

# Exemption Decision Paper

<b>Exemption Number</b>	EXE-00001030
<b>Exemption Type</b>	Residual disinfection exemption
<b>Supply Name</b>	Rakaia Huts
<b>Supply ID</b>	RAK003
<b>Date</b>	1 February 2024 / te 1 o Hui-tanguru 2024
<b>Applicant</b>	Selwyn District Council
<b>Exemption Team</b>	Jim Graham, Principal Advisor, Drinking Water Peter Wood, Regulatory Team Leader
<b>International panel member</b>	Dr Dan Deere

## Recommendation

For the reasons set out in this paper, the Exemption Team recommends that you **grant** the residual disinfection exemption application for the Rakaia Huts drinking water supply. This decision paper identifies the conditions that the Exemption Team considers are necessary to ensure the supply will operate consistently with the main purpose of the Water Services Act 2021 (**WSA**) on an ongoing basis.

## Executive summary

1. On 14 November 2023, Selwyn District Council (**SDC**) applied for a residual disinfection exemption in relation to the Rakaia Huts drinking water supply (supply ID RAK003). The application was made under section 58 of the WSA.
2. The application made on 14 November 2023 is the second application in relation to the supply, following the previous application made on 9 September 2022 that was declined.
3. For the 9 September 2022 application, the Exemption Team considered – having regard to the details of the supply, the manner of its operation, and the information provided by SDC – that the supply could not at that time be operated without residual disinfection in a way that would be consistent with the main purpose of the WSA. The factors contributing to that decision were outlined in the exemption decision paper dated 26 April 2023.<sup>1</sup>
4. SDC has carried out work to address the factors identified in the previous exemption decision. In particular:
  - (a) The supply’s source water risk management plan (**SWRMP**) has been updated to include human pathogenic enteric viruses. SDC commissioned an assessment of the viral risk by

<sup>1</sup> Available at [www.taumataarowai.govt.nz/assets/Uploads/Exemption-papers/27042023-Exemption-Decision-Paper-Rakaia-Huts-FINAL.pdf](http://www.taumataarowai.govt.nz/assets/Uploads/Exemption-papers/27042023-Exemption-Decision-Paper-Rakaia-Huts-FINAL.pdf).

the Institute of Environmental Science and Research (**ESR**) . The resulting report, *Viral Risk Assessment of Contamination of the Rakaia Huts Drinking-Water Supply* (May 2023), is now an appendix to the SWRMP.

- (b) Water loss reported by SDC in the supply's distribution system was previously considered too high for the supply to safely operate without residual disinfection. Water loss is a particularly significant factor, as the supply's distribution system is located within a community that is served by on-site domestic wastewater systems where it is reasonable to expect that groundwater will be affected by wastewater containing human pathogenic viruses, bacteria, and protozoa. SDC provided the *Rakaia Huts – Water Loss Report for 2022/2023* (25 September 2023) report by Thomas Consultants. This report highlighted significant uncertainty in the calculations used and proposed an approach for reducing this uncertainty. SDC also provided a document labelled *Selwyn District Council's Approach to Unallocated Water Demand* (14 December 2023), which includes SDC's current strategy for managing unallocated water demand, and a proposed future strategy for managing unallocated water demand for supplies where a residual disinfection exemption is granted and smart meters are installed. The Exemption Team proposes that this key risk factor be mitigated through conditions 1, 2 and 3 outlined in this report.
- (c) The Rakaia Huts Water Supply Scheme Unit Process Control Procedure (**UPCP**) now records that the storage tanks are to be checked weekly, including a check for cracks or leaks and a check of the condition of pipe penetrations, connections, overflow strainers and pressure/level transducers.
- (d) The storage tanks are now padlocked.
- (e) The pipe renewal work SDC identified in the original improvement schedule for the supply's distribution network is now complete.
- (f) A standard operating procedure for the disinfection and hygiene of water reticulation (WSP 005) has been developed. This includes procedures for 'repair and replace under pressure' work.
- (g) Drinking Water – Incident Response Plans (**IRPs**) now identify steps for immediate chlorination where total coliforms are detected post-treatment, and for loss of pressure in the distribution system. IRP-09 covers changes in source water.
- (h) The storage tanks have been moved so they are not directly under the power lines. There was no evidence of bird defecation on the storage tanks during the Exemption Team's most recent site visit.
- (i) SDC has initiated a consultation process specific to the Rakaia Huts community and local iwi which is due to conclude in September 2024. This consultation will seek the view of customers and iwi on operating the Rakaia Huts supply without residual disinfection, explain how an intermittently chlorinated supply will be managed, and promote sign-up

to the SDC's "Boil Water Notice Portal" for email and text contact in an emergency, when a conserve water notice is issued, or for a chlorination advisory.

- (j) The SDC Drinking Water – Compliance Monitoring Plan now provides for heterotrophic plate count testing to be carried out at appropriate locations within the supply. A monitoring condition is included as condition 5 in this report.

## Supply information

- 5. The Rakaia Huts drinking water supply is described in the decision paper dated 26 April 2023 and that material is adopted for the purposes of this paper, without repetition. Since that date, the supply's ultra-violet (**UV**) disinfection equipment has been upgraded to provide increased dose for virus control (the effective dose has changed from 40 mJ/cm<sup>2</sup> to 187 mJ/cm<sup>2</sup>; a more than four-fold increase). Chlorination infrastructure has remained in place and will continue operating unless and until an exemption is granted.
- 6. SDC assessed whether the supply complied with the Drinking Water Standards and Drinking Water Quality Assurance Rules (**DWQAR**) for the period from 1 January to 31 October 2023. SDC reported one non-compliance with rules T3.17 and T3.86, which relate to UV dose requirements and associated monitoring. SDC also provided a "Drinking Water Event Investigation Report" dated 16 August 2023 (updated 27 September 2023) outlining the incident and the steps taken address the issue and to ensure it does not recur. Taumata Arowai has not received any notifications of non-compliance or potentially unsafe drinking water in relation to the supply since it became the regulator in mid-November 2021.

## Information provided by the applicant

- 7. SDC's exemption application was accompanied by a covering letter, a "Rakaia Huts Exemption Attributes Table" (identifying the attributes from Hinekōrako, the self-service portal for drinking water supplies maintained by Taumata Arowai, and noting where supporting information can be found) and a Drinking Water Safety Plan (**DWSP**).
- 8. Additional supporting information was also provided, including: SDC's Compliance Monitoring Plan, the UPCP, Drinking Water Framework, Incident and Emergency Plan, and standard operating procedures (**SOPs**). During the Exemption Team's site visit the *Rakaia Huts Water Loss Report for 2022/2023* was provided by SDC.
- 9. All the information provided is considered relevant and has been taken into account by the Exemptions Team.

## Assessment process

- 10. Alongside the international panel member for this application, the Exemption Team assessed the documentation provided.
- 11. The Exemption Team carried out a site visit to the Rakaia Huts supply with SDC staff on 11 December 2023.

12. Queries and requests for clarification have been raised with SDC staff and responses received.

### Assessment factors

13. SDC's application has been assessed against the relevant factors arising under the WSA, Taumata Arowai policy and guidance material in relation to exemption applications, and other considerations relevant to decision-making by Taumata Arowai and its staff.
14. Those factors, which shape the structure of the balance of this paper, are:
- (a) The scale, complexity and risk profile of the drinking water supply, which go both to the assessment of drinking water safety risks and also to the proportionality of regulation under the WSA.
  - (b) The Treaty of Waitangi / te Tiriti o Waitangi and its principles, which are relevant considerations under section 19(1)(b) of the Taumata Arowai—the Water Services Regulator Act 2020 (**TAWSRA**).
  - (c) Te Mana o te Wai, to the extent it applies to SDC's application and the associated decision-making of Taumata Arowai.
  - (d) Consistency with the main purpose of the WSA: i.e. to ensure that drinking water suppliers provide safe drinking water to consumers. In accordance with section 58(3)(a) of the WSA, a residual disinfection exemption can only be granted if the decision-maker is satisfied that the exemption is consistent with the main purpose of the WSA.
  - (e) Compliance with legislative requirements and the DWSP (including the SWRMP). In accordance with section 58(3)(b) of the WSA, a residual disinfection exemption can only be granted if the decision-maker is satisfied that drinking water supplied by the supplier will comply with all other legislative requirements and the drinking water safety plan on an ongoing basis.
  - (f) The Taumata Arowai Compliance, Monitoring and Enforcement Strategy 2022-2025 (**CME Strategy**). This is a matter that the Taumata Arowai Chief Executive, and any delegate of the Chief Executive, must have regard to when determining exemption applications.<sup>2</sup>

### Scale, complexity and risk

15. The Rakaia Huts supply is a comparatively small, simple supply. It is a medium sized (101 – 500 people) 'networked supply' for the purposes of the DWQAR. As such, the supply must comply with the G, S2, T2 and D2 rules modules within the DWQAR. SDC has also elected to meet the T3 rules for this supply, which is permissible under the DWQAR.

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<sup>2</sup> WSA, s136(7); TAWSRA, s11(2)(b).

16. The relative scale, complexity and risk of the supply has been factored into the Exemption Team’s assessment of SDC’s application and the commentary and recommendations in this paper.

## **The Treaty of Waitangi / te Tiriti o Waitangi and its principles**

17. Taumata Arowai and its staff are required to uphold the Treaty of Waitangi (Te Tiriti o Waitangi) and its principles when carrying out their functions.<sup>3</sup>
18. What this means in practice varies from situation to situation, depending on the relevance of Treaty/Te Tiriti provisions and associated principles, including: partnership, self-determination, mutual benefit, honour, active protection, options, right of development, informed decisions, equity and equal treatment, and other principles that may be developed or identified as relevant from time to time. There is also some overlap between these principles and aspects of Te Mana o te Wai, which is discussed in the next section of this paper.
19. SDC have advised that a formal relationship agreement with Te Taumutu Rūnanga was signed on 30 November 2022. Both SDC and Taumata Arowai have engaged with the Rūnanga in relation to the Rakaia Huts supply.

## **Te Mana o te Wai**

20. For the purposes of the WSA, Te Mana o te Wai is defined in the National Policy Statement for Freshwater Management 2020. Everyone exercising or performing a function, power, or duty under the WSA must give effect to Te Mana o te Wai when doing so, to the extent it applies to the function, power, or duty.
21. Te Mana o te Wai is a water-centric concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. It protects the mauri of the wai. Te Mana o te Wai is about restoring and preserving the balance between the water, the wider environment, and the community.
22. The framework for Te Mana o te Wai involves 6 principles relating to the roles of tangata whenua and other New Zealanders in the management of freshwater, coupled with a hierarchy of obligations that prioritises:
  - (a) first, the health and well-being of water bodies and freshwater ecosystems;
  - (b) second, the health needs of people (such as drinking water); and
  - (c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.
23. Te Mana o te Wai is likely to have relatively limited application in the context of a residual disinfection exemption, which is largely focussed on the treatment processes and operations

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<sup>3</sup> TAWSRA, s19(1)(b)(i).

within a drinking water supply. However, each case situation must be assessed on its facts and the extent of application of Te Mana o te Wai determined.

24. SDC recognised the importance of implementing Te Mana o te Wai in their application letter dated 13 November 2023. SDC references the obligations constituted under the Te Runanga o Ngai Tahu Act 1996 and the importance of mana whenua interests. SDC intends to engage with iwi specifically on Rakaia Huts and implement improvements to the DWSP as a result of that collaboration. SDC noted that feedback from Te Taumutu Rūnanga on the draft Long-term Plan 2021-2031 recognised that providing for and upholding Te Mana o te Wai would ensure that drinking water supplies would not be compromised to the extent that chlorination is required, which indicates general support for the avoidance of residual disinfection where possible.

## Consistency with the main purpose of the Water Services Act 2021

25. On the whole, the Exemption Team considers that the drinking water supply at Rakaia Huts is well set up and operated. It draws from source water that is of good quality and supply components include effective barriers to bacteria and protozoa. The distribution system is comparatively simple and short in length. Most risks in the supply are adequately managed.
26. The report on SDC's first residual disinfection exemption application outlined factors that affect the provision of safe drinking water to consumers. The list of factors below are limited to those areas where the Exemption Team assessed a significant change from the previous application.

### Source water factors

27. In this application, SDC has assessed the risk to health from viruses in the source water and the drinking water supply. The assessment concluded that there was a maximum 14% probability of norovirus concentration arriving at the source in excess of the concentration expected to result in 1 annual infection per 10,000 people. With the enhanced UV treatment in place, this probability dropped to less than 1%.
28. Future risks to source water will require analysis and management. Any intensification of farming or development of surrounding land into residential/lifestyle blocks with on-site wastewater systems will increase the risk of source water contamination.

### Treatment factors

29. The supply involves the following treatment processes:
  - (a) 1 µm cartridge filtration;
  - (b) continuous turbidity monitoring, with alarm;
  - (c) UV disinfection at a minimum target dose of 187 mJ/cm<sup>2</sup>, with flow, UV transmittance (**UVT**) and UV intensity (**UVI**) continuously monitored and alarmed; and
  - (d) chlorination, which will generally be turned off and only used intermittently in the event an exemption is granted: i.e. as required in response to works, incidents, or

emergencies. Continuous chlorine monitoring is available before and after the supply's treated water storage tanks.

30. The supply has two treated water storage tanks. The tanks are plastic and have been moved away from the overhead lines that are used by birds for roosting. The overhanging lids on each tank prevent ingress of runoff and the lids are now locked.
31. The treatment plant is located on a sweeping bend in the road. A crash barrier has been constructed to protect the water treatment plant and the treated water storage from vehicles that fail to take the bend.
32. During the site visit to the Rakaia Huts water treatment plant, the Exemption Team observed some of the infrastructure is in pits below ground level that contained standing water. These are subject to possible inundation and contaminant ingress if pressure is lost. Sump pumps with float switches or sensors to remove water from below ground chambers is one possible mitigation. Condition 4 is included to address this residual risk.

#### Distribution factors

33. Non-testable dual check backflow prevention devices are installed on all residential connections to the supply. A reduced pressure zone device (**RPZD**) is also installed on the one commercial connection in the community. This aligns with the information found in the DWSP at *Table 2-13: Rakaia Huts Backflow Connection Summary (February 2021)*, which notes that backflow prevention is installed on every supply connection.
34. SDC advised that every supply connection is metered and indicated they would accept a condition requiring the implementation of smart meters. SDC can set a maximum life for meters and associated check valves and have a program to replace them over time. This will assist in confirming the true level of leakage that is currently uncertain.
35. Pressure is continuously monitored in the distribution system.

#### Drinking water safety plan

36. The Exemption Team reviewed the supply's DWSP.<sup>4</sup> In general terms and subject to the issues identified in this paper, the DWSP addresses the hazards, risks and issues arising in a manner that the Exemption Team believes is appropriate for the scale, complexity and risk profile of the supply.
37. The DWSP needs to be proactively updated as changes are made to the supply and as land use materially changes within the supply's catchment and distribution areas.

#### Transgression response plans and SOPs

38. SDC has prepared emergency response and incident response plans to support its exemption application.<sup>5</sup> These are separate documents from the DWSP, although they are complementary

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<sup>4</sup> Document DW-RAK-00-WSP-0001, Revision 5, 27 September 2023.

<sup>5</sup> Document DW-GEN-07-DST-0006, Revision 4, 3 November 2023 and Document DW-GEN-07-DST-0007 Revision 3, 28 August 2023.

to it. The incident response plans include specific information that applies to intermittently chlorinated supplies where an exemption is granted.

### System factors

39. The Drinking Water Quality Compliance Monitoring Plan<sup>6</sup> includes a specific section on the monitoring of supplies where an exemption from residual disinfection has been granted. The Exemption Team considered that the Monitoring Plan was a little difficult to follow, but achieved the expected outcomes. SDC updated the document to revision 7 to ensure clarity after a meeting with the Exemption Team on 8 January 2024. The international panel member noted that: “Opportunistic pathogen remains a significant risk in unchlorinated systems and the HPC [heterotrophic plate count] monitoring should be used to provide early warning of conditions favouring the growth of such pathogens, and limits and actions should be set for responding to these results.” Condition 6 addresses this point.
40. Maintaining staff capacity and competency is particularly important for unchlorinated supplies. SDC should be actively working to ensure staff do not become complacent about supply risks or operation. SDC can look to formalise a means to maintain organisational and technical capacity (head count, training, competency, capacity, awareness) for both the SDC and principal contractors. This should include awareness-raising at senior executive and councillor level of need to maintain this capacity. This extends to frontline worker contractors that do the risky work, and how risks associated with staff and contractor turnover are mitigated.
41. The DWSP and UPCP were both current and recently updated, demonstrating SDC’s commitment to continuous improvement. Support documentation was cited within these overarching documents. The information was clear and well-presented. There is a lot of documentation, with a lot of detail, that will require ongoing maintenance and revision. Many of these documents were developed for SDC by consultants. In a meeting with the Exemption Team on 8 January 2024, SDC officers confirmed that SDC has ownership and editorial rights of the DWSP and UPCP and associated supporting documents and procedures. Condition 10 is included to ensure ownership and reliable management of key documents is retained by SDC.

### Compliance with legislative requirements

42. A residual disinfection exemption cannot be granted unless the decision-maker is satisfied that the drinking water supplied will comply with all other legislative requirements (i.e. other than the usual requirement to provide for residual disinfection) on an ongoing basis.
43. ‘Legislative requirements’ has a particular meaning<sup>7</sup> that covers requirements imposed by the WSA, most secondary legislation made under the WSA (such as drinking water standards and the DWQAR), and some enforcement instruments (directions or compliance orders issued under the WSA).

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<sup>6</sup> Document DW-GEN-05-DST-0002, Revision 5, 30/10/2023.

<sup>7</sup> WSA, s5.



44. The supply's previous compliance history is noted under the 'Supply information' heading above. It is evident that SDC carried out more extensive source water monitoring for the supply than was required under the previous regulatory regime.
45. SDC's updated DWSP identifies the correct rules modules in the DWQAR and also indicates that SDC has elected to comply with the 'T3' treatment rules, which is a voluntary decision to adopt more stringent treatment requirements.
46. Having regard to the supply's previous compliance history and monitoring results, and the DWSP and the decisions it reflects, the Exemption Team considers that there are grounds to be satisfied that the drinking water supplied will comply with all 'other' legislative requirements on an ongoing basis.

### **Compliance with drinking water safety plan**

47. A residual disinfection exemption cannot be granted unless the decision-maker is satisfied that the drinking water supplied will comply with the relevant DWSP on an ongoing basis.
48. The Exemptions Team is not aware of any information or issues that suggest drinking water supplied by the Rakaia Huts supply would not comply with the DWSP on an ongoing basis, if the DWSP was considered suitable to enable the granting of a residual disinfection exemption.

### **Compliance, Monitoring and Enforcement Strategy**

49. The CME Strategy outlines the approach Taumata Arowai will take to exemption applications. It provides part of the backdrop for the more detailed provisions in other Taumata Arowai policy and guidance material.
50. Amongst other things, the CME Strategy provides that Taumata Arowai will be guided by the following principles when determining exemption applications:
  - consumption of safe drinking water by consumers is paramount; and
  - the scale, complexity and degree of risk associated with a drinking water supply will affect the assessment of whether an exemption would be consistent with the main purpose of the WSA, to ensure that drinking water suppliers provide safe drinking water to consumers.
51. The Exemption Team has had regard to the relevant parts of the CME Strategy when conducting its assessment and preparing this paper. The principles recorded in the CME Strategy are reflected in the discussion above.

### **Additional comments**

52. In light of the further work carried out by SDC and described in its most recent exemption application, the Exemption Team considers that the Rakaia Huts supply can now be operated without residual disinfection in a way that is consistent with the main purpose of the WSA.
53. The Exemption Team considers that the exemption should be granted, subject to conditions outlined in the approval section below.

## Approval

The Exemption Team recommends that you:

- (a) **note** the Exemptions Team’s view that, having regard to the scale, complexity and risk profile of the Rakaia Huts supply:
- the supply can be operated without residual disinfection in a way that is consistent with the main purpose of the WSA;
  - aside from residual disinfection, there are grounds to be satisfied that the drinking water supplied by the supply will comply with all other legislative requirements on an ongoing basis;
  - there are grounds to be satisfied drinking water supplied will comply with the DWSP on an ongoing basis.
- (b) **agree** to grant the residual disinfection exemption application for the Rakaia Huts drinking water supply, subject to the following conditions:<sup>8</sup> Yes / No
1. A programme detailing the installation of smart meters to all residential connections by 31 December 2024, including the type and functionality of the meters, how data from the meters will be collected, managed and analysed and how mass balance calculations of water use and loss will be undertaken, must be provided to Taumata Arowai by 1 September 2024.
  2. Smart meters must be installed according to the programme set out in condition 1, subject to any variations to that programme agreed to by Taumata Arowai.
  3. Maximum life spans for the smart meters and associated check valves must be identified and documented, and a programme to replace them within those maximum life spans provided to Taumata Arowai, by 31 December 2026.
  4. Before the supply begins to operate without residual disinfection, Selwyn District Council must demonstrate to the reasonable satisfaction of Taumata Arowai that the risk of contamination of drinking water due to ingress into infrastructure contained in below ground chambers at the treatment plant is appropriately managed.
  5. Analysis for water quality indicators and operational parameters must be carried out in accordance with the monitoring and sampling plan for the Rakaia Huts drinking water supply, as set out in Appendix B of the Selwyn District Council Drinking Water Quality Compliance Monitoring Plan (Revision 7 dated 8/1/2024), or in accordance with any changes to that plan agreed to by Taumata Arowai.
  6. Before the supply begins to operate without residual disinfection, monitoring frequencies and response protocols for heterotrophic plate counts must be set, to the

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<sup>8</sup> A residual disinfection exemption may be granted on any condition the decision-maker thinks fit: WSA, s58(2). It is an offence to fail to comply with a condition of a residual disinfection exemption: WSA, s181(1).

reasonable satisfaction of Taumata Arowai. Frequency settings should help to detect both contaminant ingress and conditions conducive to opportunistic pathogen proliferation.

7. The supply must be operated in accordance with the version of the Drinking Water Safety Plan that is current at any given time.
8. The supply must be operated in accordance with the G, S2, T3 and D2 rules in the Drinking Water Quality Assurance Rules, with the following modifications:
  - (i) Rules relating residual disinfection do not apply. For the avoidance of doubt, Rules G16 and D2.5 do not apply, and Rule D2.4 should be read with references to FAC excluded.
  - (ii) The reference to a reduction equivalent dose (**RED**) of 40 MJ/cm<sup>2</sup> in rules T3.16 and T3.17 is replaced by a RED of 187 MJ/cm<sup>2</sup>.
9. The supply chlorination system must be tested at least annually, with the supply chlorinated to a minimum level of free available chlorine of 0.5mg/L in water leaving the treatment plant and 0.2mg/L in the distribution system for a period of at least 24 hours.
10. Selwyn District Council must retain full editorial rights and ownership of the Drinking Water Safety Plan, the Unit Process Control Procedure and all associated supporting documents and procedures, with no dependency on contracted or consulting third parties to maintain and update those documents. For the avoidance of doubt, this condition does not prevent Selwyn District Council from engaging contractors or consultants to carry out work on these documents; the intent is to ensure that Selwyn District Council retains ultimate responsibility for, and the ability to adjust, the versions of these documents are current at any given time.
11. Taumata Arowai must be promptly informed of:
  - (i) any new or altered circumstances that may change the hazards or risks affecting the supply;
  - (ii) any material change to, or revision of, the supply's Drinking Water Safety Plan, Water Supply Scheme Unit Process Control Procedure, or Drinking Water Quality Compliance Monitoring Plan; and
  - (iii) any new issues emerging that materially change the assessment of the supply, including in relation to Te Mana o te Wai.



Date: 01/02/2024

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