

Final Report on implementation of a Drinking Water Supply's Water Safety Plan

Water Supply

Ashhurst (ASH001)

Central North Island Drinking Water Assessment Unit
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Report Identifier

ASH001_Ashhurst_WSPImplementation_FinalReport_140617_v1

Executive Summary

On 18/5/2017 an on-site assessment of the implementation of the Ashhurst Water Safety Plan (WSP) was undertaken. The implementation assessment was carried out by Peter Wood, Drinking Water Assessor (DWA). Ruth Porter and Judy Williamson (IANZ) were both present for the implementation as observers. Palmerston North City Council (PNCC) was represented by Dora Luo; Water Asset Engineer, Mike Monaghan; Treatment Plants Manager, and Joshua McIndoe; Senior Water Treatment Technician.

An updated version of the Ashhurst WSP was forwarded by email on Friday 5/5/2017. The implementation assessment was based around the revised WSP. Additional information was requested subsequent to the on-site assessment and was provided promptly (by 25/5/2017).

The on-site assessment was undertaken in two parts. The first part was completed at the PNCC Offices. The second part was undertaken at the Ashhurst bore and treatment plant site. A third part of the assessment, a proposed on-site visit to the Oxford Street Polishing Station was called off due to a combination of inclement weather and time constraints.

The outcome of the implementation assessment was that PNCC was implementing the WSP. The WSP is being used and updated as a living document. PNCC are commended for the active implementation of the WSP. Despite this an additional project was underway that was not captured in the WSP.

One non-conformance and four recommendations have been made as a result of the assessment.

A summary of the identified non-conformances, recommendations and agreements reached to rectify non-conformances can be found in the 'Agreement Sheet' included below.

Non-conformances relate to DWA findings where requirements of the approved WSP were not met, where the on-site visit has identified critical inadequacies in the approved WSP, or where a significant omission has been identified.

Recommendations are suggestions where the DWA believes improvement could be made relating to good practice.

The cooperation of PNCC staff during this implementation assessment was appreciated. PNCC is commended for the clear demonstrated commitment to implementation of the WSP and for the proactive approach to addressing risks.

This final report updates the provisional report released 9/3/2017 (Report Identifier: ASH001_Ashhurst_WSPImplementation_ProvisionalReport_070617_v1) based on the agreement sheet received 13/6/2017. PNCC provided comments on all recommendations, and agreement has been reached regarding the non-conformance.

Outline of the Ashhurst Water Supply

The WSP reports that the water source for the Ashhurst water supply is groundwater abstracted from a secure aquifer of good quality with low levels of hydrogen sulphide and ammonia. The bore has been granted secure status under Section 4.5 of the Drinking Water Standards for New Zealand 2005 (Revised 2008) (DWSNZ). In addition to the main supply bore the WSP reports that a test bore

(unsecure) could be used as an emergency backup supply. This bore is not registered, and there are no records at the Palmerston North branch of the Central North Island Drinking Water Assessment Unit (CNIDWAU) reporting that the bore has ever been used for supply purposes. There was additional correspondence from Council in May prior to the implementation, and this was taken into account during the assessment.

The WSP summarises the treatment as chlorination and fluoridation. The WSP includes conflicting information about the chlorination, on page 3 the WSP states: "Chlorine is dosed at a relatively high level" and on page 5 the WSP states: "a small amount of chlorine gas is added". Chlorination is an important barrier identified in the WSP, and the implementation assessment focussed on chlorination.

The WSP reports additional treatment post-storage: "Water from the reservoirs is filtered through cartridge filters at a facility located at Oxford Street to remove iron and manganese deposits for aesthetic purposes". An on-site assessment at the polishing station was planned but was called off on the day. However filter cartridges from the polishing station were available for inspection on the day, as Joshua McIndoe had changed the cartridges prior to the on-site WSP implementation assessment.

The Ashhurst township has a population of approximately 2,800. The Ashhurst water supply is fully compliant with the DWSNZ.

WSP Implementation

Improvement Schedule

In preparation for the implementation assessment, the May 2017 version of the WSP was compared to the July 2016 version. Improvements 1 and 2 had been removed from the May 2017 version. The reason for the removal of these improvements from the WSP was explored during the implementation assessment.

Improvement 1 referred to the "replacement/repair of reservoir and reservoir specific components." When the reservoir was emptied and water-blasted, the contractor determined the reservoir was in good condition. The structural engineer was contacted and confirmed that work was not required.

Improvement 2 referred to the need to "undertake additional renewal work on water bores and headworks." PNCC advised that this improvement had been re-prioritised. The concerns around iron and manganese being linked to bore deterioration were determined to be unfounded. Electrical control equipment for the bore was upgraded in 2015/16.

Improvement 4 of the revised WSP identified that from 2017 PNCC would monitor for Trihalomethanes (THMs) in treated water. PNCC advised that the testing has started and will be carried out once/year. THMs are only a subset of all the potential disinfection by-products that may possibly be formed in Ashhurst water such as haloacetic acids (HAAs). The formation of disinfection byproducts will be dependent on water chemistry.

<p>Recommendation 1: PNCC to consider whether monitoring for other disinfection byproducts (other than THMs) is warranted.</p>

Palmerston North City agreed to monitor Total Organic carbon (TOC) instead of disinfection byproducts directly.

Improvement 5 of the revised WSP referenced work on the replacement water tobies with manifolds that have backflow functionality. This project is well advanced, and nearly 60% of the connections in Ashhurst are verifiably manifolds.

Improvements 4 and 5 have vague timeframes and it is difficult to assess whether the improvement is progressing as intended. The time frame for Improvement 4 is “from 2017’ and for Improvement 5 is “from 2016”.

Recommendation 2: PNCC to consider amending time frames for Improvement 4 and 5 to make progress against the WSP measurable.

An amended WSP was submitted with the agreement sheet.

Four new improvements have been added to the Improvement schedule. Improvements 6 – 9 in the May 2017 version of the WSP are new. PNCC advised that improvements 6 and 7 have been inserted as a result of the proceedings of the Havelock North inquiry. Improvements 8 and 9 come from the need to replace assets. This was clear evidence that the WSP was being actively used and updated appropriately.

Test Bore

Correspondence had been received from PNCC regarding work that was being done to upgrade a test bore located near the Ashhurst source. The implications for the water supply were explored during the implementation. PNCC advised the work being done by PNCC on the test bore was a response to the proceedings of the Havelock North inquiry. PNCC has commissioned work to look at the protection of the Ashhurst source, and is paying for upgrades to a test bore that is used by the farmer for farm water. This bore is located very close to the supply bore.

This implementation assessment determined that a substantial body of work was being undertaken for the Ashhurst supply to identify risks to the source water from nearby bores, and to upgrade the closest test bore to prevent aquifer contamination through the bore head. This work does not appear in the risk tables.

Non-Conformance: The work being carried out by PNCC to identify risks and further protect the source does not appear in the risk tables.

An amended WSP and risk tables was submitted with the agreement sheet. This item has been cleared.

Monitoring Records and Maintenance Schedules

As part of the implementation assessment a number of key monitoring parameters were identified (Ref 5 and 8 on table 12). The information available to the Water Asset Engineer in the PNCC office was reviewed. The online monitoring is available to the Water Asset Engineer in real time and a monthly summary report is available.

The maintenance schedules for Ref 11 and 12 were also checked. Records of routine maintenance activities were available.

Contingency Planning

During the implementation PNCC was asked whether any contingency plans had been exercised or used, and whether tropical cyclone Debbie had any impact on the water supply. No contingency plans have been used, and tropical cyclone Debbie did not affect the water supply.

Bore Head Security – On Site

On-site at the Hacketts Road water treatment plant the bore head was inspected and the routine checks undertaken were reviewed. Monthly checks are reportedly carried out on the bore head but these do not appear to be recorded anywhere – no records were available for review.

Recommendation 3: Establish a system for recording monthly checks made on-site at Hackett's Road.

PNCC agreed to establish a system by 30/6/2017.

Chlorination – On Site

The risk tables (T2 and T3) outline daily checks that are undertaken on site to verify that the chlorination system is working effectively. The results and outcomes from the daily checks are recorded in a workbook and entered manually into an electronic system (Oasis). The work sheets were checked and found to be up-to-date, with records available up to 17/5/2017 (the day before the assessment). As part of the implementation assessment the method of heating for the chlorine drum was checked (chlorine gas can liquefy at low temperatures). The chlorine gas drum was observed have appropriate heating in place.

The chlorine alarm levels were reviewed. A clear escalation policy was in place, that if the alarm was not responded to within the specified time frame it was escalated to the Senior Water Treatment Technician, and then to the Treatment Plants Manager.

Fluoridation – On Site

The fluoride dosing system was inspected, and the Senior Water Treatment Technician was able to demonstrate a good understanding of the fluoridation system and the regular checks undertaken. Appropriate checks and balances were in place. The risk tables (T4) includes references to online fluoride monitoring, but online fluoride monitoring does not appear in the WSP monitoring section. Online fluoride monitoring is not installed at Ashhurst.

Recommendation 4: Check the Ashhurst WSP risk tables for references to online fluoride monitoring and amend if necessary.

PNCC responded to this item in the agreement sheet.

Conclusion

The outcome of the assessment is that PNCC is implementing the Ashhurst WSP. PNCC demonstrated a commitment to maintaining the WSP and is actively updating the document as required. PNCC have already established a work plan to respond to the proceedings of the Havelock North inquiry. The one non-conformance identified during the assessment is an omission where PNCC have responded very quickly to a risk that has not been adequately identified, and the WSP has not kept pace with the work plan despite the recent revision.

Under the Health Act, this supply falls into the category of a minor drinking water supply. The Act requires that PNCC starts to implement the WSP within 1 month after the date on which that risk management plan is approved.

These results relate only to the Ashhurst water supply (ASH001).

Information in this report may be provided to the Ministry of Health at their request. With the exception of the Ministry of Health, this report shall not be reproduced without the approval of the Central North Island Drinking Water Assessment Unit and PNCC.

Completed 14/6/2017



Peter Wood
Drinking Water Assessor
Central North Island Drinking Water Assessment Unit (Palmerston North Branch)

Definitions:

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Assessment Report Information

Report identifier	ASH001_Ashhurst_WSPImplementation_FinalReport_140617_v1
Drinking Water Assessment Unit (Inspection Body)	Central North Island Drinking Water Assessment Unit Public Health Unit MidCentral Health Private Bag 11-036 Palmerston North 06 350 9110
Drinking Water Assessor	Peter Wood
Assessment Date	18/5/2017 – 19/5/2017
Description of assessment work	Assessment of implementation of Water Safety Plan for Ashhurst (ASH001): Ashhurst Bore (G00110); Ashhurst water treatment plant (TP00158); Ashhurst township (ASH001AS) distribution zone.
Equipment Used	Nil
Water Supply Owner / Person Responsible	Palmerston North City Council Dora Luo; Water Asset Engineer Mike Monaghan; Treatment Plants Manager Joshua McIndoe; Senior Water Treatment Technician
Assessment method	Standard assessment as per Scope Procedure 4 Standard specified in Part 2A of Health Act 1956
Documents and Information	Health Act 1956 Drinking Water Standards for New Zealand 2005 (Revised 2008) Ashhurst Water Supply Water Safety Plan July 2016 Ashhurst Water Supply Water Safety Plan May 2017
Site of Assessment	Palmerston North City Council Offices Ashhurst Water treatment Plant (Hacketts Road) Palmerston North Public Health Unit
Omissions from proposed assessment	The Oxford Street polishing station was omitted from the assessment.
Sub-contracted work	Nil
Document checked by:	Reynold Ball Drinking Water Assessor 14/6/2017
Release of report authorised by:	Peter Wood IANZ Accredited Drinking Water Assessor  Signature: Date: 14/6/2017

If you do not agree with the findings of this report a written appeal must be lodged with the Technical Manager, *Peter Wood, MidCentral Public Health Services, PO Box 11036, Palmerston North 4442*, within 2 months of receipt of this report. The Technical Manager will arrange for a review to be undertaken using the Ministry of Health appeals procedure.