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# Review into Management of Bore Water Security

Christchurch City Council  
27 September 2018

Document status

Ref	Version	Approving director	Date
Advisory copy, pre-consultation	CEO copy only	Bruce Robertson	21 May 2018
Consultation version	For interviewees	Bruce Robertson	31 May 2018
Post-consultation version	CEO copy only	Bruce Robertson	20 June 2018
Post-consultation version	Pre-final	Bruce Robertson	28 June 2018
Released to CEO	Final	Bruce Robertson	27 September 2018

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## Introduction

### Our brief

1. On 22 December 2017 Christchurch City Council was advised by the Drinking Water Assessor (DWA) that the security status for the Christchurch and Brooklands/Kainga water supplies would be changed from 'provisionally secure' to 'unsecure.'
2. On 25 January 2018, Council resolved to:

Ask the Chief Executive to undertake an overarching independent external review of this matter so that the Council can provide assurance for the future of our unchlorinated water supply...
3. Bruce Robertson of RRobertson Ltd was engaged by Christchurch City Council to undertake the review.
4. The review, its findings and recommendations are intended to assist the Council in providing assurance for the future for Christchurch's unchlorinated water supply (the 'Prime Objective').
5. In accordance with the Terms of Reference for the review (attached at appendix A), this report provides conclusions and recommendations to assist in achieving the Prime Objective, including:
  - an assessment of how the matter arose and was handled;
  - an assessment of existing practices, monitoring and assessment regimes, controls and reporting;
  - recommendations for improvements whether in procedure, practice, levels of services, reporting or otherwise (including recommendations for contractors and contract management arrangements).
6. Regarding the first bullet under paragraph 5, above, I have interpreted the 'matter' to refer to the events leading up to the withdrawal of the provisionally secure status on 22 December 2017 (the last working day before the Christmas 2017 break). This approach was confirmed with the Chief Executive. I have also remained informed of the events subsequent to 22 December 2017.

## City values

7. Christchurch draws its water from high quality aquifers. The water supply has generally not needed treatment before distribution to residents. Untreated water carries a high cultural value for the city.
8. Current standards allow supply of untreated water under certain circumstances, and Council desires to continue to supply untreated water under current and future standards.

## Background

### Scope

9. Christchurch City Council supplies water to its residents through a network of approximately 146 bores (also known as wells). 104 boreheads are below ground, 42 are above ground. Sixteen bores in the Northwest zone are in the process of being redeveloped and the shallow wells are being replaced.
10. The primary focus of this report is on the Christchurch and Brooklands/Kainga supply. Although for context, I include some discussion around the Northwest supply, my review and conclusions relate to the Christchurch and Brooklands/Kainga supply. The supply to Banks Peninsula is excluded from this review.
11. This review relates to the events leading up to the withdrawal of the provisional secure status of the bore water supply on 22 December 2017, and not on subsequent developments, which are ongoing.

### Water quality management

12. Water quality in New Zealand is managed through a framework of standards and guidelines, testing and inspections, which is overseen by DWAs and Medical Officers of Health (MOH), who are employed by the District Health Boards.

#### Standards and guidelines

13. Part 2A of the Health Act 1956 requires suppliers of water in New Zealand to take all practicable steps to comply with the Drinking-water Standards for New Zealand 2005 (Revised 2008). The standard is supported by the Guidelines for Drinking-water Quality Management for New Zealand 2017, which provide information on the tools used by the Ministry of Health to promote the provision, by suppliers, of drinking-water that is safe to drink.

14. The standards sets out compliance criteria, including for contaminants such as bacteria, protozoa, and chemicals.
15. Section 4.5 of the standards, which sets out requirements for bore water security and compliance, is of particular importance for this review. This section sets out three criteria which must be met for the water supply to be considered secure, and therefore not require treatment:

Bore water security Criterion 1: bore water must not be directly affected by surface or climatic influences.

Bore water security Criterion 2: boreheads must provide satisfactory protection. The borehead must be judged to provide satisfactory protection by a person recognised as an expert in the field.

Bore water security Criterion 3: Escherichia coliform (E. coli) must be absent from bore water.
16. Current standards allow the supply of untreated water subject to meeting the three criteria.
17. In addition, the Council applies the Ministry of Health's 2003 system for grading water supplies. This is not mandatory but is another useful way of indicating whether the supply is likely to deliver good quality water. The system applies a two-letter grading, such as Aa, Cb, Ed, etc. The capital letter represents the grade of the water coming into the zone (i.e. source quality and treatment) while the lower-case letter indicates the quality of the water received by the consumer (i.e. the delivery system or reservoirs and piped infrastructure).

#### Roles

18. Within Christchurch City Council, the Three Waters and Waste Unit is responsible for managing the water supply. The Unit reports internally to the General Manager, City Services and to management's Executive Leadership Team (ELT); it also reports regularly to the Infrastructure, Transport and Environment (ITE) Committee.
19. Assessments against bore water Criterion 2 of the Drinking-water Standard were undertaken by Pattle Delamore Partners (PDP) until mid-2017; Beca now provides this service.
20. Council outsources routine bore maintenance to Citycare. The maintenance programme should be informed by reports from the assessors. The contract and relationship with Citycare is managed by the Three Waters Unit.
21. Assessment reports are also provided to the DWA, who may escalate issues to the MOH.

#### Reporting

22. The Three Waters Unit reports to the ITE Committee quarterly on performance against Criterion 3 – E. coli. This is the primary reporting measure.

## The Havelock North story

23. The Havelock North story provides important context for the Christchurch matter.
24. In August 2016 there was a widespread outbreak of gastroenteritis in Havelock North. E. coli was confirmed in the water supply.
25. The Government initiated an inquiry and two reports were issued. The Stage 1 report focuses on identifying what happened, what caused the outbreak, and assessing the conduct of those responsible for providing safe drinking water to Havelock North. The Stage 2 report addresses lessons learned for the future and steps to be implemented to reduce the likelihood of such an outbreak occurring again. The sector is waiting on a response from Government, which is likely to have an impact on future standards.
26. Havelock North's drinking water was sourced from what was thought to be a confined aquifer. A confined aquifer is secure from contaminants. Under this belief, water was distributed untreated.
27. The Inquiry noted that, notwithstanding the belief that the aquifer was contained and therefore secure, the water supplier needed to be aware of and manage the risks of contamination of the water supply. It also noted that the local authorities needed to competently manage the broader resource management regime.
28. The Inquiry found that several of the parties with responsibility for the water supply regime for Havelock North (the Hastings District Council, DWAs and Hawke's Bay Regional Council) failed to adhere to the high levels of care and diligence necessary to protect public health and to avoid outbreaks of serious illness.
29. It also found that the failings of the councils did not cause the outbreak, but the outcome may have been different in their absence. Specifically, it found that the Regional Council failed to protect the water source. The District Council did not embrace or implement the high standard of care required of a public drinking-water supplier – particularly considering previous transgressions and an earlier outbreak.
30. Failings of the District Council included inadequate supervision of delegated tasks, and not properly managing the maintenance of plant and equipment, with little supervision of follow up and inadequate record-keeping. Specifically, it was slow to obtain a report on borehead security and did not promptly carry out recommended improvements.
31. The Inquiry found that the DWAs failed to hold the District Council to account for adequate identification and analysis of key risks or investigate the unusually high rate of transgressions. Furthermore, Council had no contingency plans to support a response to an outbreak.
32. Finally, the Inquiry found that the consulting firm that acted as the Council's technical advisor failed to competently assess and report on the security of the boreheads.

33. The Inquiry found that the contamination of the Havelock North water supply was most likely to have entered through the aquifer, however, it noted that there was some likelihood that it entered through the boreheads. The Inquiry also considered the risks associated with below-ground boreheads and was critical of the way in which they were managed.

## The Christchurch City timeline

December 2005	PDP report on Criterion 1 concluding that the majority of supply pressure zones (including Christchurch and Brooklands/Kaingā) are secure, with the exception of the Northwest pressure zone.
05 September 2011	Advice from MOH and DWA granting provisionally secure status on the basis of work being undertaken to re-establish full secure status after the Canterbury earthquakes. Advice included the comment, “the greatest measure we have is the lack of a recorded increase in the sort of diseases that would have been expected with a contaminated supply.”
12 August 2016	Outbreak of E. coli / campylobacter in Havelock North.
25 August 2016	The MOH requested Council to provide details on: <ul style="list-style-type: none"> <li>• “why Christchurch City Council believe continued use of [the Northwest shallow bores] does not represent an untenable risk to the residents” in light of “[the] recent developments in Hawkes Bay.”</li> <li>• the time being taken to implement all practicable steps to improve bore water security, given “the increased awareness” of shallow bore vulnerability.</li> </ul>
01 September 2016	Three Waters Unit reports to ITE Committee on drinking-water, E. coli testing and risk management, as requested by the Committee after the Havelock North event (the report was presented to ELT on 23 August 2017).
22 September 2016	Full council receives report responding to MOH’s 25 August letter and resolves to fast track the Northwest upgrade; but does not accept recommendation to chlorinate.
30 September 2016	Council responds to MOH’s inquiry noting the fast-tracking of the Northwest programme and that “Council will use an increased monitoring programme and increased community education programme to address concerns about the risk.”
19 October 2016	DWA acknowledges the fast-tracked capital improvement programme in the Northwest designed to address protozoal risks earlier than previously planned.
10 May 2017	Release of Havelock North Water Inquiry Stage 1 report.



07 June 2017	Report to ITE Committee on the key findings of the Havelock North Inquiry's Stage 1 report. Comparing Christchurch's situation to Havelock North, the report stated, "Several years ago CCC improved the design for wellheads with the aim to reduce contamination risk. The standard well design is now an 'above ground,' fully enclosed wellhead which is an improvement over the previously used 'below-ground' well head chamber." At the point of reporting, the majority of bores remained underground (and still do). The report also states, "Wellhead security assessments identify issues and repairs are carried out as required."
09 June 2017	Three Waters Unit request to Citycare to explain their borehead inspection programme.
13 June 2017	<p>Response from Citycare identifying:</p> <ul style="list-style-type: none"> <li>• "quick inspection" cycle</li> <li>• early 2017 work on "duct safety"</li> <li>• over 50% of underground wells do not have sump pumps</li> <li>• 3 boreheads were pumped "on a regular basis"</li> </ul> <p>The email acknowledged the impact of the Havelock North event.</p>
19 June 2017	<p>Citycare issues an 'early warning notice':</p> <p>"The Contractor has undertaken well head gland/ducting sealing but cannot guarantee that it can stop all contaminated water entering the wellhead, as sealing materials age/change condition. The Contractor requests a meeting with the [Three Waters Unit] to recommend a way forward, to mitigate where practical the risk of contamination."</p>
26 June 2017	<p>Meeting with Citycare leading to instruction to develop a detailed condition report.</p> <p>Also, internal discussion took place to assess the adequacy of the maintenance contract with Citycare and the adequacy of the Water Safety Plan for borehead security.</p>
28 June 2017	<p>The Head of Three Waters expresses concern that the Unit's report to "ELT and Council in September [2016] did not identify these below-ground wellheads as a risk."</p> <p>Staff responded that the Water Safety Plan discusses "groundwater contamination risks in general terms; the risk of a presence of below-ground wellhead is not featured as a separate risk."</p> <p>Staff also noted, regarding the maintenance contract with Citycare, "It appears that the [task of checking the wellhead chambers, removing ponding water and reporting any significant issues for repairs] was not transferred over to the maintenance contractor."</p>
30 June 2017	PDP submits reports to Three Waters staff with recommendations and analysis showing that the boreheads did not meet Criterion 2, but without providing specific conclusions on compliance.

28 June-05 July 2017	Staff and DWA seek advice from The Institute of Environmental Science and Research (ESR) on below-ground boreheads with the response “the presence of groundwater [in below-ground chambers] is a very important point [and] presents a potential source of contamination. The CCC needs to identify how to manage this risk. It may seem small, but the risk levels change with circumstances. Seal failure may be unlikely, but if there is water in the chamber the risk from seal failure will be greater than if there is no water in the chamber.”
27 July 2017	Memorandum from Head of Three Waters to General Manager, City Services, outlining contamination risk from bore head security after meeting with Citycare and noting that Citycare were commissioned to undertake “Immediate repair works ... estimated to be \$16.5k and renewal work ... \$192k.”
21 August 2017	Staff responding to a DWA query noted they had received the PDP wellhead reports and that “we are unhappy ... they are vague and fluffy which seems to have been caused by the Havelock North events.” DWA provided with a link to the reports.
21 August 2017	Citycare issued report: Christchurch City Council Below Ground Water Well Head Repair Recommendations, estimating \$840,000 for repairs; work commissioned.
22 August 2017	Annual Compliance Report 2016/17 received from DWA confirming compliance.
28 August 2017	ESR noted comments from the DWA and the Three Waters Unit about the boreheads and responded that “the chambers need to be sealed.”
28 August 2017	Staff agree with DWA that meeting with ESR at an upcoming conference over the boreheads is desirable, as they need ESR’s “guidance that what [CCC does] is right.”
20-22 September 2017	Staff, DWA and ESR meet at the 2017 Water NZ Conference and agree that, in light of the PDP reports, a more substantial approach was required concerning groundwater security (addressing all three bore water security criteria).
3 October 2017	DWA, Three Waters staff, and MOH visit the site of the first repaired wellhead, and discuss aspects of the upgrade programme.
11 October 2017	Three Waters reports to Infrastructure Transport and Environment Committee for the August/September period, enclosing the 2016/17 Annual Compliance Report from the DWA noting the “excellent result” of full bacterial compliance across the system.
November 2017	Beca begins scheduled borehead security assessments.
09 November 2017	Beca advises Three Waters that their fieldwork indicated “immediate public health risks” at some boreheads and recommended immediate remedial action.

10 November 2017	<p>Citycare instructed by Three Waters staff to undertake remedial action, based on Beca's advice of 09 November.</p> <p>While Citycare subsequently questioned Beca's assessment in its 09 November email, they did not follow through on a meeting as they suggested they would.</p>
05 December 2017	<p>At the request of the Ministry of Health, the DWA enquires about the Northwest improvement programme and when a security assessment can be completed. The Assessor suggests the Ministry's enquiry "may be in light of the [fact that the] report from Havelock North Stage 2 is due any day".</p>
06 December 2017	<p>Release of Havelock North Water Inquiry Stage 2 report.</p>
07 December 2017	<p>Three Waters responds to DWA on the Northwest improvement programme indicating the programme will be completed by June 2018, with the exception of Wrights Road, which has been offline since 2016 and will be completed June 2019.</p>
14 December 2017	<p>Beca provides draft reports on the pump stations in the 20 percent assessed that year, describing issues with all associated wells. The individualised borehead reports conclude that generally the boreheads do not meet Criterion 2.</p>
19 December 2017	<p>In order to finalise its reports on borehead security, Beca meets with DWA, Canterbury MOH, and Council technical staff to discuss its findings (focusing on areas of non-compliance).</p>
20 December 2017	<p>Director-General of Health issues statement to bring responsibilities to the attention of drinking-water suppliers.</p> <p>General Manager, City Services and Head of Three Waters advises Chief Executive of possible impact of the Director-General's statement and options Council may need to consider in response and the timing of any decision.</p> <p>Mayor informed by Chief Executive of the Director-General's statement and that staff would analyse and work on a response.</p>
20 December 2017	<p>The DWA emails the Head of Three Waters requesting an urgent pre-Christmas meeting stating the DWA was concerned that "the timeframe for when all Christchurch sources meet Criterion 2 is still some time away".</p>
22 December 2017	<p>DWA and MOH advise senior Council staff that the security status for Christchurch and Brooklands/Kainga water supplies would be changed from 'provisionally secure' to 'unsecure' because of the expert's view that not all boreheads meet Criterion 2 of the Drinking-water Standards. The advice noted, "It is acknowledged that while in some instances the boreheads may have deteriorated, the assessment and acceptance of risk are the more likely drivers that have meant that engineering experts are no longer willing to confirm the security of borehead installations."</p>

22 December 2017

General communication throughout the day:

- 10.32am – General Manager, City Services emails Chief Executive, under the heading “Re Director-General of Health statement on drinking-water” noting “We are meeting with CDHB today as they may be moving from the statement put out by [the MOH] when the Director-General’s statement was released.” Further the General Manager notes the Director-General’s statement “directs Councils to consider treatment so we need to put up some facts and options.”
- 11.55am – DWA advises Ministry of Health of the intention to withdraw the provisionally secure status based on the original basis for the using the provisional status classification, the PDP and Beca reports and Director-General’s statement; stating “... so with the bores clearly not meeting criteria two we are going to write to the Council removing the provisionally secure status ... ”
 

“CCC are in agreement with us making this decision, they do have a programme they had already instigated to upgrade the 102 below-ground bores that they have, prioritising 25 that are more urgent. They are also moving to address the areas of concern that Beca found in the bores they have inspected.”

“[The Head of Three Waters] is preparing (in response to the DG’s statement) a report to Council recommending chlorination (and potentially additional treatment). This will be given to council today and they are likely to call an emergency meeting to discuss this rather than waiting to the next scheduled February meeting.”
- (11.30 - 12 noon – the Chief Executive commences annual leave, activating her “Out of Office” notification for all subsequent emails)
- 12.03pm – Ministry of Health advises that the DWA’s email (of 11.55am) is “helpful and proposed actions are very clear.”
- 1.38pm – Head of Three Waters sends an email titled “Memo to Crs on D-G Statement” to General Manager, City Services with an attached memorandum “Statement from the Director-General of Health Relating to Drinking-Water: Health Act 1956 69ZZZC”. The Head of Three Waters memorandum includes the comment “It is anticipated that the Drinking-Water Assessor will withdraw the provisional secure status of the city bores in the light of the Stage 2 report and the advice of the Director-General of Health.”
- 1.43pm – Head of Three Waters sends draft memorandum to MOH and DWA for comment
- 2.07pm – DWA sends letter withdrawing provisionally secure status commenting “Seemed sensible to just get this letter written after our meeting this morning.”

	<ul style="list-style-type: none"> <li>• 2.18pm – General Manager, City Services sends email and accompanying memorandum titled “Memo to Crs on D-G Statement” to Chief Executive and asks about “the need to accelerate” based on the Director-General’s statement</li> <li>• 2.20pm – Head of Three Waters notes to General Manager, City Services that councillors “have not seen the Citycare reports but they do demonstrate the risk and effort going in to bring them up to standard.”</li> <li>• 3.52pm – Head of Three Waters emails Council’s in-house Legal Services Unit about the final changes to the memorandum “Memo to Crs on DG Statement” and that “I would like this [memorandum] to go out to [elected] members ASAP today if possible.” The email circulation includes the Chief Executive and General Manager, City Services.</li> <li>• 3.34pm – Head of Three Waters sends memorandum to MOH and later, at 4.04 pm, to the Chief Executives of Water NZ and Institute of Public Works Engineers Association NZ (IPWEA).</li> <li>• Telephone conversation between General Manager, City Services and the Mayor indicating the report on the Director-General’s 20 December statement was complete. The Mayor agreed the report, understood to be primarily about the Director-General’s statement, would be considered early in January 2018.</li> <li>• 4.14pm – General Manager, City Services notes to Chief Executive and Head of Three Waters that “I have discussed this with the Mayor and she has instructed us to not circulate a memo to Councillors but to ensure we have a full briefing ready for all Councillors upon their return in the week of the 22<sup>nd</sup> [January]. She has made this call on the urgency of the matter.”</li> <li>• 5.25pm – Mayor emails General Manager, City Services her approval that staff are pulling together options for the council meeting on 22 January 2018.</li> </ul>
15 January 2018	Upon return to work, the Mayor was provided with the full report and briefed.
16 January 2018	Council Recess Committee meets and discusses the matter.
24 January 2018	The Chief Executive formalised prior discussions with the Mayor and Councillors, in a memorandum titled “Election by Staff not to exercise certain Health Act delegations”, that Three Waters staff would not exercise delegated functions in relation to treating drinking water and other water supply matters in light of the “high significance, community and councillor interest and as there is time for the matter to be dealt with by Councillors” at their meeting on 25 January 2018 .

25 January 2018	Council receives a paper from the Recess Committee at its public meeting and resolves to adopt all recommendations of the Recess Committee, including the programme identified by Citycare (for a total of \$840,000), establishing some reporting back requirements including updating on the cost of undertaking further improvements to all below ground well heads recommended by Beca and commencing temporary chlorination.
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## Findings

34. I have met with the key people involved, reviewed relevant documents (see Appendix B for details) and considered the sequence of events, to understand how the matter arose and was handled, and to assess existing practices, monitoring and assessment regimes, controls and reporting.

### How the matter arose and was handled

35. Overall, in my view, this matter arose as a result of a number of issues within the Three Waters Unit:
- a lack of a cohesive system to manage, monitor and report compliance with all three criteria for bore water security, including managing providers, and sharing information across providers and internally
  - a willingness to rely on the DWA/MOH, assuming a co-operative, lenient approach, rather than proactively taking responsibility for responding to the results of assessments
  - a general failure to escalate the developing issue with the boreheads; and
  - a lack of robust, integrated risk management.
36. The sections below elaborate on factors that have contributed to the situation.

### Assessment of existing practices, monitoring and assessment regimes, controls and reporting

37. I was told that the Christchurch earthquakes had fundamentally affected the operation of the Three Waters Unit. There was a need for a high degree of reliance on the experience of individuals and a necessary focus on getting tasks completed rather than attention to maintenance of sound practice and approach. The suggestion is that the approaches and roles developed in this high-pressured time continued to affect the functioning and management of the team which continues to rely on individuals to respond to issues.
38. This may go some way to explain why there appears to be a lack of a comprehensive approach to the routine management of the security status of the water supply, including the boreheads. There appears to be no planned, documented approach to ensuring compliance with all three criteria to return to and then maintain fully secure status.
39. With a sound process and documented framework for managing compliance with all three criteria set out in the Drinking-water Standards, the Three Waters Unit might have demonstrated:

- better management of external parties critical to regaining fully secure status. This would have included sharing relevant information and ensuring an understanding of respective work and roles. Relationships with the DWA, the independent engineering assessors (PDP and more latterly Beca) and Citycare were not managed as an integrated group whose inputs together are critical to meeting the objective. I was told that key evidence from each party was not necessarily shared with the other parties, even when it was relevant to the other parties' work – for example, Citycare were unaware of the PDP report when they were asked to develop an approach to secure the highest priority boreheads.
  - a better sense of the timelines required to be met. Timing was important given the temporary nature of the provisional status. For example, a dispensation had been given in relation to Criterion 1, which was last assessed as compliant in 2005 and required to be reconfirmed every five years. While it is currently being held over with the agreement of the DWA, it is now 13 years since the last demonstration of compliance and eight years since the last renewal date.
  - greater readiness to report openly to ELT on developing issues and updating of information supplied – even when the final status of an issue is yet to be confirmed.
  - a better sense of the risks, and communication of those risks, as events unfolded. Below I expand on my view that there was a lack of appropriate risk management throughout 2017.
40. It is unlikely that the issues raised above – especially the lack of communication and escalation of these issues by the Three Waters team – would have prevented the loss of secure status, but I believe that the issues would have been better managed as they unfolded.

### Escalation of issues and risks to senior managers, ELT, CE and Council

41. The issues with the boreheads were known within the Three Waters Unit since mid-2017, yet ELT and elected members were surprised by the change of status communicated by the DWA and MOH on 22 December 2017. In short, they were unaware that it was evident that compliance with Criterion 2 could not be asserted from mid-2017.
42. It is clear that staff were aware of the issues:
- senior Three Waters staff recognised that, although the 30 June 2017 PDP reports did not include clear conclusions, as their previous reports had, the recorded observations provided a clear indication that there were problems with the wells.
  - three Waters enquired into Citycare's inspection practices when they became aware through the PDP report that there was water in some of the boreheads.



- By 27 July 2017, staff were acknowledging the risk and had informed the General Manager, City Services of the matters arising from enquiries of Citycare.
  - By 28 August 2017 ESR had confirmed that the security of the boreheads was a risk and on 20 September 2017 recommended that Three Waters should take a more comprehensive management approach taking all three criteria into account.
43. I have found no credible reason why the matter was not formally escalated to ELT. Arguably it should have been elevated to ELT, the ITE Committee and Council's Audit and Risk Management Committee (ARMC) at the point when Three Waters knew they could not assert compliance with Criterion 2.
44. Even as late as the afternoon of 22 December the nature of the communication lacked a level of clarity. While staff worked hard to prepare a report on the Director-General's Statement of 20 December, and this report eventually included the withdrawal of provisionally secure status of the 22 December, the report did not change to reflect the real, emergent issue of the loss of provisionally secure status nor was it evident there was a sense of urgency in the matter in the general communications that afternoon.
45. Again, while it is likely that earlier escalation would not have any significant impact on the extent of the problems being dealt with now - including temporary chlorination - or how quickly they would be resolved, it is perhaps more important that the lack of escalation prevented a Council-wide developed and supported approach to a matter of high importance to the community and which may have been better managed on this basis.

### Formal and informal reporting to Council and Council committees

46. It is important to recognise that the three bore water security criteria are important individually as well as collectively, and compliance with all three is required to maintain secure status.
47. Quarterly reporting to ELT and the ITE Committee only addressed Criterion 3 – the absence of E. coli. We acknowledge that the other two criteria are assessed less frequently, however, by excluding them from routine reporting, there is no ongoing visibility of assessment results and status. ESR advised Three Waters in September 2017 to rework its management approach to include focus on all three criteria. This should have flowed through into reporting at least to ELT and the ITE Committee.
48. The purpose of the 7 June 2017 report to the ITE Committee on the Havelock North incident and the Inquiry's first report was to 'inform the committee of the key findings and how those findings and issues are currently being managed in the Christchurch context.' The Inquiry's report raised a key finding in relation to Havelock North that contaminated water was likely to have 'flowed across to [Havelock North's] Brookvale Road bore 1 where the bore pump drew contaminated water through the bore and into the reticulation system.'

Yet, the 'Five key issues in the Christchurch context' section of the report gave the impression that its own boreheads were secure – even though the rationale for this focused on the new design of above ground boreheads. It is important to note that the majority of boreheads were, and still are, below-ground.

49. Even when the Three Waters Unit's own work with Citycare revealed issues with the management and security of the boreheads, this was not elevated to ELT, or Council committees, when the public health nature of the risk would suggest it should have been.

### Appropriateness and quality of services provided by contractors to provide assessments to the Drinking-Water Assessor and Medical Officer of Health

50. The primary relationship with the contractors is with the Three Waters Unit. The DWA did not raise any concerns with me in relation to the work of the contractors who provided assessments of the Christchurch water supply.
51. It appears to me that, although the PDP reports would have been strengthened through the inclusion of clear conclusions, they included sufficient information and evidence to inform the Three Waters Unit that there were problems with the boreheads that they assessed.
52. The PDP reports were not provided to Citycare to inform the development of the maintenance programme. Furthermore, the reports were not provided when Citycare was commissioned to develop a remedial plan.
53. If there had been better sharing of information by The Three Waters Unit between PDP and Citycare, this might have enabled the Unit to provide a clearer picture of the state of the boreheads to the DWA.
54. In addition, it is noted that there was clearly tension in the relationship between Three Waters and Citycare in mid-2017 over the nature of the maintenance contract and Citycare's specific responsibilities around maintenance of the boreheads. I am uncertain whether this has been adequately resolved.

### Responses and involvement of the Medical Officer of Health and Drinking-Water Assessor with Council

55. The primary relationship for the DWA and MOH was at tier 6 within the Council staff structure. Generally, this was considered effective by the DWA and MOH. There is evidence that there was an open and accessible relationship with the Three Waters team.
56. While the relationship between Three Waters and the DWA and MOH was constructive, communication was not always effective, including during mid-2017:

- Updates on the compliance programme were not provided by Three Waters as a matter of course. It was only through her request on 21 August 2017 that the DWA obtained the PDP reports.
- While the DWA had a general awareness of the Citycare borehead upgrade programme through her site visit on 03 October, she told me that she did not see the associated assessment and planned approach until 22 December 2017.

57. My key concern is that this relationship appears to have led to passivity on the part of the Three Waters Unit. For example, I was told by several staff members essentially that 'the DWA has the report, if they don't come back to us we must be ok.' This may have been a factor in the delay in escalating the matter, however, I find it unacceptable that the Three Waters Unit did not actively take responsibility for responding to the findings of the PDP reports (even where clear conclusions were not drawn), irrespective of feedback from the DWA and MOH.

### How Havelock North changed the approach to assessment and application of standards

58. In general, the Havelock North event raised awareness of the risks around the supply of untreated water from below-ground bores. However, it does not appear to have driven a change in approach to meeting the standards, and responding to issues, by the Three Waters Unit. Critically, in my view, the internal report received by Council about the Havelock North event prompted the near-opposite response, in that the report strongly conveyed a sense that there were no implications for Christchurch. In my view, the Inquiry's first report (May 2017) clearly stated the possibility that the contamination in Havelock North could have occurred through the boreheads, and highlighted the risks arising in relation to any system relying on below-ground wells.
59. PDP changed its approach to reporting, by not providing clear conclusions about compliance, as it had in previous reports. They noted to me that while this was a marked contrast to their previous approach, there was little or no contact from Three Waters to discuss the change or the reason for it.
60. Beca indicated that the assessments of boreheads in Christchurch were similar in approach to those conducted elsewhere, prior to the Havelock North event. They told me it is likely they would have reached the same conclusions about the Christchurch boreheads without the influence of Havelock North.
61. I note that in the preamble to their reports, Beca acknowledges Havelock North and highlights recommendation 50 of the Inquiry's second report (December 2017), that the risk of below-ground bores should be dealt with appropriately in Water Safety Plans. Beca noted that they considered this recommendation from the Havelock North report in their assessment work for Christchurch City Council.

## Risk management

62. There is a lack of evidence that risk management principles and processes focusing on the objectives of Council and consumers were applied, either generally to the work of Three Waters, or specifically to the situation. This should have been a core part of any response even if there had been an expectation that the situation could be resolved without escalation.
63. Council has a standard risk management framework based on identification of key risks and managed through a system called Promapp (a system used by many local authorities).
64. Promapp information forms the basis for ELT monitoring of key risks through its Risk and Audit and Health and Safety meetings. By December 2016, “drinking-water contamination” was noted as a “moderate” residual risk. Council’s Audit and Risk Management Committee (ARMC) received the ELT risk register and in December 2016 also received a briefing on the water contamination risk from the head of the Three Waters Unit.
65. ELT and ARMC continued to receive reports which included this risk until August 2017 when it was effectively removed from ELT reporting and delegated to the Three Waters Unit. At this stage ELT had been given no reason to consider this risk warranted closer monitoring. It had not been made aware of the outcome of the PDP reports.
66. Promapp includes two risks that are relevant to the security of bore water:
  - R0001 Water contamination (source or distribution)
  - R0098 (Maintain or improve existing MOH water supply risk grading).
67. These risks are the responsibility of the Three Waters Unit.
68. The risk mitigation treatments for R0001 include a ‘wellhead inspection and repair programme regime.’
69. However, from a review of the records it does not appear that the risk register was substantially altered to reflect the results either of the PDP reports, or the risks identified around the nature of the Citycare inspections, which Three Waters discovered in mid-2017 were not what they had originally thought they were.
70. Further, the risk assessments were not altered from an overall ‘moderate’ residual assessment when it became clear to Three Waters that the that PDP would not positively conclude the boreheads were secure. In my view this would have meant a minimum risk assessment of ‘high’ which, by virtue of the risk management framework escalation policy would have meant the matter should have automatically been reported to the ELT. This should have occurred by mid-2017.

71. Even if, in the judgement of Three Waters management, the risk should not have been reassessed within formal processes around Promapp, I find it difficult to accept that the matter should not have been raised with ELT outside of the risk system.

## Conclusions

72. In considering the withdrawal of the provisionally secure status, the context for the Council is complex:
- The water source has provided, and continues to provide, high quality water with a minimum of transgressions as confirmed in the annual compliance report and further acknowledged by the MOH in September 2016.
  - The condition and performance of the below-ground boreheads had not necessarily changed between the time when they were assessed as secure and the time when the status was changed to unsecure.
  - What has changed is the appreciation of the risks arising from the state of the wells and the rigour of the assessment processes applied by assessors. Rather than the wells suddenly becoming unsecure, the assessments became more accurate and better informed; it is likely that the wells had been unsecure for some time before the status was changed.
73. The Three Waters Unit was clearly aware of the risks to the secure status of the boreheads – especially in relation to Criterion 2 and, more latterly, in relation to Criterion 1.
74. They knew this by mid-2017 when they:
- were aware of PDP’s view that the boreheads no longer warranted being signed off as secure, and
  - had established that Citycare’s regular maintenance programme did not mitigate some of the core concerns of the PDP reports.
75. While the Three Waters team had concerns about the quality of the PDP report, the report clearly highlighted key risks which were confirmed by subsequent advice from:
- the DWA (which was supported by ESR), who confirmed that the state of the boreheads was a risk which needed to be managed; and
  - the new assessors, Beca, who concluded that the boreheads did not meet Criterion 2.
76. And, yet the team did not adequately communicate the situation internally nor record the changing understanding of risk in the risk management system.
77. The withdrawal of the provisionally secure status was a surprise to senior management and elected members. It needn’t have been.
78. The lack of effective internal communication was a missed opportunity for the Three Waters team to establish a proactive response in conjunction with senior management. The developing situation could then have been better aligned to Council’s overall priorities and an effective response prepared.

79. Reporting to ELT has focused on Criterion 3. Since the results have generally indicated an absence of E. coli, ELT apparently had no reason to be concerned. Yet all three criteria are required to be met to achieve secure status. In my view, ELT should have been given better information on the fundamentals needed for a safe untreated water supply and the assurance from Three Waters that all three criteria were being met. This would have been important to ELT both because of the inherent risks of an untreated water supply and below-ground boreheads, and because untreated water is valued so highly by the city.
80. Time was of the essence, as the amount of time it would take to rectify the situation was a significant factor in the DWA's decision to withdraw the provisionally secure status.
81. Three Waters was first aware that some boreheads were not secure as early as May 2017 when PDP was completing its assessment. Three waters staff and management gained an increasing understanding of the scale of the issue through gathering more information from its maintenance contractor, Citycare, and through discussions with the DWA and ESR.
82. By mid-2017, Three Waters was aware that a number of boreheads had issues, and that these issues created risk – even though in August 2017 the DWA signed off on the 2016/17 annual compliance report.
83. The issues with the boreheads created risk that contaminants could enter the system, and this means that both compliance with criterion 2 and public health were at risk.
84. In my view the issues and the risks these matter gave rise to should have been escalated by Three Waters before the DWA informed the Council that the provisionally secure status was withdrawn.
85. How early should it have been escalated? It is understandable that Three Waters took some time to investigate and establish the scale of the problem, and develop a plan and budget to resolve the situation. But the PDP reports identified that the below-ground boreheads it tested (approximately 20% of Christchurch's borehead system) had issues. Given that this was not likely to be rectified within a short period, I consider that the risk to public health should have been escalated to ELT shortly after the PDP reports were provided to Three Waters and discussions with Citycare confirmed the risks.
86. My review does not question the technical competency of the Three Waters team; but the failure to communicate, to escalate the issue, has made the situation substantially more difficult for the Council as a whole. To be clear, I am not asserting that the lack of communication by the Three Waters team caused the current temporary chlorination of the water supply.
87. In contrast to the potential opportunity to be proactive, Council now finds itself in a reactive mode. While the security status may still have been downgraded, and the solutions – including temporary chlorination - currently being undertaken may have been no different if this matter was raised in mid 2017, Council is now having to react to circumstances and with heightened reputational risk.

## Recommendations

- I. Reset Council's approach to the management of drinking-water given its high cultural value. The reset needs an ELT-led response in the medium term given the withdrawal of the secure status. The response needs to be driven by the Three Waters Unit. ELT also needs to set a longer-term approach if Council is to achieve its objective of continuing to supply untreated water to its community.
- II. Note that in resetting the approach, Council needs to ensure it takes a proactive response to managing its compliance with the Drinking-water Standards.
- III. Monitor the risks to the bore water source based on the three criteria, rather than an over-reliance on the absence of E. coli (Criterion 3).
- IV. Consider the broader risks to the drinking-water supply and the potential of higher standards with any new drinking water safety regime.
- V. Align operational risk settings for water supply with community and political values.
- VI. Recognise the importance of the roles of the Citycare, DWA and MOH and its independent experts and how to reset the existing working relationships.
- VII. Strengthen risk management within the Three Waters Unit:
  - proactively follow up, investigate and plan to resolve risks, issues and concerns
  - recognise the value of risk management as a management tool, and as a communications tool within the team, across providers and contractors, and vertically within Council.
- VIII. Review how the role of quality assurance and compliance can be supported and enhanced within the Three Waters Unit.



## Appendix A

### Terms of Reference

#### BACKGROUND

1. Christchurch City Council owns and operates a large number of wells (also known as bores) across the city for the primary purpose of providing water to the city's residents. The Council is in a fortunate position that there is a high quality water source within the aquifers beneath the city, which provide a nearly pristine supply that has generally not required any further treatment. Very few cities in the world benefit from such a high quality water source.
2. Since the Canterbury earthquakes of 2010/11, Christchurch's water supply has had a 'provisionally secure' status. This has meant that the water supply complied with the Drinking Water Standards for New Zealand (DWSNZ) without the need for treatment.
3. The Havelock North Drinking Water Inquiry Stage 1 report was released on 10 May 2017 and described the likely causes of the contamination event as well as other failings that could have caused the contamination. These failings included the poor condition of the below ground well heads, the potential for flood waters to have entered the well head, and the potential for contamination via poorly sealed cables that penetrated the well heads.
4. In light of the Stage 1 Inquiry report, and rather than waiting for the final Stage 2 inquiry report, staff took steps to implement measures to improve the safety of Christchurch's water supply, including improving the security of Christchurch's well heads. In early June 2017, Citycare (the Council's contractor) were instructed to assess, review and recommend repairs to all of the Council's below ground well heads. At a meeting with Citycare Water staff on 26 June 2017, it was agreed that they should continue this work with urgency. The Drinking Water Assessor was notified of this work and made a site visit on 3 October 2017.
5. On 21 August 2017 Citycare Water issued its report, Christchurch City Council Below Ground Water Well Head Repair Recommendations, which summarised the typical defects that had been found through the investigations, and recommended a repair strategy with an estimated cost of \$840,000. It was expected that about half of the cost would be improvements (capital expenditure) and half would be maintenance (operational expenditure). Due to the urgency of the required work, approval was given for Citycare to proceed with the repairs.

6. On 22 August 2017, the annual compliance report was received from the Drinking Water Assessor confirming that the Christchurch water supply was compliant with the DWSNZ and commending the Council on having full bacterial compliance for all distribution zones.
7. The Three Waters & Waste Unit's 11 October 2017 report to the ITE Committee included the compliance report from the Drinking Water Assessor.
8. The Stage 2 report from the Havelock North Drinking Water Inquiry was released on 6 December 2017. It was highly critical of the Ministry of Health particularly in the area of enforcement of the DWSNZ. There has not, as yet, been any Government response to the Stage 2 report.
9. A relevant recommendation from the Inquiry's Stage 2 report was that "[321] The Ministry, via the [Drinking Water Assessors] and Medical Officers of Health, should take urgent steps to administer and enforce the existing regulatory regime, having regard to the findings and recommendations in this Stage 2 Report."
10. On 20 December 2017, the Director-General of Health issued a statement under section 69ZZZC of the Health Act 1956 to bring the responsibilities under the Act and the DWSNZ to the attention of drinking water suppliers. While this was not a directive to drinking water suppliers, the advice needed to be considered with urgency. The advice from the Director-General was:
  1. Protection of drinking-water sources is of paramount importance and a founding principle of drinking-water safety;
  2. Every drinking-water supplier must contribute to the protection of drinking-water sources;
  3. The risk to the public is increased if drinking-water is untreated;
  4. To provide adequate protection to public health, suppliers providing drinking-water to untreated networked supplies should consider implementing appropriate and effective treatment without delay; and
  5. They should reconsider their reliance on secure bore water status as a means of providing safe drinking-water.
11. The latest round of scheduled well head security assessments was conducted in November 2017 by Beca Ltd. A total of 25 wells at nine pump stations were assessed (which accounted for all but one which could not be accessed for safety reasons). The findings of these assessments, contained in the draft reports, found that none of the below ground well heads inspected met the security criteria. Draft reports on each of the pump stations were provided to Council staff by Beca on 14 December 2017, which described the issues with each of the wells. The reports also recommended immediate actions to comply with the security criteria, as well as actions that should be undertaken within 12 months and in the longer term.

12. The findings of these assessments were discussed at meetings attended by the Drinking Water Assessor, the Canterbury Medical Officer of Health, the authors of the Beca report and Council technical staff on 14 and 19 December 2017.
13. After receiving the Director-General of Health's Statement on 20 December 2017, senior Council staff met with the Drinking Water Assessor and the Canterbury Medical Officer of Health on 22 December to discuss its implications. At this meeting the Drinking Water Assessor indicated that in light of the draft reports on the latest round of well head security assessments, the security status for the Christchurch and Brooklands/Kaingā water supplies would be changed from 'provisionally secure' to 'unsecure'. The letter confirming the change was received by staff later that afternoon, and stated that this meant the Council no longer complied with the DWSNZ.
14. Following further internal organisational discussions, the Council's Recess Committee met on 16 January 2018 and the Council received a paper at its 25 January 2018 public meeting. The Council resolved as follows (in full) including a request for this review:
15. That the Council:
  1. Receive the information in the Below Ground Well Heads and Drinking Water Supply Status Update report.
  2. Approve and accelerate the programme of improving the security of below ground well heads at a cost of \$840,000 made up of \$630,000 capital expenditure and \$210,000 operating expenditure.
  3. Approve the installation of temporary chlorination for up to 12 months at all 56 pump station sites within the Christchurch City Water and Brooklands/Kaingā water supplies at a capital cost of \$600,000 and an operating cost of \$20,000 per month, until the Drinking Water Assessor and Medical Officer of Health agree that temporary chlorination can cease.
  4. Request staff report to the Infrastructure Transport and Environment (ITE) Committee as follows, to be reported on to the Council including any recommendations:
    - i. as soon as possible with an update on the cost of undertaking further improvements to all below ground well heads recommended by Beca to comply with the latest round of well head security assessments.
    - ii. on monthly progress with implementing the well head improvement works.
    - iii. with the draft Water Safety Plan for approval when completed.
    - iv. with a review of the inspection regime for the monitoring and assessment of below ground well heads undertaken prior to June 2017 and since.

5. Inform the community about the status of Christchurch's water supply and any decision on temporary chlorination. Coordinate with the Medical Officer of Health to ensure the community is suitably informed regarding the implications of any decision.
  6. Note that the capital budget required can be found from savings elsewhere in the Three Waters & Waste Unit's capital programme and that Council staff will work to prioritise expenditure in order to seek to offset the additional unbudgeted operating costs required to implement the recommendations.
  7. Resolves that long-term the Council wants to retain its unchlorinated drinking water system. Accordingly the Council opposes any Government imposed mandatory permanent chlorination.
  8. Notes resolution 7. deals with the Infrastructure Transport and Environment Committee recommendation to the Council meeting of 20 December 2017, which was left to lie on the table to be referred to the Council meeting of 22 February 2018.
  9. Ask the Chief Executive to undertake an overarching independent external review of this matter so that the Council can provide assurance for the future of our unchlorinated water supply, and report back to the Council.
16. This review is sought by the Chief Executive to fulfil the Council's resolution in "9" above.

## SPONSOR

17. Karleen Edwards, Chief Executive

## REVIEW OBJECTIVE AND SCOPE

18. In accordance with the Council's resolution, this review and its findings and recommendations are intended to assist the Council in providing assurance for the future for Christchurch's unchlorinated water supply (the "Prime Objective").
19. In particular, the review should provide conclusions and recommendations to assist in achieving the Prime Objective, including:
  - An assessment of how the matter arose and was handled;
  - An assessment of existing practices, monitoring and assessment regimes, controls and reporting;
  - Any recommendations for improvements whether in procedure, practice, levels of service, reporting or otherwise (including any recommendations for contractors and contract management arrangements).
20. The review shall also include:
  - A full detailed timeline of all relevant meetings, events and occurrences between August 2015 and 25 January 2018;

- Reviewing and assessing:
  - Escalations of issues and risk up to Senior Managers, the Executive Leadership Team, the Chief Executive, and Council;
  - The formal and informal reporting provided to Council and Council's Committees, including in particular, the Infrastructure, Transport and Environment Committee;
  - The appropriateness and quality of services provided by contractors to the Council, including Citycare Limited and third parties used to provide assessment of well heads for Council and the Drinking Water Assessor;
  - The responses and involvement of the Medical Officer of Health and the Drinking Water Assessor, with Council;
- Consideration of the standards being applied to the monitoring and assessment of below ground well heads. This shall include any changes in the approach and application of those standards and assessments from the time of the Havelock North incident in August 2016 until 22 December 2017.

## APPROACH

21. The review will be performed by undertaking the following:
  - Interviews with the Mayor, Chair of the Infrastructure, Transport and Environment Committee, relevant Councillors, the Chief Executive, Council staff and contractors;
  - Review of relevant Council documentation, systems, procedures, minutes, reports, correspondence, memos, and any other supporting material;
  - Review of assessments, reviews, reports and inspections made over the relevant period in relation to relevant well heads controls and testing and assessment regimes regime, in order to assess compliance with drinking water standards;
  - Review of relevant supplier/contractor arrangements, instructions, contract performance management arrangements and assessments, inspection assessments/reports, the standards that inspections were measured against, and correspondence associated with this;
  - Consideration of any other Quality Assurance systems, process and reporting used by the Council, and its suppliers and contractors;
  - Confirming findings/improvements through discussion with relevant management;
  - Operating transparently and on a "no-surprises" basis;
  - Other matters as agreed with the Chief Executive.
22. The reviewer will regularly meet with and update the Chief Executive, and discuss with the Chief Executive any matters requiring clarification in relation to approach, methodology, resourcing or otherwise.

## REPORTING

23. Prior to providing a final report to the Chief Executive, the reviewer shall provide a draft report for the Chief Executive in order to seek and incorporate any relevant feedback and/or actions (planned or already underway).
24. The final report shall be provided to the Chief Executive

## TIMING

25. To be confirmed with Reviewer by Chief Executive.

## Appendix B

### People

The following people were interviewed, some on a number of occasions. I acknowledge and appreciate their openness and contribution to this inquiry. Their assistance has enabled me to develop a clear understanding of the events leading to the withdrawal of the secure status of the bore water on 22 December 2017.

Christchurch City Council

Christchurch City Council staff (in alphabetical order)

Canterbury Public Health

Environment Canterbury

Citycare

PDP

Beca

## Documents reviewed

- Terms of Reference for the inquiry
- Report of the Havelock North Drinking-Water Inquiry – Stages 1 and 2
- Drinking-water Standards for New Zealand 2005
- Inspection reports from PDP, Citycare and Beca
- Correspondence among Council, service providers and regulators
- Internal reports to ELT, ITE Committee, and full Council
- Monthly Performance Reports from City Services/Three Waters and Waste
- Promapp risk management records



## Appendix C

### Comment on consultation on draft report

1. Page 2 of the report outlines the key steps in the production of this report. Appendix B lists the people I consulted in its preparation.
2. It was a cornerstone of my approach that I would be circulating, in draft (and in confidence), to the people and parties I consulted, a draft copy before I finalised it. I made this clear to all people interviewed.
3. I followed this process<sup>1</sup>. Once I cleared my initial draft through the Chief Executive on 31 May, I circulated two versions of the draft:
4. A largely unredacted version to staff and elected members within Christchurch City Council.
5. External parties received redacted versions of the draft report. They were circulated with sections of the report that specifically related to them or their organisation.
6. All people circulated were asked to consider the draft for its factual correctness and inferences drawn.
7. All participants responded either in writing or some through extensive verbal feedback. Generally, with external parties, one person responded on behalf of their organisation.

### The response to feedback

8. External feedback helped to clarify the actions of external parties and their engagement with Council – especially with the Three Waters unit.
9. The majority of all feedback was from the Three Waters Unit. I either received email feedback, or in the case of the Head of the Three Waters unit, met with him. All his feedback was provided after consulting with his legal representative.
10. In following up on the combined Three Waters unit feedback, I did make some additional contact with other Council staff – outside the Three Waters unit – around reporting to and working with Council's ELT. I have not named the staff contacted as, while helpful, none of the comments received changed this report.

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<sup>1</sup> I treated my contact with the CEO of Environment Canterbury differently. I sought, near the end of reporting, to contact the Chief Executive on 22 May 2018. It was a discussion of a general nature and did not affect my report. A draft copy was not circulated to

## The key changes

11. Substantive changes were made to this report in light of the combined feedback from the Three Waters Unit:
  - I agreed that the report be titled a “review” rather than an “inquiry”.
  - Paragraph 6 was included to be clear that the nature of the review was to establish and conclude on the events leading up to the loss of provisionally secure status on 22 December 2017.
  - The timeline included detail of the communication on the 22 December 2017 – especially that afternoon - plus a summary of other events after that date<sup>2</sup>.
12. The substantial changes to my report occurred in the concluding section. One conclusion about trust and confidence was entirely deleted as I considered that it did not add to the core conclusions reached and agreed that it was unnecessary.
13. Paragraphs 40 and 45 were amended to note that my assessment of the failure in communication, to escalate the increasing concerns over Criterion 2, were not causative of the revocation of the provisionally secure status nor the current need to temporarily chlorinate the water supply.
14. Paragraphs 79 through 87 were introduced as the result of feedback on a single draft conclusion about the actions of the Three Waters Unit. On considering the Head’s feedback, I considered the new paragraphs reflected a fairer conclusion than the one originally drafted.

## Feedback not affecting the final report

15. The final meeting with the Head of Three Waters was convened on 29 June 2018. The Chief Executive of the Council and its General Manager, City Services were also present. I outlined those main aspects of the Head’s feedback that had not affected my report. Amongst those were:

The Three Waters Unit was substantially under-resourced and was affected in its ability to respond. In addition, the Head was involved in leading a number of civil defence responses in and around mid-June 2017.

I was not persuaded by this argument. Ultimately the core issue was one of communication and its effectiveness. As stated in my comments and conclusions, the

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<sup>2</sup> This Mayor made a similar request.

potential for being unable to assert compliance with Criterion 2 should have been made plain and unequivocal from about mid-2017 – whether through monthly reporting, the risk management system or, most likely, by direct communication with ELT/ITEC. This is not necessarily a matter of resourcing.

My report should accord proportionate blame on others.

I was not persuaded by this argument. I have not sought to apportion blame. My expectation was that the Three Waters unit, as primary managers of the water supply, would have effective systems for asserting compliance with all 3 criteria, and that when assertion was impaired and at risk, as evidenced by the PDP reports, appropriate communication would be made.