

Report No.	19-84
Information Only - No Decision Required	

DRINKING WATER RESEARCH ANNUAL REPORT

1. PURPOSE

- 1.1. To provide Council with an annual report on drinking water research completed during the 2018-19 reporting year (with a focus on council-operated drinking water supplies), as required by Horizons' **Long-term Plan 2018-28 (LTP)**.

2. EXECUTIVE SUMMARY

- 2.1. There are a number of different organisations with responsibilities for managing and monitoring potable drinking water in New Zealand, including regional councils, district councils, and regional public health units. The over-arching aim of the regional drinking water work programme is to ensure these legislative requirements are met, and that the relevant organisations are working together proactively to improve drinking water supply management in the Horizons Region.
- 2.2. An initial stocktake and risk assessment was completed by Horizons in 2017, and funding was secured via Horizons' LTP to provide for a dedicated work programme to address recommendations made by the report, and provide for the continuous improvement of drinking water security in the region. During 2018-19, this resourcing has been directed toward: the delineation of source protection zones for council-operated public water supplies serving more than 500 people; bore-head security inspections for those supplies sourced from groundwater; and an update of the original stocktake and risk assessment report.
- 2.3. This report provides an update on annual progress to Council, as required by the LTP. It includes background information around the management of public drinking water supplies, provides an overview of the work programme for 2018-19, reports on progress to date – including recommendations for further action, and outlines the next steps and recommendations for the work programme from 1 July 2019.

3. RECOMMENDATION

That the Committee recommends that Council:

- a. receives the information contained in Report No. 19-84.

4. FINANCIAL IMPACT

- 4.1. There are no current financial impacts associated with this item. This report reflects previously endorsed budgets approved as part of Council's annual planning and long term planning processes, and identified work programmes delivered as part of the Science Operational Plan. It is noted that the **Territorial Authorities (TA's)** have co-funded and contributed time in-kind to this work programme increasing the scale and scope of work being able to completed within the financial year.

12 June 2019

5. COMMUNITY ENGAGEMENT

- 5.1. This is a public item. Information around the regional drinking water research programme was made available to the public as part of Horizons State of Environment report, released in May 2019.

6. SIGNIFICANT BUSINESS RISK IMPACT

- 6.1. No significant business risk has been identified.

7. BACKGROUND

Roles and Responsibilities

- 7.1. Regional councils have responsibilities pertaining to water quality under both the **Resource Management Act (RMA)** and regulations set out in the **National Environmental Standard for Sources of Human Drinking Water (NES)**. With respect to water quality under the RMA, regional councils are responsible for the use of land for the purposes of maintaining and enhancing the water quality of water in water bodies; and the discharge of contaminants into or onto land, air or water, and discharges of water into water. Drinking water suppliers require a resource consent from the regional council to take water and as part of the determination of that consent, the regional council must have regard to the relevant provisions of the NES.
- 7.2. The functions of TA's (District and City Councils) are narrower than those of Horizons', however they are responsible for creating and implementing district plans, which must not be inconsistent with regional plans. TA's also have responsibilities as consent holders for water take consents and must comply with the conditions of those consents. As drinking water suppliers, TA's are required to manage and monitor drinking water supplies to ensure the supply complies with the **Drinking Water Standards for New Zealand (DWSNZ)**, take reasonable steps to protect both the source of this supply from contamination and the supply system from pollution, and prepare and implement a **Water Safety Plan (WSP)**.
- 7.3. Under the Health Act, **drinking water assessors (DWA's)** have primary responsibility for monitoring and enforcing compliance of drinking water suppliers with the Health Act, DWSNZ, and water safety plans.
- 7.4. A stocktake and gap analysis of public drinking water security in the Horizons Region was initially completed in November 2017, in partnership with Territorial Authorities and the MidCentral Public Health Service, and the results reported to Council in 2018. The report, commissioned by Horizons and completed by **Pattle Delamore Partners Ltd. (PDP)**, identified 29 water supplies (from 55 sources) within the region providing water to communities of more than 500 people at any given time. The majority (43) of these sources were council-operated, with the remaining twelve sources registered to Massey University, Fonterra, the Department of Corrections or New Zealand Defence Force.
- 7.5. This initial assessment was considered indicative and representative of a point in time but did highlight a number of issues with the overall compliance of a number of these supplies. It should be noted that some of these compliance issues related to missing information such as compliance reports, WSP's and/or bore head security reports however, a number of detections of *Escherichia coli* (*E.coli*) were also identified in monitoring data for some supplies. A key recommendation of the initial report was the delineation of zones of contribution to surface water sources and groundwater sources to better inform decisions around resource consent applications for discharges and potential land-use restrictions within the zones.

- 7.6. To deliver this recommendation, further funding was sought through Horizons' Long-term Plan 2018-28 to provide for further drinking water supply research, with a focus on Council-operated drinking water supplies. An LTP performance measure for environmental monitoring and reporting activity requires that an annual report on this research be provided to Council.

8. DISCUSSION

Drinking Water Work Programme 2018-19

- 8.1. The work programme set out for 2018-19 seeks to further our understanding of any risk posed to communities and provide information around the security of council-operated drinking water supplies so that, where necessary, improvements can be made. The scope of this year's work programme included (1) the delineation of source protection zones for Council-operated water supplies serving 500 people or more; (2) bore-head security inspections for groundwater sources of these supplies; and (3) an updated risk assessment and gap analysis of these supplies to incorporate the latest information. The work programme has been co-funded by Horizons and the region's Territorial Authorities.

Delineation of Drinking Water Source Protection Zones

- 8.2. A key output of the 2018-19 drinking water work programme is a series of reports considering source protection management for drinking water supplies serving more than 500 people in the Horizons Region, including both surface water and groundwater supplies. These reports are being prepared by PDP for each individual Territorial Authority and include several recommendations that are common to all areas, as well as some recommendations that are specific to individual sources.
- 8.3. Each source protection management report includes a description of each catchment and a definition of the source protection zones around each source. Considerations for source protection management for each source are based on the consented activities that could be a source of contamination occurring in each zone, including consented discharges and consented land-use, historical and current bores, as well as the location of contaminated land (HAIL sites) that could pose a risk to a drinking water supply. Note that permitted activities have not been assessed as there are few records detailing their location. However, by their nature, they are not generally expected to pose a significant contamination risk. Exceptions include unconsented groundwater bores, and earthworks, both of which could provide a pathway for contaminants to enter a deeper aquifer.
- 8.4. The following three source protection zones are defined for the water supply takes:
- Intake Zone (SPZ1), which is the area in the immediate vicinity of the intake structure;
 - Intermediate Zone (SPZ2), for surface water intakes this is a zone where contaminants can reach the supply in 8 hours; for groundwater intakes this is a zone where microbiological contaminants could reach the intake at harmful concentrations; and
 - Catchment Zone (SPZ3), defines the remainder of the catchment that contributes water to the intake.
- 8.5. Recommended actions to improve or ensure the ongoing security of each water source have been identified for the three protection zones. Whilst a number of these recommendations identify actions for Horizons Regional Council that should not mean that the Water Supply Manager is excluded from those actions. Better outcomes can often be achieved if water supply managers and the regional council collaborate to deliver actions.

- 8.6. We recommend that any identified actions for each city and district are discussed and agreed between the relevant Territorial Authority and Horizons, and any resourcing needs are clearly identified to ensure the work programme is adequately supported. Depending on available resourcing, this work may need to be phased, and could be prioritised in terms of risk – with SPZ1 being of higher risk (and therefore priority) than SPZ2 or SPZ3.

Summary of common recommendations for SPZ1:

8.7. Groundwater sources

- The Water Supply Manager should ensure that fencing around the bores is maintained to prevent livestock in the area from approaching the bore heads.

8.8. Surface water sources

- Landowners whose property is within the area of SPZ 1 should be contacted to discuss the management of their land in that area. That could include reviewing the farm management plan and discussing any issues identified as part of consent compliance checks. This is likely best carried out by Horizons, in consultation with the Water Supply Manager;
- Horizons and/or the Water Supply Manager should contact the landowners within SPZ1 and identify any permitted discharges in those areas;
- The waterways within SPZ1 should have a wide appropriately planted riparian buffer from which stock should be excluded;
- Signposting may be appropriate in some locations to identify the area as an inner source protection zone.

Summary of common recommendations for SPZ2:

8.9. Groundwater sources

- Horizons and/or the water supply manager should contact the surrounding landowners whose land falls within the areas of SPZ2 and inform them that their land is within a drinking water supply protection zone.
- Horizons and/or the Water Supply Manager should contact the owners of registered bores within SPZ2 and inform them that their bores are located within a drinking water supply protection zone. If the bores are no longer used, the owners should be encouraged to properly decommission their bores.
- Horizons should inform the Water Supply Manager of any consent to drill bores in SPZ2, as well as any new potentially hazardous consented activities or any newly identified contaminated site; and
- A letter drop to residents within the areas of SPZ 2 should be undertaken by Horizons to help identify if any previously unknown bores are present. Any bores identified should be assessed to ensure that they are suitably sealed if they are not in use.

8.10. Surface water sources

- The Water Supply Manager and/or Horizons (as part of compliance checks) should notify the owners of the farms that drinking water supply protection zones extend onto parts of their land and discuss the management of their land in that area. That could include reviewing the farm management plan and discussing any issues identified;
- Any permitted discharges in that area should be identified in discussion with the landowner and potential mitigation options put in place;

- Horizons should notify the Water Supply Manager of any discharge consents granted within the area of SPZ 2, or of any consented land-use changes; and
- Stock can present a risk to surface water supplies and ensuring that the surface waterways adjacent to farmland are fenced to prevent stock access is recommended.

Summary of common recommendations for SPZ3

8.11. Groundwater sources

- Horizons should provide information regarding the general groundwater and surface water quality identified in the catchment to the Water Supply Manager (for example via **State of the Environment (SoE)** monitoring and reporting). Note that some bores do not have a SoE monitoring bore located up-gradient of the source. Therefore, alternative monitoring may be required for these sources. Further monitoring in these zones should be reviewed to provide for the identification of potential contaminants (e.g. viruses, nitrates, emerging contaminants) before they pose a risk to the water supply bores. For example SOE monitoring does not routinely monitor for emerging contaminants or viruses.
- Horizons should inform the Water Supply Manager of any changes to land-use in SPZ 3 (including deforestation / harvesting).
- Samples of water quality from groundwater sources that show elevated iron and manganese concentrations should also be tested for arsenic on an annual basis.

8.12. Surface water sources

- Horizons should provide information regarding the general water quality identified in the catchment to the Water Supply Manager (for example via State of the Environment (SoE) monitoring and reporting). Note that some surface water sources do not have a SoE monitoring bore located up-gradient of the source. Therefore, alternative monitoring may be required for these sources. Further monitoring in these zones should be reviewed to provide for the identification of potential contaminants (e.g. viruses, nitrates, emerging contaminants) before they pose a risk to the water supply. For example SOE monitoring does not routinely monitor for emerging contaminants or viruses.
- Horizons should inform the Water Supply Manager of any changes to land-use in SPZ 3 (including deforestation / harvesting).

Bore-head security for groundwater sources

- 8.13. On-site inspections of all groundwater sources were undertaken in April and May 2019, which also provided a valuable opportunity to validate desktop assessments of the hazards identified around groundwater sources. Staff from the Territorial Authorities were helpful and accommodating in providing their time to allow the inspections to take place.
- 8.14. In general, the inspections showed that bore heads for larger groundwater supplies in the region were in reasonable condition, without significant issues identified that could compromise the safety of the source. However, in some cases issues were identified including:
- Old and disused bores within close proximity to a supply source that were not properly decommissioned;
 - An absence of 'as built' plans for bore heads, making identification of some pipework and flow movements at the sources difficult and also difficulties in identifying the seal around the bore casing; and

- Reliance on treatment of water leading to a lack of attention to potential issues around the bore head, which provides the first barrier to potential contamination of the water source.

8.15. The results of these inspections are currently being incorporated into the source protection management reports for each TA.

Sharing of drinking water data and information

8.16. A further stream of work is improving the availability and flow of information about council-owned drinking water supplies. During 2018-19 a number of council's provided Horizons with direct access to information about water supplies under their management via Drinking Water Online, the national repository for drinking water supply information. This enabled Horizons to access drinking water quality monitoring data directly and more efficiently, rather than having to request data directly from each council. While the available information is currently limited to data collected since 2017, in time this dataset will grow.

8.17. The need for a common repository for drinking water information in the region was identified during the development of the initial stock take report. While the Drinking Water Online database provides information about each water supply, its management and compliance, information around source protection zones and risks to each supply are not currently incorporated. It is recommended that opportunities to connect this information be explored as part of the future work programme.

9. CONSULTATION

9.1. No community consultation has been carried out as part of this report.

10. TIMELINE / NEXT STEPS

10.1. Draft source protection management reports have been circulated with each territorial authority and their feedback is now being incorporated, along with any recommendations that have resulted from the bore-head security inspections. Final reports for each TA are expected to be released to Horizons and the respective TA by 30 June 2019. A further report, summarising the collective recommended actions will also be provided to Horizons.

10.2. Scoping of a work programme for 2019-20 is now underway and will be outlined in the Science Operational Plan for next financial year, following discussions with relevant Water Supply Managers, Public Health Officers, and Horizons staff. Proposed next steps include:

(a) addressing the recommended actions identified in each city/district source protection report, as summarised above;

(b) delineation of source protection zones for smaller council-operated supplies (those serving less than 500 people) and non-council operated supplies serving 500 people or more; and

(c) further work to progress data and information sharing around drinking water supply management.

10.3. It is intended that the Science Operational Plan be presented to Council in August 2019.

10.4. It is clear that there will be a need to prioritise Horizons efforts and expenditure on this activity within the 2019/20 year to fit within the allocated budget of the Annual Plan. Horizons will seek to work with the Territorial Authorities to collaborate and co-fund activity to provide protection of drinking water supplies.

12 June 2019

11. SIGNIFICANCE

- 11.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Abby Matthews

SCIENCE AND INNOVATION MANAGER

Jon Roygard

GROUP MANAGER NATURAL RESOURCES & PARTNERSHIPS

ANNEXES

There are no attachments for this report.