

Report on adequacy of a Drinking Water Supply's Water Safety Plan

Drinking Water Supply
Bunnythorpe (BUN001)

Central North Island Drinking Water Assessment Unit
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Report Identifier
BUN001_Bunnythorpe_WSPAdequacy_060617_v1

Executive Summary

On Thursday 18/5/2017 the January 2017 version of the Bunnythorpe Water Supply Water Safety Plan (WSP) was received by the Palmerston North branch of the Central North Island Drinking Water Assessment Unit (CNIDWAU). The WSP was assessed against the requirements of the Health Act 1956 (as amended) (the Act) using the National Drinking Water Co-ordination Service Scope 3 Procedure: Verifying Adequacy of WSPs.

The WSP has been approved.

The findings of a WSP adequacy assessment can be split into two types:

Non-conformances - These are areas of the WSP that must be corrected or amended before the plan can be approved. No non-conformances were identified during the assessment of the January 2017 version of the WSP.

Recommendations - These are areas of the WSP where suggestions for improvement have been made. These changes can wait until the plan is next reviewed and will not affect approval of the plan. Seven recommendations were identified during the assessment of the January 2017 version of the WSP.

Palmerston North City Council is commended for preparing the WSP in-house.

Description of drinking water supply

The WSP reports that the water source comprises groundwater abstracted from a confined aquifer. The Raymond St. bore is reported to be 202m deep with 150mm casing. Chlorine is dosed to provide a disinfectant residual level target of 0.2ppm to prevent the growth of bacteria in the network. The treated bore water is gravity fed to a single 154m³ reservoir, which has capacity to supply Bunnythorpe for 20 hours at average flow. The water from the reservoir feeds directly into the reticulation network with no further treatment. The water supply reticulation comprises 5.4 km of pipelines, supplying approximately 183 service connections and is operated as a single pressure zone. The WSP applies to Bunnythorpe only.

WSP Verification – Adequacy of Risk Assessment Methodology

The Bunnythorpe WSP is written based on the Ministry of Health WSP guides. The basis for the WSP is outlined in Section 1 page 1. The Ministry of Health guides that were used to construct the plan are listed on pages 1 and 2 of the WSP. No significant deviation from the Ministry of Health guides was identified during the assessment of the WSP. Detailed risk tables were provided in a separate spreadsheet. The information in the guides has been adapted so that it is specific for Palmerston North City Council (PNCC).

WSP Verification – Adequacy of Risk Assessment and Risk Management

The WSP outlines the ownership of the Bunnythorpe Water Supply in Section 2.2 (page 4). The operations, monitoring and control for the water supply can be found in Section 2.6. The site location is described in Section 2.1, and a map is provided in Figure 1 (page 3). PNCC prepared the

plan in house (Section 1 page 1). A narrative description of the Bunnythorpe water supply is found in Section 2 of the WSP (pages 3 – 5). The supply is very straightforward and the narrative description is sufficient to gain an understanding of the system. A schematic is included as Appendix A. No omissions were identified during the assessment of the WSP. The description aligns with information held on the Public Health Service files.

The WSP identifies barriers to contamination in Section 4 (page 7) of the WSP. Four barriers are listed, and there are bullet points that describe what is in place for each barrier. The WSP could be enhanced with a statement of how effective the barrier is considered to be based on the Risk Information Tables that have been provided with the WSP.

Recommendation 1: Consider including a statement on whether the barriers in place are considered to be effective.

The risk assessment covers all the items in the supply description. Risk tables were provided in a separate file in spreadsheet form, and these tables cover source/abstraction, treatment, distribution and general matters (staff training and monitoring). The risk assessment appears to be complete. No omissions were identified during the review of the tables when assessing the WSP. The distribution zone is adequately covered in the WSP. Possible causes for each event are specifically identified in a separate column in the risk table.

Many of the proposed corrective actions in the risk tables do not appear as improvements in the Improvement Schedule. However the risk tables appear to have been generated for the Palmerston North supply and sectioned off for the Bunnythorpe supply. There are some minor tweaks that are appropriate in the risk tables. For example:

- No mention of residence time testing was identified in the Source and Abstraction risk table. It is in Section 8.2 but could be more explicitly identified in the “Monitoring – What to Check” column of the risk tables.
- Check that overflow level is below inlet level has not been carried over from the Risk Tables into the WSP (this is linked to a source protection action, and would have minimal cost associated with it).
- Security Fencing of bore sites has not been carried over from the Risk Tables into the WSP (the barrier table indicates that the well is already fenced off).
- Service reservoir roof replacement has not been carried over from the Risk Tables into the WSP.
- The information regarding pipe condition assessment and renewal programme should be checked and amended where appropriate. This links to two other proposed corrective actions in the risk tables; Renewal of AC (Asbestos Cement?) pipes as part of renewal programme. Renewal of CI (Cast Iron?) pipes as part of renewal programme. There is no indication of cast iron pipes in the WSP.
- In the Risk tables PNCC proposes to investigate risks associated with mixing of bore and Turitea water sources. This is not a current issue as Bunnythorpe is not connected to Palmerston North yet. Even when the Bunnythorpe supply is connected to Palmerston North City it is unlikely that Turitea water will reach Bunnythorpe – after connection water from Palmerston North is more likely to be bore water.
- Implement Water Supply Development Plan actions could be expanded upon.

None of the barriers, existing preventative measures, or existing contingencies are absent. However the WSP needs to be re-checked against the risk tables and appropriate amendments made for consistency.

Recommendation 2: Review the risk tables to ensure that all the details apply to Bunnythorpe.

The events have all been assessed using a consequence and likelihood scale. The analysis has been undertaken on the event with existing preventative measures and monitoring in place. An overall residual risk is provided for each event. The basis for the consequence and likelihood ratings are provided in Section 5 of the WSP. There are a number of items in the risk tables that have a high residual risk. Issues with the water quality and public health are identified in the consequence rating that is applied to the risk.

Existing preventative measures are listed for all the events. The risk assessment has been carried out in the context of existing preventative measures being in place. Monitoring is identified for all the events/preventative measures. In addition there are signs that action is needed identified for each event.

The monitoring plan covers all tests required for DWSNZ compliance. In addition the secure bore water is chlorinated, FAC and turbidity is monitored continuously. There are also alarms based on pressure and flow.

Current controls that are in place in the event of an issue are listed on the risk tables in a column labelled Existing Contingency. These are likely to address the event, but may not reduce the likelihood of the risk occurring again. For example the existing contingency for SA1 is to take the bore out of service. This will not reduce the likelihood of the risk occurring again, and will leave Bunnythorpe without a source of drinking water, creating additional risks. The proposed corrective actions in the final column mitigate these risks.

The WSP includes an Improvement Schedule in Section 7. The proposed corrective actions in the risk tables were compared to the Improvement Schedule. The supply is currently compliant with the DWSNZ. No improvements are required for the supply to comply.

A PNCC staff member (identified by both name and position) is assigned to each improvement. A time frame is identified for each improvement. Some of the time frames are identified as ongoing. It is more appropriate for targets to be SMART (Specific, Measurable, Agreed upon, Realistic and Time-based). Annual measurable targets are better than nebulous time frames.

Recommendation 3: Review the “ongoing” time frames in the Improvement Schedule.

The WSP reports that improvements have been prioritised from high to low according to the existing risk level and from low to high on cost. The order of the improvements could be assumed to represent the priority, however a priority column is given in the table – this priority column is blank.

Recommendation 4: Amend the Improvement Schedule to ensure the priority is in the appropriate place.

Section 69Z(2) of the Act requires that costs and benefits of the mechanisms identified for preventing (or reducing or eliminating) public health risks are estimated. A cost estimate is listed for each improvement on the improvement schedule. There is also a column on the improvement schedule that identifies the benefit of each improvement with a narrative description of the benefit the improvement is intended to provide.

Contingency plans are included in Section 9 of the WSP. The contingency plans are in the form of events. Each of the events has Indicators, Required Actions, and a Responsibility is assigned. The

tables are generic, and these contingency plans should be subjected to a desk-top exercise during the life of the plan.

Recommendation 5: Run desk-top exercises on the contingency plans during the life of the WSP and modify if necessary.

Section 10 of the WSP (page 27) sets the review process for the WSP. The first comprehensive review is scheduled for 2021. Brief instructions for the review of the plan are included in this section. In addition to these instructions it is appropriate to refer back to incidents and near misses to assess whether improvements to the WSP or supporting documents are required.

Recommendation 6: Consider revising the instructions for the review to make them more comprehensive in future iterations of the plan.

WSP progress reporting is covered in two lines that form Section 11 (page 27). In addition to the reports in the report in the WSP that will be submitted to the Drinking Water Assessor, we consider it is appropriate for Council internal reporting to be summarised.

Recommendation 7: Include internal reporting to Council management in the WSP.

No other quality systems are referenced in the WSP. There are references to other Council documents, including the Water Supply Asset Management Plan 2014, the Water Supply Bylaw and Bylaw Administration Manual/Backflow Prevention Policy 2015, and the Water Supply Development Plan 2015.

Decision

The WSP for Bunnythorpe (BUN001) has been approved.

Please be aware that under the Act, this water supply is not legally required to have an approved WSP. However the water supplier must take all practicable steps to comply with the Drinking Water Standards for New Zealand by 1 July 2015.

It is expected that the water supplier begin to implement this WSP within one month. Please be aware that if significant changes are made to either the processes used to treat water or to the raw water source, the WSP must be revised and re-submitted for approval by a DWA.

These results relate only to Raymond St Bore (G00914).

These results relate only to Bunnythorpe Raymond St water treatment plant (TP01205).

These results relate only to Bunnythorpe distribution zone (BUN001BU).

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 **7/6/2017**



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

Assessment Report Information

Report identifier	BUN001_Bunnythorpe_WSPAdequacy_060617_v1
Drinking Water Assessment Unit (Inspection Body)	Central North Island Drinking Water Assessment Unit Palmerston North Branch Office Private Bag 11036 Manawatu Mail Centre Palmerston North 4442
Drinking Water Assessor	Peter Wood
Assessment Date	30/05/2017 – 6/06/2017
Description of assessment work	Assessment of adequacy of Water Safety Plan for Bunnythorpe (BUN001); Raymond St Bore (G00914), Bunnythorpe Raymond St water treatment plant (TP01205), Bunnythorpe distribution zone(BUN001BU).
Equipment Used	Water information New Zealand (WINZ) version 7.0.02.118 was used to review compliance data.
Water Supply Owner / Person Responsible	Palmerston North City Council Dora Luo, Water Asset Engineer
Assessment method	Standard assessment as per Scope Procedure 3 Standard specified in Health Act 1956
Documents and Information	Drinking Water Standards for New Zealand 2005 (Revised 2008) Bunnythorpe Water Supply Water Safety Plan, January 2017 Palmerston North City Council 10 Year Plan 2015-25 Palmerston North City Council Water Supply Asset Management Plan 2014 National Drinking Water Co-ordination Service Scope 3 Procedure: Verifying Adequacy of Water Safety Plans (WSP) – 1 September 2014.
Site of Assessment	Palmerston North Public Health Unit MidCentral Health
Omissions from proposed assessment	Nil
Sub-contracted work	Nil
Document checked by:	Reynold Ball Drinking Water Assessor 7/6/2017
Release of report authorised by:	Peter Wood IANZ Accredited Drinking Water Assessor  Signature: Date: 7/6/2017

If you do not agree with the findings of this report a written appeal must be lodged with the Technical Manager, *Peter Wood, PO Box 11036, Manawatu Mail Centre, 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.