequities.</td></tr>
<tr><td>Criterion</td><td>2b. the number of people who are reasonably likely to receive drinking water from the local authority supply</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
the Public Register of Drinking Water Suppliers</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>New Plymouth</td><td>59,072</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015
New Plymouth District Council’s estimated costs, including ongoing management and monitoring costs (for more detail on New Plymouth District Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:

- an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
- “We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care”

The New Plymouth supply fits into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by New Plymouth District Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing over 10,000 people, Sapere 2015 estimated $347,004 for capital costs, and $8742 per annum for management and monitoring costs; while for the New Plymouth supply servicing 59,072 people, New Plymouth District Council estimated $120,000 for capital</td></tr>
</table>

costs for a temporary solution to fluoridate. No costs were specified for management and monitoring costs. The capital costs to permanently fluoridate the New Plymouth supply is unknown, however, $35,000 to $40,000 per annum was estimated for management and monitoring costs.

Water Supply	Population size	New Plymouth District Council estimate of capital cost	New Plymouth District Council estimate of management and monitoring costs (per annum)	Type of solution to fluoridate
New Plymouth	59,072	$120,000	n/a	Temporary
		n/a	$35,000 - $40,000	Permanent
Total	**59,072**			

Summary of the information received from New Plymouth District Council

As required by section 116G, New Plymouth District Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. New Plymouth District Council responded within the required timeframe. A copy of New Plymouth District Council's formal response is attached to this Report as Appendix One.

For New Plymouth District Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above.

New Plymouth Water Supply

New Plymouth District Council stated that for a temporary fluoridation solution the timeframe by which it would be able to comply with a direction for the New Plymouth supply is 6 – 9 months.

New Plymouth District Council stated that for a permanent fluoridation solution the date by which it would be able to comply with a direction for the New Plymouth supply is July 2026.

Rotorua Lakes District Council: Rotorua Central and Rotorua East water supplies

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**
Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Rotorua Central and Rotorua East water supplies would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by each of these water supplies.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Rotorua Central and Rotorua East water supplies.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**

Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	Rotorua East and Rotorua Central water supplies are situated within the previous Lakes District Health Board area. 2020 data for children aged 0-12 in Lakes District Health Board shows: - overall, 53 percent of children had experienced tooth decay at age five - on average, children at age five have 2.53 decayed, missing or filled primary teeth, and at school year 8 have on average 2.46 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Lakes District Health Board. For example, 65 percent of Māori children had experienced decay at age five compared to 37 percent for all other (non-Māori and non-Pacific) children. The 2017-2020 New Zealand Health Survey results for Rotorua Lakes District Council show: - 51.3 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease - 9.5 percent of adults (15+) had one or more teeth removed in the past 12 months due to decay, an abscess, infection or gum disease From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Rotorua Central and Rotorua East water supplies. There is strong evidence by CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Rotorua Central and Rotorua East water supplies. The evidence indicates that fluoridation of the Rotorua Central and Rotorua East water supplies would make significant improvements to oral health outcomes for the communities it serves.

<table>
<tr><td></td><td>Within the Rotorua area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, there are areas in Rotorua that are in deciles 8 – 10. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.</td></tr>
<tr><td>Director of Public Health advice</td><td>Informed by the evidence and data sources listed above at ‘Criterion 1 Evidence’ and ‘Criterion 2a Evidence’, I have reviewed the state of oral health of the populations served by the Rotorua Central and Rotorua East water supplies. In summary, my assessment is as follows. The Rotorua Central and Rotorua East populations each presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to each of these two populations. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serves each of these communities would consequently improve oral health outcomes for each and is likely also to reduce health inequities.</td></tr>
<tr><td>Criterion</td><td>2b. the number of people who are reasonably likely to receive drinking water from the local authority supply</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
the Public Register of Drinking Water Suppliers</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>Rotorua East</td><td>10,330</td></tr><tr><td>Rotorua Central</td><td>42,500</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015.
Rotorua Lakes District Council’s estimated costs, including ongoing management and monitoring costs (for more detail on Rotorua Lakes District Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:</td></tr>
</table>

- an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
- "We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care"

The Rotorua Central and Rotorua East supplies each fit into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Rotorua Lakes District Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing over 10,000 people, Sapere 2015 estimated $347,004 for capital costs, and $8742 per annum for management and monitoring costs; while for the Rotorua East supply servicing 10,330 people, Rotorua Lakes District Council estimated $618,000 for capital costs, and $25,000 per annum for management and monitoring costs. For the Rotorua Central supply servicing 42,500 people, Rotorua Lakes District Council estimated $722,000 for capital costs, and $47,000 per annum for management and monitoring costs.

Water Supply	**Population size**	**Rotorua Lakes District Council estimate of capital cost**	**Rotorua Lakes District Council estimate of management and monitoring costs (per annum)**
Rotorua East	10,330	$618,000	$25,000
Rotorua Central	42,500	$722,000	$47,000
Total	**52,830**	**$1,340,000**	**$72,000**

Summary of the information received from Rotorua Lakes District Council
As required by section 116G, Rotorua Lakes District Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Rotorua Lakes District Council responded within the required timeframe. A copy of Rotorua Lakes District Council's formal response is attached to this Report as Appendix One.

For Rotorua Lakes District Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above.

Rotorua East and Rotorua Central Water Supply

Rotorua Lakes District Council stated that the timeframe by which it would be able to comply with a direction for the Rotorua East and Rotorua Central supply is 12 -18 months.

Tararua District Council: Dannevirke water supply

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**
Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay.

	The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Dannevirke water supply would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by this water supply.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Dannevirke water supply.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	The Dannevirke water supply is situated within the previous MidCentral District Health Board area. 2020 data for children aged 0-12 in MidCentral District Health Board shows: - overall, 42 percent of children had experienced tooth decay at age five - on average, children at age five have 1.89 decayed, missing or filled primary teeth, and at school year 8 have on average 1.10 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within MidCentral District Health Board. For example, 59 percent of Māori children had experienced decay at age five compared to 37 percent for all other (non-Māori and non-Pacific) children.

<table>
<tr><td></td><td>The 2017-2020 New Zealand Health Survey results for MidCentral District Health Board show:
- 7.9 percent of adults (15+) had one or more teeth removed in the past 12 months due to decay, an abscess, infection or gum disease

The 2017-2020 New Zealand Health Survey results for Tararua District Council show:
- 58.9 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease

From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Dannevirke water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Dannevirke water supply. The evidence indicates that fluoridation of the Dannevirke water supply would make significant improvements to oral health outcomes for the communities it serves.

Within the Dannevirke area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the lease deprivation, Dannevirke East is a 10, and Dannevirke West is a decile 8. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.</td></tr>
<tr><td>Director of Public Health advice</td><td>Informed by the evidence and data sources listed above at ‘Criterion 1 Evidence’ and ‘Criterion 2a Evidence’, I have reviewed the state of oral health of the populations served by the Dannevirke water supply. In summary, my assessment is as follows. The Dannevirke population presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to this population. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serve these communities would consequently improve oral health outcomes, and is likely also to reduce health inequities.</td></tr>
<tr><td>Criterion</td><td>2b. the number of people who are reasonably likely to receive drinking water from the local authority supply</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:

• the Public Register of Drinking Water Suppliers</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>Dannevirke</td><td>6000</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
</table>

<table>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015
Tararua District Council's estimated costs, including ongoing management and monitoring costs (for more detail on Tararua District Council's comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand's water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:
an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
"We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care"
The Dannevirke supply fits into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Tararua District Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing 5001 - 10,000 people, Sapere 2015 estimated $61,034 for capital costs and $8742 per annum for management and monitoring costs; while for the Dannevirke supply servicing 6000 people, Tararua District Council estimated $318,850 for capital costs. The ongoing management and monitoring costs for the Dannevirke supply have not been specified.

<table>
<tr><th>Water Supply</th><th>Population size</th><th>Tararua District Council estimate of capital cost</th><th>Tararua District Council estimate of management and monitoring costs (per annum)</th></tr>
<tr><td>Dannevirke</td><td>6000</td><td>$318,850</td><td>N/A</td></tr>
<tr><td>Total</td><td>6000</td><td>$318,850</td><td></td></tr>
</table>
</td></tr>
</table>

Summary of the information received from Tararua District Council
As required by section 116G, Tararua District Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Tararua District Council responded within the required timeframe. A copy of Tararua District Council's formal response is attached to this Report as Appendix One. For Tararua District Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above. **Dannevirke Water Supply** Tararua District Council stated that the date by which it would be able to comply with a direction for the Dannevirke supply is 30 June 2024.

Tauranga City Council: Tauranga water supply

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**
Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay.

	The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Tauranga water supply would be safe and effective at significantly reducing the prevalence and severity of dental decay in the population serviced by this water supply.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Tauranga water supply.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	The Tauranga water supply is situated within the previous Bay of Plenty District Health Board area. 2020 data for children aged 0-12 in Bay of Plenty District Health Board show: - overall, 50 percent of children had experienced tooth decay at age five - on average, children at age five have 2.41 decayed, missing or filled primary teeth, and at school year 8 have on average 1.06 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Bay of Plenty District Health Board. For example, 65 percent of Māori children had experienced decay at age five compared to 36 percent for all other (non-Māori and non-Pacific) children.

<table>
<tr><td></td><td>The 2017-2020 New Zealand Health Survey results for Tauranga City Council show:
- 48 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease
- 6.9 percent of adults (15+) had one or more teeth removed in the past 12 months due to decay, an abscess, infection or gum disease

From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Tauranga water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by Tauranga water supply. The evidence indicates that fluoridation of the Tauranga water supply would make significant improvements to oral health outcomes for the communities it serves.

Within the Tauranga area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, Tauranga South is in decile 8, Tauranga Central is in decile 7, and Tauranga Hospital is in decile 10. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.</td></tr>
<tr><td>Director of Public Health advice</td><td>Informed by the evidence and data sources listed above at ‘Criterion 1 Evidence’ and ‘Criterion 2a Evidence’, I have reviewed the state of oral health of the populations served by the Tauranga water supply. In summary, my assessment is as follows. The Tauranga population presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to this population. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serve these communities would consequently improve oral health outcomes and is likely also to reduce health inequities.</td></tr>
<tr><td>Criterion</td><td>2b. the number of people who are reasonably likely to receive drinking water from the local authority supply</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:

• the Public Register of Drinking Water Suppliers</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>Tauranga</td><td>146,097</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
</table>

<table>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015
Tauranga City Council's estimated costs, including ongoing management and monitoring costs (for more detail on Tauranga City Council's comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand's water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:

- an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
- "We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care"

The Tauranga supply fits into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Tauranga City Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing over 10,000 people, Sapere 2015 estimated $347,004 for capital costs, and $8742 per annum for management and monitoring costs; while for the Tauranga supply servicing 146,097 people, Tauranga City Council estimated $3,585,220 for capital costs, and $175,000 per annum for management and monitoring costs.
<table>
<tr><th>Water Supply</th><th>Population size</th><th>Tauranga City Council estimate of capital cost</th><th>Tauranga City Council estimate of management and monitoring costs (per annum)</th></tr>
<tr><td>Tauranga</td><td>146,097</td><td>$3,585,220</td><td>$175,000</td></tr>
<tr><td>Total</td><td>146,097</td><td>$3,585,220</td><td>$175,000</td></tr>
</table>
</td></tr>
</table>

Summary of the information received from Tauranga City Council
As required by section 116G, Tauranga City Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Tauranga City Council responded within the required timeframe. A copy of Tauranga City Council's formal response is attached to this Report as Appendix One. For Tauranga City Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above. **Tauranga Water Supply** Tauranga City Council stated that the timeframe by which it would be able to comply with a direction for the Tauranga supply is 24 months after a direction is received.

Waipa District Council: Cambridge water supply

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**
Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an

	up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Cambridge water supply would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by this water supply.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Cambridge water supply.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	The Cambridge water supply is situated within the previous Waikato District Health Board area. 2019 data for children aged 0-12 in Waikato District Health Board show: - overall, 45 percent of children had experienced tooth decay at age - on average, children at age five have 2.15 decayed, missing or filled primary teeth, and at school year 8 have on average 0.60 decayed, missing or filled adult teeth

	- Māori and Pacific children have significantly worse outcomes than other children within Waikato District Health Board. For example, 64 percent of Māori children had experienced decay at age five compared to 33 percent for all other (non-Māori and non-Pacific) children. The 2017-2020 New Zealand Health Survey results for Waikato District Health Board show: - 7.1 percent of adults (15+) had one or more teeth removed in the past 12 months due to decay, an abscess, infection or gum disease. The 2017-2020 New Zealand Health Survey results for Waipa District Council show: - 39.2 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Cambridge water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Cambridge water supply. The evidence indicates that fluoridation of the Cambridge water supply would make significant improvements to oral health outcomes for the communities it serves. Within the Cambridge area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, Cambridge Central is in decile 7, Cambridge West is in decile 5, and Cambridge North is in decile 3. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.
Director of Public Health advice	Informed by the evidence and data sources listed above at 'Criterion 1 Evidence' and 'Criterion 2a Evidence', I have reviewed the state of oral health of the populations served by the Cambridge water supply. In summary, my assessment is as follows. The Cambridge population presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to this population. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serve these communities would consequently improve oral health outcomes and is likely also to reduce health inequities.
Criterion	**2b. the number of people who are reasonably likely to receive drinking water from the local authority supply**
Evidence	The Ministry has considered the following information: • the Public Register of Drinking Water Suppliers

<table>
<tr><td>Analysis</td><td>
<table>
<tr><th>Water supply</th><th>Population size</th></tr>
<tr><td>Cambridge</td><td>20,833</td></tr>
</table>
</td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015.
Waipa District Council’s estimated costs, including ongoing management and monitoring costs (for more detail on Waipa District Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:
an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
“We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care”
The Cambridge supply fits into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Waipa District Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in researching that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing over 10,000 people, Sapere 2015 estimated $347,004 for capital costs, and $8742 per annum for management and monitoring costs; while for the Cambridge supply service 20,833 people, Waipa District Council estimated $480,000 (excluding GST) for capital cost, and $140,000 per annum for management and monitoring costs.</td></tr>
</table>

Water Supply	Population size	Waipa District Council estimate of capital cost	Waipa District Council estimate of management and monitoring costs (per annum)
Cambridge	20,833	$480,000 (excluding GST)	$140,000
Total	**20,833**	**$480,000 (excluding GST)**	**$140,000**

Summary of the information received from Waipa District Council
As required by section 116G, Waipa District Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Waipa District Council responded within the required timeframe. A copy of Waipa District Council's formal response is attached to this Report as Appendix One. For Waipa District Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above. **Cambridge Water Supply** Waipa District Council stated that the timeframe by which it would be able to comply with a direction for the Cambridge supply is nine months after receiving a direction and funding.

Waitaki District Council: Oamaru water supply

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**

Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Ministers Chief Science Advisor and Royal Society of New Zealand Te Aparangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015). Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Oamaru water supply would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by this water supply.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Oamaru water supply.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz)

	This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	The Oamaru supply is situated within the previous Southern District Health Board area. 2020 data for children aged 0-12 in Southern District Health Board show: - overall, 32 percent of children had experienced tooth decay at age five - on average, children at age five have 1.29 decayed, missing or filled primary teeth, and at school year 8 have on average 0.66 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Southern District Health Board. For example, 46 percent of Māori children had experienced decay at age five compared to 28 percent for all other (non-Māori and non-Pacific) children. The 2017- 2020 New Zealand Health Survey results for Southern District Health Board show: - 47.6 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease - 7.1 percent of adults (15+) had one or more teeth removed in the last 12 months due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by the Oamaru water supply. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Oamaru water supply. The evidence indicates that fluoridation of the Oamaru water supply would make significant improvements to oral health outcomes for the communities it serves. Within the Oamaru area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, Oamaru South is in decile 6, and Oamaru Central and Oamaru North are in decile 7. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.
Director of Public Health advice	Informed by the evidence and data sources listed above at 'Criterion 1 Evidence' and 'Criterion 2a Evidence', I have reviewed the state of oral health of the populations served by the Oamaru supply. In summary, my assessment is as follows. The Oamaru population presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to this population. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serve these communities would consequently improve oral health outcomes and is likely also to reduce health inequities.

<table>
<tr><td>Criterion</td><td>2b. the number of people who are reasonably likely to receive drinking water from the local authority supply</td></tr>
<tr><td>Evidence</td><td>We have considered the following information:
the Public Register of Drinking Water Suppliers.</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>Oamaru</td><td>15,561</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015.
Waitaki District Council’s estimated costs, including ongoing management and monitoring costs (for more detail on Waitaki District Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:
an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
“We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care”
The Oamaru supply fits into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Waitaki Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing over 10,000 people, Sapere 2015 estimated $347,004 for capital costs, and $8742 per annum for management and monitoring costs; while for the Oamaru supply servicing 15,561 people, Waitaki District Council estimated $367,500 for capital costs. The ongoing management and monitoring costs for the Oamaru supply were not specified.</td></tr>
</table>

Water Supply	Population size	Waitaki District Council estimate of capital cost	Waitaki District Council estimate of management and monitoring costs (per annum)
Oamaru	15,561	$367,500	n/a
Total	**15,561**	**$367,500**	

Summary of the information received from Waitaki District Council
As required by section 116G, Waitaki District Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Waitaki District Council responded within the required timeframe. A copy of Waitaki District Council's formal response is attached to this Report as Appendix One. For Waitaki District Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above. **Oamaru Water Supply** The Waitaki District Council cannot provide a date by which it could comply with a direction, as there are many factors leading into this.

Western Bay of Plenty District Council: Athenree and Wharawhara water supplies

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**

Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Athenree and Wharawhara water supplies would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by each of these water supplies.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Athenree and Wharawhara water supplies.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**
Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz)

	This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	The Athenree and Wharawhara supplies are situated within the previous Bay of Plenty District Health Board area. 2020 data for children aged 0-12 in Bay of Plenty District Health Board show: - overall, 50 percent of children had experienced tooth decay at age five - on average, children at age five have 2.41 decayed, missing or filled primary teeth, and at school year 8 have on average 1.06 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Bay of Plenty District Health Board. For example, 65 percent of Māori children had experienced decay at age five compared to 36 percent for all other (non-Māori and non-Pacific) children. The 2017- 2020 New Zealand Health Survey results for Western Bay of Plenty District Council show: - 55.4 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease - 5.9 percent of adults (15+) had one or more teeth removed in the last 12 months due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of dental decay in the communities serviced by Athenree and Wharawhara water supplies. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by the Athenree and Wharawhara water supplies. The evidence indicates that fluoridation of the Athenree and Wharawhara water supplies would make significant improvements to oral health outcomes for communities it serves. Within Western Bay of Plenty area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least, there are areas in Western Bay of Plenty that are in deciles 8-10. Athenree and Wharawhara are in decile 6. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.
Director of Public Health advice	Informed by the evidence and data sources listed above at 'Criterion 1 Evidence' and 'Criterion 2a Evidence', I have reviewed the state of oral health of the populations served by the Athenree and Wharawhara water supplies. In summary, my assessment is as follows. The Athenree and Wharawhara populations each presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to each of these two populations. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the

<table>
<tr><td></td><td>water supply that serves each of these communities would consequently improve oral health outcomes for each and is likely also to reduce health inequities.</td></tr>
<tr><td>Criterion</td><td>2b. the number of people who are reasonably likely to receive drinking water from the local authority supply</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
the Public Register of Drinking Water Suppliers</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>Athenree</td><td>5125</td></tr><tr><td>Wharawhara</td><td>5700</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015.
Water Fluoridation Engineering Costs. August 2015.
Western Bay of Plenty District Council’s estimated costs, including ongoing management and monitoring costs (for more detail on Western Bay of Plenty District Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:
an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
“We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care”
The Athenree and Wharawhara supplies each fit into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

For water supplies servicing 5001 – 10,000 people, Sapere 2015 estimated $61,034 for capital costs and $8742 per annum for management and monitoring costs; while for the Athenree supply servicing 5125, Western Bay District Council estimated $286,000 for capital costs and</td></tr>
</table>

$26,000 per annum for management and monitoring costs. For the Wharawhara supply servicing 5700, Western Bay District Council estimated $280,000 for capital costs and $29,000 per annum for management and monitoring costs.

Water Supply	Population size	Western Bay of Plenty District Council estimate of capital cost	Western Bay District Council estimate of management and monitoring costs (per annum)
Athenree	5125	$286,000	$26,000
Wharawhara	5700	$280,000	$29,000
Total	**10,825**	**$471,000**	**$55,000**

Summary of the information received from Western Bay of Plenty District Council

As required by section 116G, Western Bay of Plenty District Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Western Bay of Plenty District Council responded within the required timeframe. A copy of Western Bay of Plenty District Council's formal response is attached to this Report as Appendix One.

For Western Bay of Plenty District Council's estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above.

Athenree Water Supply
Western Bay of Plenty District Council stated that the timeframe by which it would be able to comply with a direction for the Athenree supply is 24-36 months

Wharawhara Water Supply
Western Bay of Plenty District Council stated that the date by which it would be able to comply with a direction for the Wharawhara supply is 24-36 months.

Whangārei District Council: Whangārei and Bream Bay water supplies

Analysis	
Criterion	**1. Scientific evidence on the effectiveness of adding fluoride to drinking water in reducing the prevalence and severity of dental decay**
Evidence	The Ministry has considered the following information: • Fluoridation: an evidence update | Office of the Prime Minister's Chief Science Advisor (June 2021) • Health effects of water fluoridation: A review of the scientific evidence (August 2014) Office of the Prime Minister's Chief Science Advisor and Royal Society of New Zealand Te Apārangi • Water fluoridation to prevent tooth decay | Cochrane Collaboration (June 2015) Fluoridation: An update on evidence (PMCSA 2021) examines new evidence on water fluoridation published since the Royal Society Te Apārangi report in 2014. The Cochrane Collaboration's water fluoridation to prevent tooth decay (2015) is a high-quality scientific meta-analysis of a large number of high-quality research studies conducted over a long period worldwide.
Analysis	The sources of evidence referred to above are reviews that examine substantial bodies of research generated over periods of time on the safety of community water fluoridation (CWF) and its effectiveness at reducing dental decay. Considered together, these reports provide an up-to-date and high-quality scientific assessment of the state of the scientific evidence on the health effects of CWF. They find that the provision of CWF at a level of 0.7-1 mg/L is safe and significantly reduces the prevalence and severity of dental decay. The summary analysis of evidence stated above justifies the conclusion that provision of CWF at a level of 0.7-1 mg/L in the Whangārei and Bream Bay water supplies would be safe and effective at significantly reducing the prevalence and severity of dental decay in the populations serviced by each of these water supplies.
Director of Public Health advice	Informed by the findings of the reviews noted in 'Criterion 1 Evidence' above on CWF, my assessment is that there is strong evidence that CWF is a safe and effective way to improve oral health outcomes, by reducing and preventing dental decay. I also consider that this strong evidence applies to the communities served by the Whangārei and Bream Bay water supplies.
Criterion	**2. whether the benefits of adding fluoride to drinking water outweigh the financial costs, taking into account:**
Criterion	**2a. the state or likely state of the oral health of a population group or community where the local authority supply is situated**

Evidence	The Ministry has considered the following information: • data on Age 5 and Year 8 oral health outcomes from the Community Oral Health Service (Ministry of Health) • data from the New Zealand Health Survey: Oral Health (New Zealand Health Survey | Ministry of Health NZ) • Oral Health Survey Report (Our Oral Health: Key findings of the 2009 New Zealand Oral Health Survey | Ministry of Health NZ) • 2013 New Zealand Index of Deprivation (NZDep) (Socioeconomic deprivation profile | ehinz) This is the most relevant up-to-date data available. It should be noted that oral health outcome data can take a long time to change substantially.
Analysis	The Whangārei and Bream Bay water supplies are situated within the previous Northland District Health Board area. 2020 data for children aged 0-12 in Northland District Health Board show: - overall, 58 percent of children had experienced tooth decay at age five - on average, children at age five have 3.41 decayed, missing or filled primary teeth, and at school year 8 have on average 1.15 decayed, missing or filled adult teeth - Māori and Pacific children have significantly worse outcomes than other children within Northland District Health Board. For example, 75 percent of Māori children had experienced decay at age five compared to 42 percent for all other (non-Māori and non-Pacific) children. The 2017-2020 New Zealand Health Survey results for Whangārei District Council show: - 56.9 percent of adults (15+) had one or more teeth removed in their lifetime due to decay, an abscess, infection or gum disease - 8.8 percent of adults (15+) had one or more teeth removed in the last 12 months due to decay, an abscess, infection or gum disease. From the data summarised above, it is reasonable to conclude that there are significant levels of tooth decay in the communities serviced by Whangārei and Bream Bay water supplies. There is strong evidence that CWF reduces dental decay. There are therefore also significant opportunities for oral health improvement for the communities served by Whangārei and Bream Bay water supplies. The evidence indicates that fluoridation of Whangārei and Bream Bay water supplies would make significant improvements to oral health outcomes for the communities it serves.

<table>
<tr><td></td><td>Within the Whangārei area, there are significant levels of deprivation. In the 10-level score in which decile 1 has the least deprivation, Whangārei Central are in decile 10 and Bream Bay is in decile 5. There is a significant body of evidence that levels of tooth decay are highest among the most deprived socioeconomic groups.</td></tr>
<tr><td>Director of Public Health advice</td><td>Informed by the evidence and data sources listed above at ‘Criterion 1 Evidence’ and ‘Criterion 2a Evidence’, I have reviewed the state of oral health of the populations served by the Whangārei and Bream Bay water supplies. In summary, my assessment is as follows. Whangārei and Bream Bay water supplies populations each presently have significant levels of preventable dental decay. The evidence that CWF improves oral health outcomes by reducing dental decay is applicable to each of these two populations. So too is the evidence that these benefits tend to be greater for populations that experience higher levels of tooth decay, such as Māori and Pacific communities. Fluoridation of the water supply that serves each of these communities would consequently improve oral health outcomes for each, and is likely also to reduce health inequities.</td></tr>
<tr><td>Criterion</td><td>2b. the number of people who are reasonably likely to receive drinking water from the local authority supply</td></tr>
<tr><td>Evidence</td><td>The Ministry has considered the following information:
the Public Register of Drinking Water Suppliers.</td></tr>
<tr><td>Analysis</td><td><table><tr><th>Water supply</th><th>Population size</th></tr><tr><td>Bream Bay</td><td>14,800</td></tr><tr><td>Whangārei</td><td>56,530</td></tr></table></td></tr>
<tr><td>Criterion</td><td>2c. the likely financial cost and savings of adding fluoride to the drinking water, including any additional financial costs of ongoing management and monitoring</td></tr>
<tr><td>Evidence</td><td>We have considered the following information:
Review of the Benefits and Costs of Water Fluoridation in New Zealand. Sapere Research Group. May 2015
Water Fluoridation Engineering Costs. August 2015.
Whangārei District Council’s estimated costs, including ongoing management and monitoring (for more detail on Whangārei District Council’s comments see table below).</td></tr>
<tr><td>Analysis</td><td>The 2015 Sapere Report estimated that adding fluoride to New Zealand’s water treatment plants classified as medium sized and above (ie, those supplying populations of over 5000) is cost-saving, and for smaller supplies (ie, those supplying populations of over 500) is likely to be cost-saving. The Sapere report also noted:</td></tr>
</table>

- an estimated total net discounted saving over 20 years for smaller supplies and above to be $1,401 million, made up of a cost of fluoridation of $177 million and cost offsets of $1,578 million from reduced dental decay
- "We estimate the 20-year discounted net saving of water fluoridation to be $334 per person, made up of $42 for the cost of fluoridation and $376 savings in reduced dental care"

The Whangārei and Bream Bay supplies each fit into the category of supplies servicing over 5000 people (see further detail in Criterion 2b).

The estimated costs provided by Whangārei District Council are presented in the table below. These estimates vary from the cost estimates Sapere 2015 used in reaching its conclusion that fluoridation is cost-saving for supplies servicing over 5000 people. For water supplies servicing over 10,000 people, Sapere 2015 estimated $347,004 for capital costs, and $8742 per annum for management and monitoring costs; while for the Whangārei supply servicing 56,530 people, Whangārei District Council estimated $1,200,000 for capital costs. For the Bream Bay supply servicing 14,800 people, Whangārei District Council estimated $1,700,000 for capital costs. For both the Whangārei and Bream Bay supplies, Whangārei District Council estimated over $100,000 per annum for management and monitoring costs.

Water Supply	**Population size**	**Whangārei District Council estimate of capital cost**	**Whangārei District Council estimate of management and monitoring costs (per annum)**
Bream Bay	14,800	$1,700,000	Over $100,000
Whangārei	56,530	$1,200,000	
Total	**71,330**	**$2,900,000**	**Over $100,000**

Summary of the information received from Whangārei District Council
As required by section 116G, Whangārei District Council was invited to give written comments on the estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring; and the date by which each local authority would be able to comply with a direction. Whangārei District Council responded within the required timeframe. A copy of Whangārei District Council formal response is attached to this Report as Appendix One.

For Whangārei District Council estimated financial costs of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring please see Criterion 2c above.

Bream Bay Water Supply

Whangārei District Council stated that the date by which it would be able to comply with a direction for the Bream Bay water supply is 30 June 2024.

Whangārei Water Supply

Whangārei District Council stated that the date by which it would be able to comply with a direction for the Whangārei water supply is 31 December 2023 - 31 December 2025.

Appendix One – Responses from local authorities

Watercare
An Auckland Council Organisation

Watercare Services Limited
73 Remuera Road, Remuera
Auckland 1050, New Zealand
Private Bag 92521 Wellesley Street,
Auckland 1141, New Zealand

Telephone +64 9 539 7300
Facsimile +64 9 539 7334
www.watercare.co.nz

22 June 2022

Dr Ashley Bloomfield
Te Tumu Whakarae mō te Hauora
Director-General of Health
133 Molesworth Street
PO Box 5013
Wellington 6140
New Zealand

Tēnā koe Dr Bloomfield

Re: Community water fluoridation next steps

Thank you for your letter dated 3 May 2022 inviting written comment in relation to the fluoridation of Onehunga and Waiuku water supplies. We acknowledge your preliminary assessment of the Waiuku and Onehunga drinking water supplies against the decision-making requirements set out under Part 5A Section 116E (3) of the Health Act 1956.

We can confirm that the costs and timing of projects have been revised. These cost changes account for inflation and other material escalations, and timings have been considered in light of the projects currently planned within the Watercare Asset Management Plan.

Regarding your request for comment from in relation to the fluoridation of the Waiuku and Onehunga Zone supplies, we can confirm the following:

Onehunga Supply Zone:

Watercare can programme fluoridation works for the Onehunga Water Treatment Plant into our asset management plan to be complete before 30 June 2024. There are risks associated with fast tracking this investment, including internal resourcing, health and safety and quality of delivery. This delivery timeframe assumes that the proposed enhancements are fully funded by Watercare.

Capital investment	$125,000
Ongoing Operating costs	$33,000 per annum

Waiuku Water Supply:

We will need to programme the fluoridation upgrades to coincide with the wider Waiuku upgrades that are planned to be complete by 30 June 2026. At present three water treatment plants supply the Waiuku community. The costs provided below are estimated based on upgrades to the three existing facilities and assuming the proposed enhancements are fully funded by Watercare.

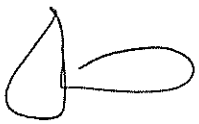
Capital investment	$1,500,000
Ongoing Operating costs	$75,000 per annum

We would like to engage with the Ministry of Health in relation to the communications plan for the communities impacted by this directive. Historically, we have engaged on numerus occasions with various parties and individuals regarding the basis for water supply fluoridation. We would like to ensure that the communications with these communities are clearly defined.

We trust this information provides you with the detail required to support your further decision-making processes.

Please do not hesitate to contact me if you have any further questions.

Noho ora mai



Jon Lamonte
Chief Executive
Watercare Services Limited

Far North District Council
Te Kaunihera o Tai Tokerau ki te Raki

HE ARA TĀMATA
CREATING GREAT PLACES
Supporting our people

Email: ask.us@fndc.govt.nz
Website: www.fndc.govt.nz

Private Bag 752, Memorial Avenue
Kaikohe 0440, New Zealand
Freephone: 0800 920 029
Phone: (09) 401 5200
Fax: (09) 401 2137

Director-General of Health
Ministry of Health
PO Box 5013
Wellington 6140

5 July 2022

Dear Dr Ashley Bloomfield

RE: Community water fluoridation

I write in response to your letter dated 3 May 2022 requesting feedback relating to your proposal to fluoridate the Kaitaia and Kerikeri water supplies and the ability to meet costs and timeframes.

I do not propose to comment on the advantages and disadvantages of fluoridation as your Ministry is best placed to engage with our communities on this public health matter.

My response is to re-iterate our earlier comments in that:

1. Council has no funding within our Long-Term Plan (ending 30 June 2024) to fund the installation of the necessary infrastructure or to meet the annual operating costs of the chemicals
2. Indicate costings to install the necessary infrastructure and address the requirements under the hazardous substances regulations, are $800,000 for both Plants.
3. Based on the above 2 points, we would strongly suggest that if your proposal was to proceed that it be aligned with 3-Water Reforms and be introduced in a staged approach. Site assessments and detailed design in 24/25 year and installation during 25/26 year.

The suggested timeframe outlined in point 3 would allow time for the Ministry to engage with our local communities.

If you require any further information, please do not hesitate to contact me on 09 401 5200 or free-phone 0800 920 029.

Yours sincerely,
FAR NORTH DISTRICT COUNCIL

Glenn Rainham
Manager, Infrastructure Operations
glenn.rainham@fndc.govt.nz

Vi Vu

From: Matt Kersel <matthewpk@hdc.govt.nz>
Sent: Wednesday, 29 June 2022 10:12 am
To: Fluoride
Subject: Community water fluoridation - next steps - HDC resposnse
Attachments: CWF next steps letter Hastings District Council.pdf

To whom it may concern

Thank you for your letter dated 3 May 2022 (attached) requesting further information regarding the readiness of Hastings District Council to Fluoridate the Hastings Urban Water Supply.

Overview:
Five Water Treatment Plants (WTPs) service this water supply. Capital upgrades are underway at two of the sites (Frimley and Waiaroha) which include the construction of new WTPs that incorporate fluoridation facilities. Sufficient budget is allocated within these projects to complete these installations.
Planning is underway at a third site (Wilson Road) which will complete fluoridation facilities of the three main sources and budget is required for the delivery of this project which is estimated at $240,000 (+/-50%). The two remaining sources at the time of completion of these projects and implementation of Fluoridation to the supply will be for emergency and operability purposes only and Fluoridation facilities are not planned to be installed at these WTPs and have not been considered in the information provided.

Please find responses to your questions below:

a) the estimated financial cost of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring
Fluoridation facilities at Wilson Road WTP is estimated at $240,000 (+/-50%).
The ongoing average cost per annum is estimated at $100,000 for chemical purchase, system maintenance, management and monitoring.

b) the date by which your local authority would be able to comply with a direction.
The completion date of the Waiaroha WTP is the date HDC are targeting for all sites to be ready for the implementation of Fluoridation. This is currently programmed for June 2023.

Please contact me if you have any further queries or require clarification.

Regards

MATT KERSEL
DRINKING WATER MANAGER

HASTINGS DISTRICT COUNCIL
Te Kaunihera ā Rohe o Heretaunga
HASTINGS HEART OF HAWKE'S BAY

Phone (06) 871 5110 ext 5417 Mobile s 9(2)(a)
Email matthewpk@hdc.govt.nz Web hastingsdc.govt.nz
Hastings District Council, Private Bag 9002, Hastings 4156, New Zealand

Horowhenua
DISTRICT COUNCIL

1 July 2022

Dr Ashley Bloomfield
Te Tumu Whakarae mō te Hauora
Director-General of Health
fluoride@health.govt.nz

Tēnā koe Dr Bloomfield,

Community water fluoridation next steps

Thank you for your letter, dated 3 May 2022, in which you invited Horowhenua District Council (Council) to provide further comment on the costs and timeframes to implement a fluoride dosing system for Levin's water supply.

Council held a workshop on Wednesday 29 June 2022 to discuss and clarify the broader public health outcomes of fluoridation, leading to our response to your letter. We would like to thank Riana Clarke, your National Clinical Director for Oral Health, for her presentation. We appreciated the opportunity to discuss the benefits and community health outcomes with your chief dental expert.

Our previous advice on the costs and timeframes for the Levin water supply, dated 15 December 2021 remains largely unchanged. With regard to the two questions posed:

a) *the estimated financial cost of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring*

We have carried out some preliminary investigations into the addition of a fluoride dosing system into our water treatment plant, including advice from specialist suppliers. The plant itself will require some modifications alongside the design, supply, installation and commissioning of the new dosing system. At the time of writing, and based on current market conditions, the estimated capital cost of adding fluoride to Levin's water supply will be circa $1,000,000.

The high-level breakdown would be:

- $500,000 for the mechanical and chemical engineering systems
- $250,000 for the civil engineering modifications to the plant
- $250,000 for project management, design, compliance, commissioning and contingency

We estimate the ongoing (business and usual) operational costs would be circa $40,000 per annum.

Furthermore, our asset management plan would also need to include planned renewals, inventory of spares and reactive maintenance budgets per annum. Quantification of those costs is reliant on the system we select and the various warranties, guarantees and depreciation cycles for the specialist equipment.

We will of course work alongside the Ministry to detail and confirm the scope and budgets once the Director General of Health has outlined the direction.

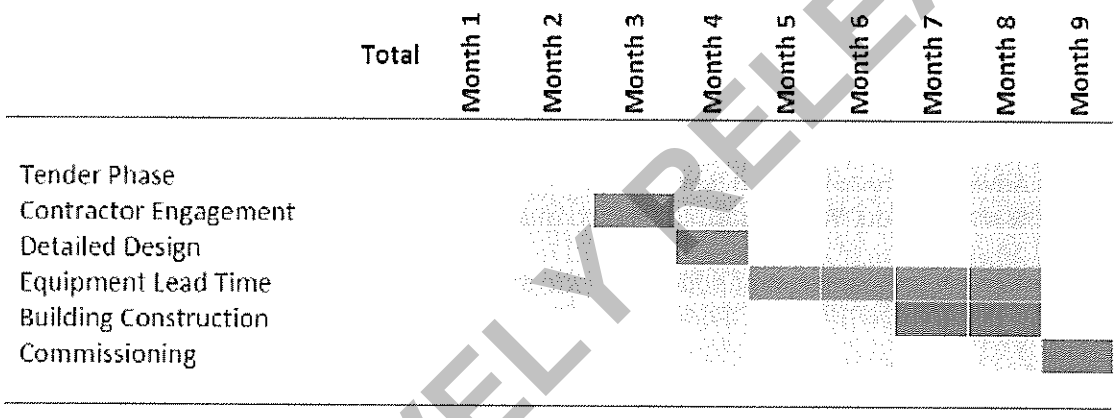
Council will require funding assistance from the Ministry. You will be aware that Council had not anticipated this as part of our Long Term Plan of Annual Plan processes and does not have any dedicated funding set aside for the additional capital and operational costs. Our team will work alongside the Ministry to determine a mutually agreeable funding model going forward.

b) the date by which your local authority would be able to comply with a direction.

At the time of writing and based on market advice, we have conservatively estimated up to nine (9) months to design, install and commission a fluoride dosing system for Levin. Noting the timeframe can be reduced depending on the procurement method and lead times to secure the specialist equipment.

Procurement would commence immediately upon of receipt of a direction from the Director General of Health. It is conceivable we could begin dosing fluoride in 2022.

We have outlined a simple critical path programme below.



I wish to reiterate Council's concern about the ad hoc way in which we introduce this treatment into our community means we could lose out on bundling and procuring work across our 5 treatment plants, rather than just the one treatment plant you have identified. With the impending Three Waters Reform Programme we are concerned about the compounding impact of adding in infrastructure, that we do not have allocated budgets for. We also seek clarity on the implications of this direction with our current Water Safety Plan obligations.

We trust this further information provides the necessary confirmation and commitment you were looking for from Council. Please do not hesitate to make contact should you have any further questions. We look forward to working with you to implement this important initiative for our community.

Ngā mihi,

Monique Davidson
Chief Executive

Vi Vu

From: Hanno van der Merwe <Hanno.vanderMerwe@kaweraudc.govt.nz>
Sent: Wednesday, 29 June 2022 4:19 pm
To: Fluoride
Subject: Kawerau District Community fluoridation

Dear Ashley,

In response to your community fluoridation request:

a) The estimated cost is still about $50,000 to install and about $5,000 pa to maintain.
b) We should be able to comply within three months from any direction from you.

I am already doing the preparation work. I will have formal quotes from at least two suppliers in the next month.
Please note that Kawerau is a poor district and we will always appreciate any funding support to install and maintain the required systems.

Kind regards,

Dr Hanno van der Merwe | Group Manager, Operations and Services | Kawerau District Council

Phone +64 7 306 9009
Direct +64 7 306 9045
Mobile s 9(2)(a)
Ext 727
Email Hanno.vanderMerwe@kaweraudc.govt.nz

Website | Facebook |

Te Kaunihera-ā-Rohe o Ngāmotu
New Plymouth District Council

When replying please quote: ECM 8791861

27 June 2022

Dr Ashley Bloomfield
Director-General of Health
P O Box 5013
WELLINGTON 6140

Email: fluoride@health.govt.nz

Dear Sir

COMMUNITY WATER FLUORIDATION

Thank you for the opportunity to provide further comment on Council's readiness to fluoridate.

At the time of our response of 7 March we were working on an improvement plan for the New Plymouth Water Treatment Plant. The purpose of this improvement plan was to assess options to improve the seismic resilience of the WTP building and the compliance of our chemical storage facilities, along with considering options for maintaining adequate water treatment capacity for the predicted population growth over the next 30 years.

At a workshop held in mid-June it was identified that the existing chemical storage and dosing equipment will be best relocated to a new purpose built facility, designed and constructed to current seismic and legislative requirements. Subject to Council approval processes the work would commence in July 2024 and is estimated to take two years to complete. If instructed to fluoridate the New Plymouth water supply, Council will install fluoride dosing equipment at the same time as this work is undertaken.

If Council is required to fluoridate earlier than this, then a temporary installation will be required. Any equipment installed before the chemical dosing equipment is relocated would need to be abandoned when the new chemical storage and dosing upgrade is completed.

We do not have any reliable estimates for this work as we do not have a clear understanding of the scope of the work yet. Cost estimation is also very uncertain in the current construction market.

The capital costs submitted in March are a Class 5 estimates (in our system this means it is an estimate with the lowest level of certainty as we have no design upon which to base costs). Also they were based on the installation of fluoride dosing equipment within our existing building. It was not known at the time the costs were submitted that we would not be able to resolve the building seismic issues without relocating the chemical storage and dosing facility. Given the current inflationary environment and volatility in the construction market it is expected that costs could be significantly higher.

The ongoing operating costs were estimated at the time of our March response. To provide a fluoride dose of 0.7mg/L based on recent water volume to supply, the total annual cost of operating and maintaining the fluoride dosing to the New Plymouth water supply would be $35,000 - $40,000. Again, these are cost estimates with a significant degree of uncertainty given the current price

volatility. This Opex cost is not included in our current budgets and we would need to seek Council approval to increase budgets.

The low level of confidence in the cost estimates and the short term usable life for any dosing equipment installed now should be taken into account in any cost benefit analysis undertaken.

Yours faithfully

M Hall

Mark Hall
THREE WATERS MANAGER

Vi Vu

From: Mark Hall <Mark.Hall@npdc.govt.nz>
Sent: Wednesday, 13 July 2022 2:51 pm
To: Fluoride
Subject: RE: Letter to Ministry of Health re Community Water Fluoridation

Kia ora Ben

We have received a proposal from a supplier for a temporary installation which we believe is feasible to install at our plant. Allowing for lead times for supply of imported equipment I'd expect it could take 6 to 9 months to finalise design, procure and install.

The estimated capital cost for this would be in the order of $120,000. As this is an unbudgeted service level expenditure, it may require us to reprioritise spending as part of the 2023 Annual Plan meaning funding may not be available until 1 July 2022.

Mark Hall
Three Waters Manager

New Plymouth District Council | Liardet St | Private Bag 2025 | New Plymouth 4340
Phone: 06-759 6060 | Mobile: s 9(2)(a)
www.newplymouthnz.com | Facebook | Twitter

Ref: A2912243

Civic House, 110 Trafalgar Street
PO Box 645, Nelson 7040, New Zealand

P (03) 5460200
E Alec.louverdis@ncc.govt.nz
nelson.govt.nz

28 June 2022

Director-General of Health
133 Molesworth Street
PO Box 5013
Wellington 6140

By email to: fluoride@health.govt.nz

Dear Sir

Community Water Fluoridation Next Steps

Thank you for your letter dated 3 May 2022 regarding the above.

As requested, please see Nelson City Council's response to the following questions:

- *The estimated financial cost of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring*
  - The estimate cost for design, construction and commissioning is $750,000.
  - The estimate cost for ongoing management and monitoring is $110,000 per annum.

- *The date by which your local authority would be able to comply with a direction.*
  - From the date a direction is given, it is anticipated to take approximately 12 to 18 months to complete the works.

Please note that Council does not have any funding allocated for this work within its Long Term Plan and 2022/23 Annual Plan. The costs and timeline highlighted above are high level and there is a high risk that these will increase based on the current national supply chain issues (local and overseas) and increasing cost escalations for the foreseeable future.

Yours sincerely

Alec Louverdis
Group Manager Infrastructure/Acting Chief Executive

Vi Vu

From: Eric Cawte <Eric.Cawte@rotorualc.nz>
Sent: Monday, 4 July 2022 11:21 am
To: Vi Vu; Fluoride
Cc: Craig Tiriana; Geoff Williams; Stavros Michael; Regan Fraser; Greg Manzano; Steve Harwood
Subject: FW: Action Required: Community Water Fluoridation

Kia ora Vi,

Further to your email to Geoff Williams, please find below the table you supplied, populated with estimated capital and annual operating costs related to implementing fluoridation of the listed water supplies. I apologise for the delay in sending this reply. These estimates are still very preliminary and considering that the proposed compliance date is between 12 and 18 months away, I have incorporated current and projected cost escalations based on a contract award date around March 2023. As you will probably be aware, Capital Goods and Consumer Price indices have increased significantly recently, and we are seeing actual construction and operational prices well in excess of the published indices. The actual costs will be very dependent on international materials and local labour costs which continue to rise.

You have asked for details for only Rotorua Central and Eastern supplies. It may be that you are considering funding for only these two which would mean that approximately 11,500 people will not receive fluoridated water. It is understandable that you wish to target funding to economies of scale, but I would respectfully request that at least Ngongotaha and its population of 5000 be included for consideration. The area of Ngongotaha has always been considered to be within the Rotorua "Urban" area and receives the same stated water supplies levels of service as the remainder of the urban area. There is a 300mm diameter pipeline linking the Rotorua Central and Ngongotaha networks which provides the opportunity for them to supplement each other, and RLC has recently reached agreement with mana whenua for the commissioning and operation of this pipeline. The Ngongotaha area also contains communities of relatively high deprivation which would benefit from this targeted health intervention. I have included the relevant data for Ngongotaha in the table for your information.

Please don't hesitate to contact me if you require any further information.

Nga mihi,

Eric Cawte.

Supply name	Estimated cost to add fluoride	Operating costs	Proposed compliance date
Rotorua Central	722,000	47,000	12 to 18 months
Rotorua East	618,000	25,000	12 to 18 months
Ngongotaha	333,000	23,000	12 to 18 months

Vi Vu

From: Peter Wimsett <Peter.Wimsett@Tararuadc.govt.nz>
Sent: Friday, 15 July 2022 5:54 pm
To: Fluoride
Subject: Re: Tararua District Council - Response to Additional Enquiry

Hello Ben
Sorry for the late reply.
With external funding and it mandated by Director General of Health or Ministerial authority, it would not be considered a matter of significance and so we would be able to include it in an Annual Plan process with the earliest delivery year being 2023/24, (Delivered within 22 months of now), assuming supply chain / contractor availability. I have been trying to make contact with our supplier all day. I am happy is you need to discuss this tomorrow or Monday. My number is s 9(2)(a) [redacted]
Nga mihi
Peter

Get Outlook for iOS

From: Ben Volz <Ben.Volz@health.govt.nz> on behalf of Fluoride <Fluoride@health.govt.nz>
Sent: Friday, July 15, 2022 4:49:43 PM
To: Peter Wimsett <Peter.Wimsett@Tararuadc.govt.nz>
Subject: FW: Tararua District Council - Response to Additional Enquiry

Thanks Peter,

What about the timeframe by which you could implement? (if the Ministry funded you)

Regards

Ben Volz
Senior Advisor
Public Health Agency

From: Peter Wimsett <Peter.Wimsett@Tararuadc.govt.nz>
Sent: Thursday, 14 July 2022 5:01 pm
To: Fluoride <Fluoride@health.govt.nz>
Subject: RE: Tararua District Council - Response to Additional Enquiry

Hello Ben

I am aware of the pressure of your timing.

I have asked for updated pricing from the supplier who is considering this request but I have had this checked by two senior water engineers, our water operations manager and our mechanical engineer contractor.

It is a very difficult environment to gauge – we are seeing 35% increases in major items.

This is our preliminary adjustment, which may be enough to give you a sense of the changes that are occurring:

Estimate 31 March 2022	$252,480	
Re-establish contingency & inflation	**66,370**	**+26%**
Revised and Adjusted to 14/7/2022	$318,850 (preliminary)	

This does maintain a contingency of 20% and allowance for further inflation – combined these allowances total $121,450 of the $318,850.

Kind regards

Peter Wimsett
Manager Strategy and Climate Change
Email: peter.wimsett@tararuadc.govt.nz

Tararua District Council · 26 Gordon Street · PO Box 115 · Dannevirke 4942 · Tararua
P: +64 (0)6 374 4080 DDI: +64 (0)6 374 4118 M: s 9(2)(a)
Web: www.tararuadc.govt.nz

From: Ben Volz <Ben.Volz@health.govt.nz> **On Behalf Of** Fluoride
Sent: Friday, 8 July 2022 3:13 pm
To: Peter Wimsett <Peter.Wimsett@Tararuadc.govt.nz>; Fluoride <Fluoride@health.govt.nz>
Subject: RE: Tararua District Council - Response to Additional Enquiry

Hi Peter,

Just checking if there has been any progress with this?

Regards

Ben Volz
Senior Advisor
Public Health Agency

From: Peter Wimsett <Peter.Wimsett@Tararuadc.govt.nz>
Sent: Monday, 4 July 2022 4:33 pm
To: Fluoride <Fluoride@health.govt.nz>
Subject: RE: Tararua District Council - Response to Additional Enquiry

Thank you Ben
I will check with our team ☺
Cheers
Peter

Kind regards

22 June 2022

Tauranga City

133 Molesworth Street
PO Box 5013
Wellington 6140
New Zealand

Sent via email fluoride@health.govt.nz

Tēnā koe Dr Bloomfield

Community Water Fluoridation Next Steps

I am writing in response to your letter dated 3 May 2022 inviting written comment in relation to the Tauranga supply, on:

a) the estimated financial cost of adding fluoride to the drinking water, including any additional costs of ongoing management and monitoring

b) the date by which your local authority would be able to comply with a direction

Our response to the above is as follows:

a) The current supply chain disruptions and surging inflation have prompted a review of the estimated financial cost of adding fluoride to the Tauranga drinking water supply. As a result of this review, our capital estimates have increased significantly to a total of $3,585,220 (previously notified $2,131,920).

   This figure includes a provision for adding a fluoride process to our Waiāri water treatment plant, which is under construction, and due to start producing water in October 2022.

   The ongoing management and monitoring costs are estimated to be $175,500 per annum but will increase as the Tauranga's water demand increases due to the City's growth.

b) The estimated time frame for implementing the fluoridation of Tauranga's water supply would, as previously advised, be about 24 months from obtaining a direction but would be dependent on the timing with council's budget cycle.

   At this time the cost of implementing fluoridation of the water supply has not been included in Council's Long-Term Plan.

   The implementation of this project will also be subject to supply chain and the capacity and capability of our contracting workforce. Water treatment and process contractors are currently inundated with work to upgrade various plants across the country.

Water Suppliers will also be looking to Ministry of Health to secure supply chains for the bulk fluoridation chemical to ensure there is adequate supplies to accommodate the increasing demand that will arise.

Thank you for the opportunity to provide written comment.

Naku noa

Nic Johansson
General Manager: Infrastructure

07 5777110| s 9(2)(a)
nic.johansson@tauranga.govt.nz

Waipa DISTRICT COUNCIL

Postal Address
Private Bag 2402
Te Awamutu 3840
New Zealand

Head Office
07 872 0030
101 Bank Street
Te Awamutu 3800

Cambridge Office
07 823 3800
23 Wilson Street
Cambridge 3434

15 June 2022

10833758

Digitally Delivered

Dr Ashley Bloomfield
Te Tumu Whakarae mō te Hauora
Director-General of Health
By email fluoride@health.govt.nz

Tēnē koe Ashley

COMMUNITY WATER FLUORIDATION NEXT STEPS

Further to your letter of 3 May 2022 to Garry Dyet, please not the following comments regarding our Cambridge Supply:

a) An updated estimated capital and operational cost of adding fluoride to the drinking water for Karāpiro Supply – capital cost including building, instrumentation, electrical, mechanical and all required tanks, dosing pumps etc to enable fluoride dosing and monitoring - $260,000.00, excluding GST, with annual operating costs including management, electricity, chemicals etc of an additional $75,000.00.

b) An updated estimated capital and operational cost of adding fluoride to the drinking water for Alpha Street Supply – capital cost including building, instrumentation, electrical, mechanical and all required tanks, dosing pumps etc to enable fluoride dosing and monitoring - $220,000.00, excluding GST, with annual operating costs including management, electricity, chemicals etc of an additional $65,000.00.

c) Waipā District Council estimates a nine month period before we would be able to comply with a direction (period required for works to be executed once a formal request and funding received).

As previously identified, Waipā District Council has no current funding allocated in its Long Term Plan for either the capital or operational costs associated with fluoridation of water supplies.

Nāku noa, nā

Martin Mould
Nga ratonga wai kaiwhakahaere
MANAGER WATER SERVICES

cc: Garry Dyet
Dawn Inglis

Vi Vu

From: Dave Inwood <dave.inwood@waitaki.govt.nz>
Sent: Monday, 20 June 2022 12:03 pm
To: Fluoride
Subject: Oamaru community fluoridation

Hi
We acknowledge your letter dated 3 May 2022 regarding Oamaru Water Treatment fluoridation inputs and your consideration of issuing a direction to fluoridate.

In response to your letter we make the following comments:

1. Due to the uncertainty of what fluoride product will be used, and therefore plant and equipment procured, it is difficult to provide any accurate costing for this purpose.
2. The original cost estimate was provided at $350,000 and with current price cost increase trends a conservative 5% cost fluctuation increase will update the project estimate to $367,500
3. The Waitaki District Council has not specifically allocated any direct funding in the LTP for this project and will not be in a position to commence fluoridation in 2022.
4. We look forward to further inputs and fact sheets from the governments' appointment of Lutra to enable us to make better-informed decisions before fluoridation is adopted and installed at the Oamaru WTP.
5. We cannot provide a date when a fluoride dosing system could be installed as there are many factors leading into this.

Waitaki District Council officers have:

i. Liaised with Ixom who provided some indicative costs for both liquid and powder, but they also advised they do not currently stock any products in the South Island, so prices are uncertain.
ii. Visited Dunedin City Council water facility to observe the use of imported bagged powder use to get some understanding of H&S and operational risks.
iii. Spoken with DCC about their annual tendering process for procuring powder product, (the same as Invercargill City) and noted their preferred suppliers are from Belgium and Japan with 12-14 month supply delivered at any given time.

Regards

Dave Inwood
Senior Operations Engineer

Email: dave.inwood@waitaki.govt.nz
Web: www.waitaki.govt.nz
Tel: +64 3 433 0300

Waitaki District Council
20 Thames Street
Private Bag 50058
Oamaru
Waitaki District
Otago 9444
New Zealand

Disclaimer

The information contained in this communication from the sender is confidential. It is intended solely for use by the recipient and others authorized to receive it. If you are not the recipient, you are hereby notified that any disclosure, copying, distribution or taking action in relation of the contents of this information is strictly prohibited and may be unlawful.

This email has been scanned for viruses and malware, and may have been automatically archived by **Mimecast Ltd**, an innovator in Software as a Service (SaaS) for business. Providing a **safer** and **more useful** place for your human generated data. Specializing in; Security, archiving and compliance. To find out more Click Here.

Vi Vu

From: Coral-Lee Ertel <Coral-Lee.Ertel@westernbay.govt.nz>
Sent: Thursday, 7 July 2022 11:42 am
To: Fluoride
Cc: Gary Allis; EJ Wentzel; Charlene Page
Subject: FW: Western Bay of Plenty District Council: Action Required: Community Water Fluoridation

Kia ora Vi

Thankyou for the opportunity to provide feedback on your proposal for fluoridation in the Western Bay of Plenty District. We note that from the information supplied to you by Council on the 10th March you are recommending both economical and health benefits in installing fluoridation at the Athenree and Wharawhara Water Treatment Plants. The following provides further details around the costs and implications of fluoridation at these sites.

Western Bay of Plenty District Council manages its water supplies in three supply zones; Western, Eastern and Central supply zones. The Wharawhara and Athenree Water Treatment Plans are part of the Western Supply Zone, along with the Tahawai and Waihi Beach Water Treatment Plants. All of these treatment plants supply treated potable water into a common network, which is inter-connected and therefore, the water is mixed throughout the network. In order to effectively fluoridate these communities all four WTPS would require to have fluoridation plants installed. The updated costs and timeframes for fluoridation of these supplies are summarised below;

Supply name	Estimated cost to introduce fluoride	Ongoing management and monitoring costs	Proposed compliance date
Athenree	$286,000	$26,000/annum	24 – 36 months
Wharawhara	$280,000	$29,000/annum	24 – 36 months
Tahawai	$276,000	$22,000/annum	24 – 36 months
Waihi Beach	$276,000	$22,000/annum	24 – 36 months

Key concerns for fluoridation and changes in the table above is summarised in the bullet points below;

- Compliance date is subject to the availability of equipment and contractors. We are finding significant lead time in supply of plant equipment from overseas and an overstretched market means contractors are not readily available for physical works.
- If Tahawai and Waihi Beach WTP supplies where to be included, Council has limited land available for installation of fluoridation onsite. Additional land purchase would be required and compliance date would be subject to Council being able to secure land required. This could add 12 months to the time frame subject to a willing seller and 2-3 years if the PWA process is required.
- Fluoridation of water supplies is specialised and involves dangerous chemicals. It is expected WBOPDC would be required to employee additional operational staff in order

manage these supplies. These costs have been included in the ongoing management and monitoring costs in the table above.

- Western Bay has limited funding available for introducing fluoridation into our water supplies.
- To enable Councils to better manage its sites, if fluoridation is to be installed direction should be given on the future requirements of UV at all WTPs.
- The Council would be seeking Health funding for the installation of fluoridation
- The Council has obligations in the 3 Waters Transition process and would need to notify DIA of any decisions regarding fluoriidation

Ngā mihi | Kind regards,

Coral-Lee Ertel
Asset and Capital Manager
Kaiwhakahaere Rawa me Whiwhi Moni

E coral-Lee.ertel@westernbay.govt.nz
P 07 571 8008 | **FP** 0800 926 732 | **M** s 9(2)(a)
1484 Cameron Road, Greerton, Tauranga 3112

Whangarei District Council

Forum North, Private Bag 9023
Whangarei 0148, New Zealand
P +64 9 430 4200
F +64 9 438 7632
E mailroom@wdc.govt.nz
www.wdc.govt.nz

Ashley Bloomfield
Director-General of Health
133 Molesworth Street
P O Box 5013
Wellington 6140

By Email fluoride@health.govt.nz

Tenã koe Ashley

Thank you for your letter of 3 May 2022 inviting comment from Whangarei District Council on your proposal to direct us to fluoridate our larger water supplies. Whilst your request for information relates to costs and timeframes it would be appropriate to provide some background to the Council's current position.

At present Whangarei District Council does not fluoridate any of its water supplies. This follows a referendum in 2002 where, of the returned papers, 62% were opposed to fluoridation of water supplies. Subsequent Councils have re-affirmed that decision through the Long Term Plan process over the last 20 years.

Consequently, Whangarei District Council has not allocated any funding for fluoridation in current or future budgets. Current budgets for the Water Services Department have prioritised projects to ensure compliance with the proposed drinking water standards and quality assurance rules. As a result of this, and the recent closure of the New Zealand Refinery at Marsden Point, Council ratepayers face a 31% increase in water rates in 2022/2023. The rate for water next year is proposed to rise to over $3.00 per cubic metre.

The estimated cost of upgrading the five water treatment plants identified in your letter, to be able to dose fluoride, is $2,900,000, and the annual operating costs are over $100,000.

Providing that funding can be sourced the timeframes for completing the work are as follows:

Work on the Whau Valley Water Treatment Plant could begin immediately. Whau Valley provides most of the water to Whangarei City including the Central and Northern suburbs.

This is a new treatment plant, completed in 2021, and space was provided at the site to retrospectively install fluoride dosing equipment. Design work would be straight forward and, if equipment and contractors were available, work may be able to start this year.

The Ruddells Water Treatment plant is a basic facility with limited space and close neighbours. The design for this site will take a little longer and timeframes for completion would depend on the amount of civil works required. However, resources permitting, we are confident we could complete the work by the end of 2023.

The Poroti Water Treatment Plant is currently undergoing an upgrade with the detailed design nearly complete. If directed, it is proposed to include fluoride dosing equipment within the upgraded plant.

It would not be sensible to design and install fluoride equipment into the current facility only to have to remove it once the plant has been upgraded. It is therefore recommended that, should it be decided to direct this plant to dose fluoride, it ought to be included as part of the upgrade works which are programmed to be completed in 2025.

The two treatment plants at Bream Bay, Ahuroa and Ruakaka, should be easier to upgrade and it is anticipated these could be done, resourcing permitting, during the 2023/2034 financial year.

These timeframes are dependent on adequate funding and resources including consultants, contractors, and staff, and materials being available.

If external funding is not available, other projects will need to be removed from Council's water projects list over these years to avoid further water rates increases. Elected Members have indicated that they would not be keen to do this and have indicated strongly that full funding from the Ministry of Health should be requested for both the capital and operational costs of fluoridation. If funding is not available, then Council would consider challenging any direction to fluoridate.

Whilst not ideal from a dental health perspective it may be prudent to delay the introduction of fluoridation until the 3 waters reforms have been completed. This would allow existing water suppliers time to meet the requirements of the new water regulator, Taumata Arowai. It would also allow the new entities to undertake the works in a coordinated and considered way which is likely to be more cost effective and allow a uniform and consistent approach across each entity area.

Yours sincerely

Simon Weston
Chief Executive
Whangarei District Council | Forum North | Private Bag 9023, Whangarei 0148 | www.wdc.govt.nz
P 09 430 4200 | DDI 09 430 4205 | M s 9(2)(a) E simon.weston@wdc.govt.nz

Explanatory Note: The following are relevant emails that were omitted in error from the report.

From: Glenn Rainham <Glenn.Rainham@fndc.govt.nz>
Sent: Thursday, 7 July 2022 2:19 pm
To: Fluoride <Fluoride@health.govt.nz>
Subject: RE: Action Required: Community Water Fluoridation

Sorry no. The $1.75M was total operating costs for both supplies, not the additional operating costs for fluoridation.

We haven't quantified this number however, I would estimate it to be approx.. $100,000 per year.

Glenn Rainham
Manager - Infrastructure Operations
Infrastructure & Asset Management, Far North District Council | **24-hour Contact Centre** 0800 920 029
DDI +6494015305 | **M** s 9(2)(a) | Glenn.Rainham@fndc.govt.nz
Website | Facebook | LinkedIn | Careers

From: Vi Vu <Vi.Vu@health.govt.nz> **On Behalf Of** Fluoride
Sent: Wednesday, 6 July 2022 3:54 pm
To: Glenn Rainham <Glenn.Rainham@fndc.govt.nz>
Subject: RE: Action Required: Community Water Fluoridation

Thank you Glenn.

My apologies, I should have said that question one is referring to the estimated annual operating costs for adding fluoride to the Kaitaia and Kerikeri water supplies. Can you please confirm this?

Ngā mihi,
Vi

From: Glenn Rainham <Glenn.Rainham@fndc.govt.nz>
Sent: Tuesday, 5 July 2022 4:30 pm
To: Fluoride <Fluoride@health.govt.nz>
Subject: RE: Action Required: Community Water Fluoridation

In answer to your 2 questions

1. The annual operating costs for Kaitaia and Kerikeri water supplies are in the order of $1.75M

2. You are correct that the timing referred within my response is based on the lack of funding within our LTP. Should the Ministry make funding available, then the indicative timelines provided within the March response seems reasonable. Subject to availability of specialised contractors and availability of fluoridation systems, then site assessments & detailed design in 22/23 year and works installations in 23/24 year.

Kind regards
Glenn

Glenn Rainham
Manager - Infrastructure Operations
Infrastructure & Asset Management, Far North District Council | **24-hour Contact Centre** 0800 920 029
DDI +6494015305 | **M** s 9(2)(a) | Glenn.Rainham@fndc.govt.nz
Website | Facebook | LinkedIn | Careers

From: Vi Vu <Vi.Vu@health.govt.nz> **On Behalf Of** Fluoride
Sent: Tuesday, 5 July 2022 4:16 pm
To: Glenn Rainham <Glenn.Rainham@fndc.govt.nz>
Subject: RE: Action Required: Community Water Fluoridation

Kia ora Glenn,

Thank you very much for your response. Can you please clarify the following:

- What the annual operating costs are for Kaitaia and Kerikeri water supplies
- Your comment on the date by which you could comply with a direction seems to be based primarily on the alignment with the Three Water Reforms, and no funding within your LTP. Can you please provide comment on the estimated date by which you could comply with a direction, **if** funding for capital works was made available by the Ministry. I note you previously estimated implementation could take 18 months earlier this year.

We acknowledge that any estimates on cost and timeframes will be high level at this point, and may be subject to change. However any information you can provide by COP Thursday 7 July would be much appreciated.

Kind regards,
Oral Health team

……