TWIZEL COMMUNITY BOARD

Membership:
John Bishop (Chairman)
Bruce White
Phil Rive
Pat Shuker
Cr Russell Armstrong

Notice is given of a meeting of the Twizel Community Board to be held on Tuesday, June 3, 2014, at 3.30pm.

VENUE*:* Council Service Centre, Twizel

BUSINESS*:* As per agenda attached

WAYNE BARNETT
CHIEF EXECUTIVE OFFICER

Twizel Community Board

Agenda for Tuesday, June 3, 2014

APOLOGIES
DECLARATIONS OF INTEREST

MINUTES:

Confirm and adopt as the correct record the minutes of the meeting held on Tuesday, April 22, 2014.

MATTERS UNDER ACTION

VISITOR: Darrin Burgess from Falstone Hospitality Ltd will attend to address the community board regarding the Top Hut frontage upgrade on Tasman Road.

REPORTS:

1. Twizel Water Supply Upgrade (attached).
2. Community Facilities Fees and Charges (attached).
3. Ward member's report (verbal report).
4. Reports from members who represent the Community Board on other committees (verbal report).

GENERAL BUSINESS:

1. Twizel Information Centre Opening Hours – a letter from the Twizel Promotion and Development Association is attached.
2. Name change for Glen Lyon Road (Chairman to speak).
3. Update on Genesis canal roads (Chairman to speak).
4. Request for community board updates in the Twizel Update (Mayor to speak).

PUBLIC EXCLUDED:

Resolve that the public, be excluded from the following part of the proceedings of this meeting namely: Previous minutes of the Twizel Community Board meeting, April 22, 2014.

General subject of each matter to be considered	**Reason for passing this resolution in relation to each matter**	**Ground(s) under section 48(1) for the passing of this resolution**
Previous minutes April 22, 2014.	Enable commercial negotiations	48(1)(a)(i)

This resolution is made in reliance on Section 48(1)(a)(i) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by Section 6 or Section 7 of that Act, which would be prejudiced by the holding of the whole or the relevant part of the proceedings of the meeting in public are as follows: Previous minutes Twizel Community Board s*ection 7(2)(i).*

MACKENZIE DISTRICT COUNCIL

MINUTES OF A MEETING OF THE TWIZEL COMMUNITY BOARD HELD IN THE COUNCIL SERVICE CENTRE, TWIZEL ON TUESDAY, APRIL 22, 2014 AT 4PM

PRESENT:

John Bishop (Chairman)
Bruce White
Pat Shuker
Cr Russell Armstrong

IN ATTENDANCE:

Wayne Barnett (Chief Executive)
Garth Nixon (Community Facilities Manager)
Arlene Goss (Committee Clerk)

One member of the public

APOLOGIES:

An apology was received from the Mayor Claire Barlow and board member Phil Rive.

DECLARATIONS OF INTEREST:

There were no declarations of interest.

MINUTES:

Resolved that the minutes of the meeting of the Twizel Community Board held on March 10, 2014, be confirmed and adopted as the correct record of the meeting.

Bruce White/Pat Shuker

The board discussed several items included in the minutes. The greenway fencing has been done and looks good. Progress on other greenways will depend on how the budget is going. There has been no progress on the issue of the Twizel Youth Centre as Garth Nixon is still waiting to hear back from them. The builder is doing remedial work as covered by insurance. The Mayor and chairman attended the Maadi Cup opening parade and enjoyed it.

TWIZEL COMMUNITY BOARD MATTERS UNDER ACTION:

The chairman asked regarding a pile of screened soil. Whitestone have been using it on various projects. The committee were otherwise happy with progress listed under Matters Under Action on page 9 of the agenda.

FINANCIAL REPORT TO FEBRUARY, 2014:

The community board considered a report from Finance and Administration manager Paul Morris. The chief executive went through this report page by page and explained variances.

Questions were asked regarding rating for the new Twizel Water Supply. Bruce White asked why there was a need to borrow so much when there is already money in the bank for water. The chief executive said the money in reserve was more than a million dollars. The total spend will be about $2.6 million, resulting in a deficit of $1.6 million. Twizel would be paying interest on this amount.

Cr Armstrong asked if more money would need to be borrowed next year. The chief executive said this further work can be delayed but there is depreciation, capital and interest to pay. There will be an increase next year because depreciation will begin, but the amount spent will not be as much as what is spent this year.

Pat Shuker asked what the money would be spent on. It would be a re-build of the wells, new pumps and new treatment plant. She asked why the water needs to be treated, as when she first came to Twizel the water was great. The chief executive said the water previously was not safe. It got pumped out of a well, put into a pond, and ducks and animals in the pond resulted in poor water. The Medical Officer of Health instructed council to put chlorine in the water to make it safe. The design of the new treatment plant is to meet the NZ drinking water standards.

The chairman said the community board were not happy about this. He asked what will change if the pond is not covered to keep animals out. The community board have heard different messages regarding water quality in Twizel and feel some confusion regarding this issue.

The community board is proposing to have a workshop with Opus on May 7th to ask technical questions and seek information.

Garth Nixon spoke regarding the section of the financial report related to his areas of responsibility – community facilities. A question was asked regarding swimming pool staffing levels and use of lifeguards. People who use the pool are happy with the service.

A question was asked regarding whether there has been a financial difference with Whitestone mowing the school grounds instead of the school doing it. This is an agreement where community board is mowing the school grounds in return for public use of the grounds. The school is also paying for their water instead of paying for mowing.

The chairman said these financial reports are essential and he thanked the chief executive for presenting the report.

Resolved that the report be received.

Russell Armstrong/Bruce White

REQUEST FOR REVIEW OF ANNUAL GRANT FROM TWIZEL COMMUNITY CARE TRUST:

Garth Nixon explained the background to this issue as outlined in his report. There have been various funding arrangements in the past. The current agreement runs until June 2015. The chairman and Garth Nixon met with trust representatives and subsequently received information from the trust.

He would like to see a community board member on the board of the trust to get a better idea of what they need and how council can best support them.

The trust has employed a social development worker using a grant from the Department of Internal Affairs. This is separate to the request that has come to the community board. The chairman referred to a requirement that they supply a quarterly report to the community board. One of these is included on page 39 and 40 of the agenda.

Bruce White offered to represent the community board on the Twizel Community Care Trust Board.

Resolved:

1. That Bruce White represent the Twizel Community Board on the Twizel Community Care Trust Board.

John Bishop/Pat Shuker

2. That the report be received.

John Bishop/Russell Armstrong

3. That The Twizel Community Board decline this request in the interim and seek further information.

John Bishop/Russell Armstrong

GRANT REQUEST FROM TPDA:

This request on page 41 of the agenda was introduced by Garth Nixon. It was originally put to council who referred it to the community board. The request is for a grant to support the Twizel 30 Year celebrations by paying the cost of the hall hire.

The community board discussed the usual practice to charge for tickets or entrance to pay the cost of hall hire. There was not enough information in the request to determine if there would be an entry fee. The town will benefit from bringing a number of people here for the event.

The chairman said he would like to support this but questioned whether it should be supported in full. He suggested a grant of $200.

This does fit the criteria as it benefits the whole town. Cr Armstrong wasn't sure if the people planning this event were committed to going ahead. However granting money towards the hall hire would not impact until the hall was hired. If the event does not go ahead the community board would not need to pay the grant.

Resolved:

1. That the report be received.

Russell Armstrong/Bruce White

2. That the Twizel Community Board approves a partial grant of $200 towards the cost of the hall hire for the Twizel 30 Year Celebrations.

Russell Armstrong/Bruce White

GRANT REQUEST FROM SADD:

The board originally declined this request at its meeting on January 27, 2014. It then went to council who appeared to support the idea of paying half the amount, and was now coming back to the community board to be considered a second time.

Community board member Bruce White declared a conflict of interest because he works with the applicant Michele O'Carroll and was involved in the project.

There was some discussion on the different recollection of events from different parties regarding a warning given to the SADD team that they would be required to pay a fee for resource consent.

The chairman said the community board is planning a working bee at Northwest Arch and if the school could contribute some students to help with the working bee he would be happy to pay for half of the fee, with council having agreed to pay the other half.

Resolved that the Twizel Community Board approve the request from the Students Against Drink Driving and grant 50% of the request at $243.75, and request that council fund the other 50%, subject to Students Against Drink Driving coming to the working bee at Northwest Arch.

Russell Armstrong/Pat Shuker

The motion was passed. Bruce White abstained from voting due to his conflict of interest.

The chairman requested that a letter be sent to the SADD team to inform them of this resolution.

WARD MEMBER'S REPORT:

Cr Russell Armstrong has nothing to report.

REPORTS FROM MEMBERS WHO REPRESENT THE COMMUNITY BOARD ON OTHER COMMITTEES:

There were no reports from members who represent the community board on other committees.

GENERAL BUSINESS:

The chairman tabled $80 cash paid to him for the use of the community board mulcher. This money was received by committee secretary Arlene Goss for banking.

LETTER FROM TWIZEL SWIMMING CLUB:

The letter from the Twizel Swimming Club on page 59 of the agenda was considered by the community board. Garth Nixon said traditionally swimming lessons were held during a public session when a lifeguard was on duty for the public. The scenario mentioned in the

letter requires opening the pool specifically for the use of the swimming club and providing a lifeguard during this time. This is why the cost has risen significantly. The swimming lessons provided by the club are a good thing for the community, and other community boards subsidise swimming to a degree. He doesn't believe the club would struggle to fully fund this with a grant from a gambling trust or similar organisation.

The chairman said the pool loses $70,000 a year and is funded by ratepayers. The club have sourced funding this year from a grant and there is no reason why they couldn't apply again.

Cr Armstrong said if the swimming club applied elsewhere and were turned down they could come back to the community board and ask again.

Resolved that the report be received and no action is taken while Garth Nixon discusses alternative funding opportunities with the swimming club.

John Bishop/Russell Armstrong

PUBLIC EXCLUDED:

Resolved that the public, be excluded from the following part of the proceedings of

this meeting namely:

1. Lot 26 DP52089 26 Glen Lyon Road (attached).

General subject of each matter to be considered	Reason for passing this resolution in relation to each matter	Ground(s) under section 48(1) for the passing of this resolution
Lot 26 DP52089 26 Glen Lyon Road	Enable commercial negotiations	48(1)(a)(i)

This resolution is made in reliance on Section 48(1)(a)(i) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by Section 6 or Section 7 of that Act, which would be prejudiced by the holding of the whole or the relevant part of the proceedings of the meeting in public are as follows: *Lot 26 DP52089 26 Glen Lyon Road section 7(2)(i).*

Bruce White/Pat Shuker

THERE BEING NO FURTHER BUSINESS
THE CHAIRMAN DECLARED THE MEETING CLOSED AT 5.15PM

CHAIRMAN: _____

DATE: _____

TWIZEL COMMUNITY BOARD MATTERS UNDER ACTION:

1. **Alleyways:**
   Fencing will be completed before spring. Sufficient timber left over to carry out two more alleyways perhaps opposite Rhoboro Road and Mt Cook Street. This has been initiated by Garth.

2. **Town Projects:**
   a. Walkways:
      Tekapo Drive from Mackenzie to Glen Lyon. Levelling and re-sowing has been completed, will be rolled again in the spring. Tekapo Drive track has been sprayed.
      Front of Town from Ruataniwha to Ostler Road.
   b. Tekapo Drive:
      Levelling and re-sowing completed, rolled again in the spring. Tekapo Drive track has been sprayed. Improve irrigation. Mulch trees.
   c. Lake Ruataniwha:
      Bollard fencing – Phil Rive has received a report of trouble with drivers on the gravel road but he has not seen evidence of this. He asked when this work would start. Garth Nixon said he would like to get fencing underway before tree felling starts. He is organising a fencing contractor.
      New road way
   d. Greenway fencing – One greenway was recently completed, one still to complete. This is being done presently.
   e. Cemetery – plan is to finish this at the same time as other work at Lake Ruataniwha.

3. **Twizel Public Toilets:**
   Council has made a decision and communicated it to the public. Chairman has requested to add the topic of the future use of the space to the agenda of a future meeting.

4. **Bike Lockup:**
   More bike space to be created when old toilets and building are removed from town centre.

5. **Twizel Youth Centre**
   Community board to wait for the Youth Centre to come back with a proposal on how they wish to proceed.

6. **First Tree Planting Plaque in Twizel**
   Plaque to be returned to as close as possible to its original location. Wakefields have been advised.

7. **TPDA Rental of Events Centre:**
   Community board will find out how much is spent on advertising before taking the issue further.

8. **Overnight Camping:**
   Community board to decide on locations of overnight camping areas so they can be included in schedule to new council bylaw and go out for public consultation.

9. **Upgrade of Twizel Footpaths:**
   The Roading Fund Reserve money will be spent on upgrading high priority Twizel footpaths. This work is to be completed within the current financial year.

10. **Community Care Trust:**
    Bruce White has been appointed to this trust. Request for review of funding has been declined with the community board seeking more information.

11. **Public Toilets at Max Smith Drive:**
    Chairman to talk to Jill Selbie regarding issues with public toilets and report back to the community board.

12. **Twizel Swimming Club Enquiry Regarding Pool Hire Costs:**
    Garth Nixon to discuss alternative funding opportunities with the swimming club.

TWIZEL COMMUNITY BOARD

REPORT TO: TWIZEL COMMUNITY BOARD

FROM: ASSET MANAGER

SUBJECT: TWIZEL WATER SUPPLY UPGRADE

MEETING DATE: 3rd June 2014

REF: WAS 16/25

ENDORSED BY: CHIEF EXECUTIVE OFFICER

REASON FOR REPORT

To update the Community Board on the progress with the Twizel water supply project.

RECOMMENDATION:

1. That the report be received.

Article I.

BERNIE HAAR	**WAYNE BARNETT**
ASSET MANAGER	**CHIEF EXECUTIVE OFFICER**

Twizel Water Supply - Proposed upgrade to meet Drinking Water Standards and Rebuild the Aging Plant

The table below sets out the work progress and decisions required.

Item	Outcome
1) Replacement Twizel Wellfield Pump This is a Goulds, Type 11- CNLC-1	Completed
2) Twizel Water Alkalinity and pH Adjustment The Asbestos Cement water pipe network is deteriorating from the inside with large scale replacement required from about 2020. As part of the water supply improvements it was appropriate to consider whether pH adjustment would extend the life of the AC pipe	Completed
3) Twizel Reservoir Liner Replacement The current liner is showing areas of deterioration. With the reservoir it was necessary to consider the life of the existing liner and what technically would be required to replace it, Is leakage through the embankment from the damaged areas of liner visible? If so, could a temporary repair be made? What is anticipated remaining life of the liner? If liner replacement is to proceed, when would it be programmed?	A report is being prepared covering life remaining, replacement material options, cover options and advantages/disadvantages, replacement procedure issues, and replacement timing. Draft report will be completed shortly. Climate and Water Demand matching will determine the installation period. Consumers will be informed and cooperation requested.

4) Twizel water - Bench scale testing of 1um cartridges for turbidity removal As mentioned in the Water Supply Options report, Cartridge filtration is the most economic form of filtration for achieving log credits and has the advantage of not requiring the use of coagulants (with the resulting problem of waste disposal). However, cartridge filtration requires clean source water. Testing of 1um cartridges will be needed to gain information on the life of the cartridges and also whether they will remove sufficient small sized turbidity. A test set-up will be installed in the pump room with the sample taken downstream of the 25 um mesh filter.	Samples for Filtec, and particle sizing, have been taken and sent away for testing. On-line testing to start as soon as possible. Photos of inside building supplied by Geoff. Opus to design and detail set-up. This information to go to Geoff to arrange installation. Opus to prepare testing procedure and record sheets for operating Contractor (Whitestone Contracting Ltd).
5) Twizel water — Possible alteration of Screens (Log credit reduction) The three screens per well have been positioned to correspond with areas giving the highest flow rates. The screens are located at depths 5.2-7.0m, 9.5-11.3m, and 13.7-15.5m. Pump intake was positioned immediately above the lowest screen so that water would flow over the motor casing to effect cooling. Video of the No. 1 well shows maximum blockage of the screens at the lowest screen. Moderate blockage of top screen, least blockage at centre screen. It is not known if screening below l0m would allow sufficient flow to be extracted from the wells. Camera inspection of No. 2 Well to be arranged.	The vacant well was videoed recently but due to the amount of rust and sludge on the well casing the screen will be cleaned by brushing or jetting and then re-videoed. This work is being arranged
6) Twizel Water PHRMP Will be delayed until better idea of forward programme is known. Approved PHRMP must be in place by 1 July 2014. Therefore must be submitted to DWA no later than mid-May 2014.	Opus have been tasked to complete this and lodge it with the Ministry of Health to meet their deadlines. This has been lodged and is also attached to this report for information. Once approved we will be compliant with DWS.

7) Twizel - Policy on Fire fighting, Domestic supplies, and (reserves) Irrigation **Fire fighting** Confirm that FW2 (PAS 4509:2008) classification required for Twizel with on-site storage in restricted supply areas (30 m3 tanks with 20 m3 for firefighting). FW3 to be allowed for Twizel CBD area. **Domestic Supplies** Water supply "on-demand" and "restricted supply" areas as shown in MDC Activity Plan (2011) Figure 3.5.6a. Restricted supply-1 unit per property per day (1,820 litres). **(Reserves) Irrigation** Will decision on irrigation supplies be made before modelling undertaken, or will modelling be used to aid decision?	Confirmed. We have supplied Opus with the copy of the plan detailing Council policy showing those areas of "on-demand" and "restricted supply". Flow monitoring has been carried out on the irrigation lines to determine the volumes of water used for irrigation so that this can be allowed for in the design.
8) Twizel Information Reticulation Modelling What has changed since 2009? New connections Updated water records Any changes to the operating of the secondary (booster) pumps Reserve irrigation volumes?	List of new connections and increased demand confirmed. Review of Zones in the District Plan completed to determine the future area to be serviced completed. All this information is being feed into the Hydraulic Model to confirm the future demand and therefore sizing of the pump sets etc. Data Loggers positioned around town in various locations collecting mains pressure data.
9) Twizel Booster Pumps	The existing plant room will have to be measured up and then assessed to see how the new pump set can best fit in the building whilst keeping parts of it operational during the fit out. Completed
10) Telemetry Review the current Scada systems available on the market to see what can best meet our needs.	Completed. Reviewed both SMS, internet and radio link systems. Radio is clearly the best and of the three packages available, it has been decided to use the "Lester Abbey" system as it best meets our needs and is also used by our neighbours. This provides the opportunity for sharing of technical support, training and collaboration.

Twizel Drinking-water Supply

Water Safety Plan

Contents

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1 Revision Details

Version No	Description	Approved	Revision Date
V1	For approval by DWA		2019

This plan will be revised and submitted for approval before 1 January 2019.

Assessment of the performance of the plan

Assessment of the performance of the plan will be undertaken annually. The assessment will consider any events, non-compliances, near misses and unexpected situations that have occurred, progress against the improvement schedule and any changes to any of the supply elements.

Reporting of the plan

A brief report on the performance of the plan, including information from the assessment of the plan will be provided by the Utilities Manager to the Asset Manager annually on the anniversary of finalisation of the plan.

Links to other quality systems

This Water Safety Plan (WSP) will be linked to the Annual Plan, the Asset Management Plan for Water Supplies and the Council Long Term Plan.

2 Introduction

This WSP has been prepared for the Twizel drinking-water supply to identify potential events that present public health risks to the consumers of the drinking water supply. Mackenzie District Council is committed to the WSP and to the future improvements to the supply that have been identified in this WSP.

The Twizel supply is unusual because it has a base population of 1300 which swells to as many as 11,000 over the summer holiday period and during the Maadi Cup rowing tournament. The supply was constructed in 1969 when the township was established as a camp for workers constructing the Upper Waitaki Hydroelectricity Scheme in the region. Since that time Twizel has become established with a permanent population and a number of holiday homes. The community has the normal social infrastructure of a community of this size with a school, Council Office, cafes, Holiday Park and service station. Twizel Township now supports local outdoor recreational activities and businesses.

The Twizel drinking water supply is classified as a minor drinking-water supply under the Health (Drinking Water) Amendment Act 2007 and provides water to a total population of approximately 1300 people (WINZ). There are 1402 connections and 368 sections in the Twizel water supply area.

The water is sourced from three shallow bores and chlorinated before being distributed to consumers in the Twizel Township. Council intends significant upgrading to the supply over the next five years, the details of which are contained in this plan.

The supply is administered at the main council offices in Main Street, Farlie and managed by the Asset Manager. Operation of the supply is carried out by Whitestone Contracting, under contract to Mackenzie District Council

The management, maintenance and operation of the Twizel drinking-water supply are the responsibility of:

- Asset Manager – Bernie Haar
- Utilities Manager – Geoff Horler
- Treatment Plant Operators – Dave Officer, Byan Wall

3 Supply Details

Table 1. Summary of Twizel water supply details

Supply Details	
Supply Name	Twizel
WINZ Community Code	TWI001
Supply Owner	Mackenzie District Council
Asset Manager	Bernie Haar
Utilities Manager	Geoff Horler
Operators	Dave Officer, Byan Wall
Population Served by Supply	1300 (WINZ register 2014)
Source Details	
Source Name	Twizel Wells
Source WINZ Code	G00247
Type of Source	Groundwater
Consent Number	CRC042741
Consent Expires	20 August 2047
Maximum Consented water take:	130L/s. Maximum rate of 4600m^3/day with maximum of 10,000 m^3/day for no more than 3 days. 1,440,000m^3/year
Grid Reference of Source (NZMG)	
Spring	**Easting** : 2278038 **Northing** : 5658344
Treatment	
Location	Glen Lyon Road
WINZ Code	TP00368
Treatment Processes	Chlorination
Average Daily Volume	2930 m^3/day
Peak Daily Volume	8000 m^3/day
Distribution	
Distribution Zone Name	Twizel
Distribution Zone WINZ Code	TWI001TW
Distribution Zone Population	1300 (WINZ register 2014)

4 Description of the Twizel Water Supply

The Twizel drinking water supply is a simple one and was installed in 1969 when the town was established to accommodate workers on the Upper Waitaki Hydroelectricity Scheme. When the scheme was completed it was intended to dis-establish the town, but after public representations, the town was retained and became a holiday home destination. The town has since grown and now supports a range of tourist activities. The drinking-water supply originally included fluoridation and chlorination however these were removed at the end of the hydroelectricity project. Water was then supplied untreated until Council re-installed chlorine dosing equipment in 2011.

The supply currently abstracts water from three shallow bores in alluvial gravel just outside the town on the northern side of Glen Lyon Road adjacent to the Fraser Stream. Two bores are generally used over summer and on an alternate basis during winter. The third bore is retained as a backup.

The bores are drilled to about 20 metres and screened to about 10metres A catchment risk assessment carried out in 2011 identified a need for 4 log protozoa for the supply The abstracted water is of good quality though copper and lead have been assigned as Priority 2 determinands under the Drinking Water Standards for New Zealand 2005 (R2008) (DWSNZ). These determinands are likely to have resulted from leaching from tap fittings rather than being constituents of the source water. A turbidity meter and data logger record raw water turbidity continuously.

Over the last 5 years 263 samples from the supply have been analysed for *E. coli.* There have been 20 transgressions. From June 2009 to November 2011 there were 15 transgression with a number of positive results in November of 2011. This prompted Council to install the current sodium hypochlorite dosing system in December 2011. Since that time there has been 5 positive results with 2 of them being a faecal coliform positive but *E. coli* negative. In recent times all results have been negative.

Water from the bores is pumped to a 6800m^3 rubber lined raw water storage pond. A level control switch turns the bores off and on when the pond level reaches predetermined levels. From the pond, water flows under gravity to a wet well under the treatment plant/pumphouse. Prior to entering the wet well sodium hypochlorite is dosed to the water. Sodium hypochlorite is stored in a bunded plastic tank and dosed via a metered pump. The dosing rate is manually adjusted by the operators based on the flow and free available chlorine (FAC) results from a monitor on water leaving the plant. The chlorine demand varies seasonally with demand, but on average about 100 litres is used each month. Contractors deliver liquid sodium hypochlorite as required. A float valve controls the flow into the wet well. Six pumps take water from the wet well and supply it to the Twizel reticulation. Two of the pumps have variable speed drives and some pressure/balance tanks are installed to reduce water hammer. Downstream of the pumps is a 25 micron screen which removes particulate and organic material in the water, including small worms which enter the raw water pond through tears in the liner. A diesel driven pump provides water to the reticulation in the event of a power failure, starting automatically.

The supply does not currently have any telemetry and only limited on-line monitoring, but alarms to the operators are provided for power failure, raw water pond low level and low water pressure at the pumphouse which indicate that the pumps are not operating when they should be.

Weekly *E. coli* samples are collected from the source water, water at the plant and water in the reticulation. The samples are transported to Timaru and analysed by Medlab Timaru, a Ministry of Health recognised laboratory.

Granular calcium hypochlorite is applied as required, around the edges of the raw water pond, 10 litres at a time, in response to observed growth on the rubber pond liner.

The operation of the water supply, including maintenance and repairs are carried out by Whitestone Contractors Ltd, under contract to MDC.

Mackenzie District Council has begun a major upgrade of the Twizel drinking-water supply. $2.6 million has been budgeted in the next financial year to improving the bore field, provide a new water treatment plant which will comply with the DWSNZ, and to install new reticulation service pumps along with a number of other improvements. Decisions have not yet been finalised on the detail of the upgrade and further investigation of options is underway.

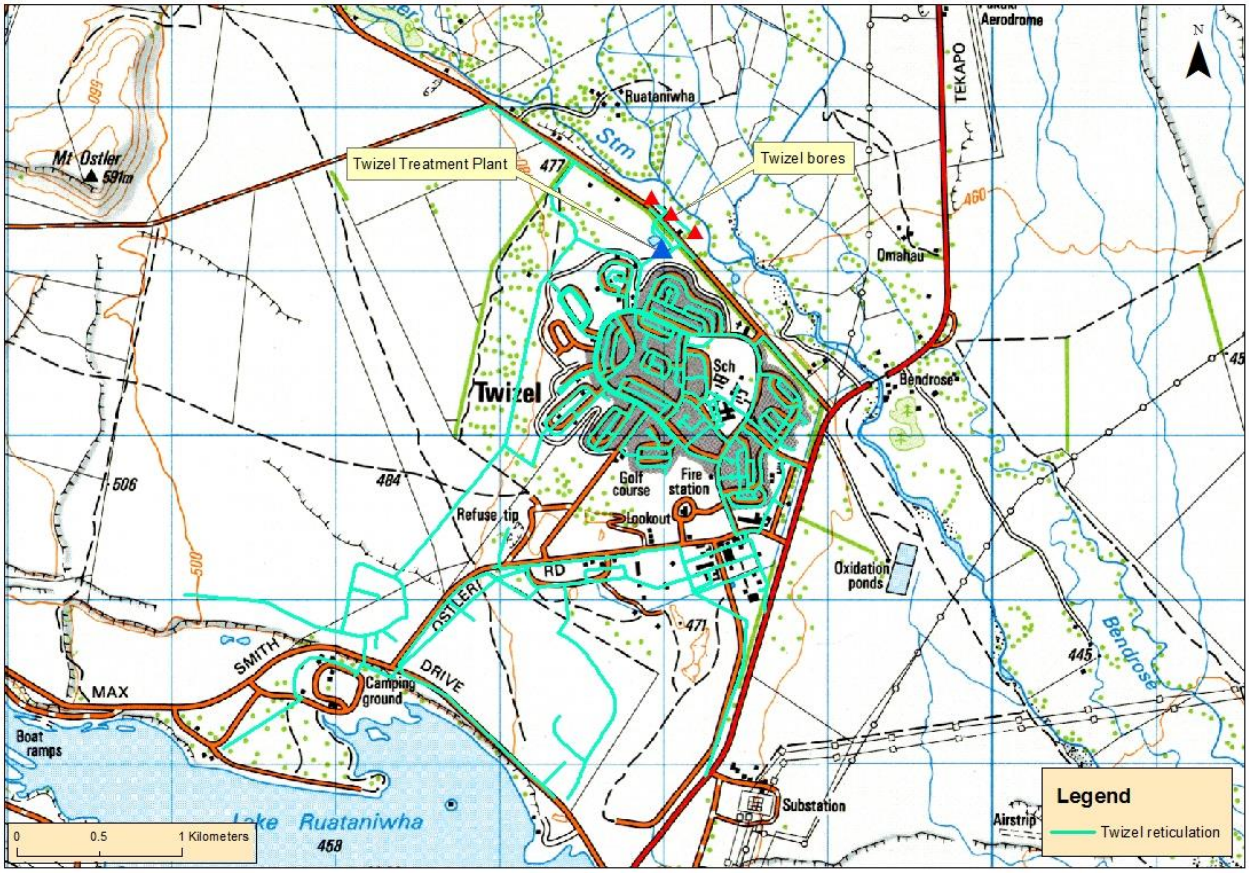


Figure 1. Location of Twizel water supply.

5 Photographs of Twizel Water Supply

Below are photos of the Twizel water supply taken during a site visit on 7 May 2014.

Figure 2. Bore cover and power box

Figure 3. Raw water storage

Figure 4. Raw water pond level indicators

Figure 5. Breaks in raw water pond liner

Figure 6. Wet well float switch

Figure 7. Pressure/balance tanks

Figure 8. Chlorine storage

Figure 9. Chlorine dosing control

Figure 10. Older pumps

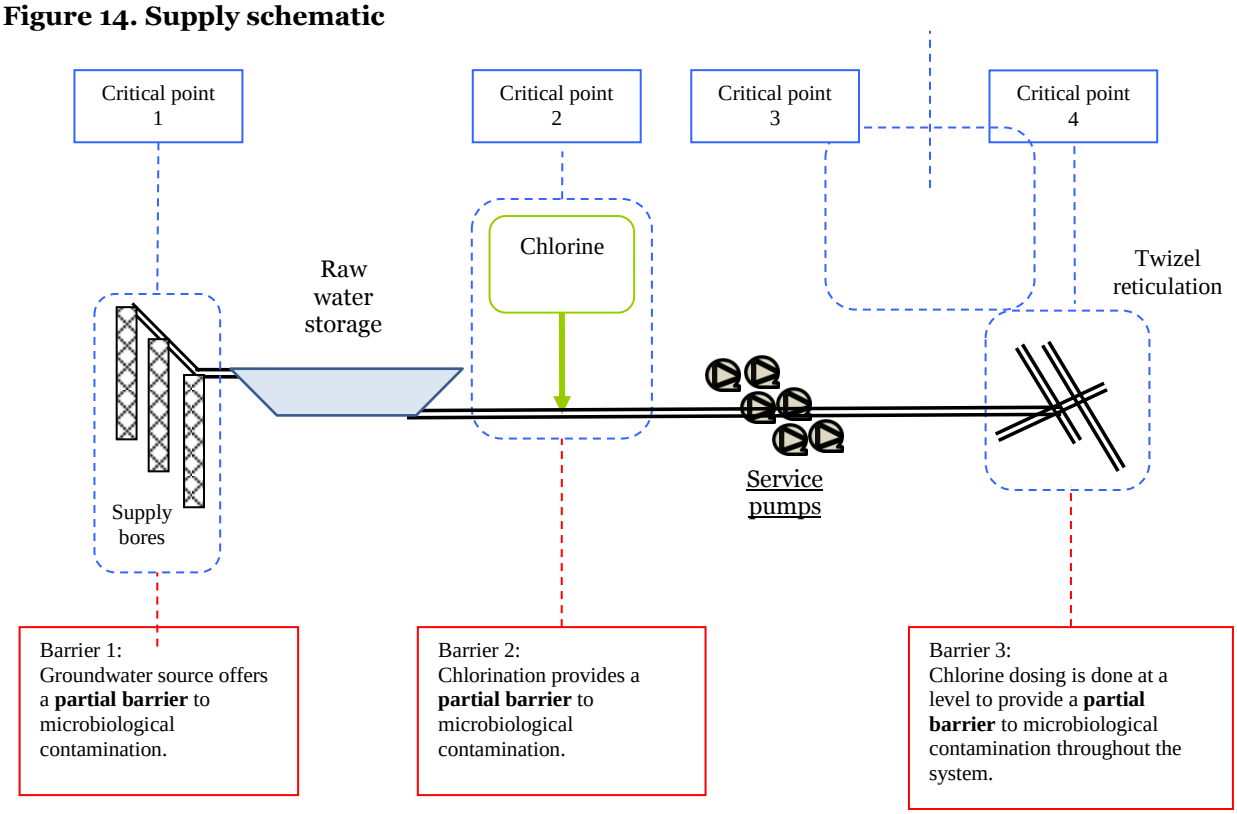
Figure 11. New pump with VSD

Figure 12. Screen filter

Figure 13. Diesel powered backup pump

6 Flow Chart/Schematic of the Supply

Figure 14. Supply schematic



7 Barriers to Contamination

Table 2. Critical Points

Critical points where hazards can be eliminated, minimised or isolated include:

	Critical Point	Description
1.	Supply bores	*Possible access point for contamination due to source water contamination*
2.	Chlorine dosing	*Failure or low dose may result in a failure to control non-protozoan micro-organisms* *Overdosing may exceed chemical MAV*
3.	Service pumps	*Pump failure may result in loss of supply pressure*
4.	Distribution system connections	*Possible access point for contamination due to backflow*

Existing barriers to contamination include:

1. Protection of the quality of the raw water source

The source is groundwater abstracted through shallow bores in alluvial gravels. The filtration effect as the water moves through the surrounding gravel provides a **partial barrier to contamination**.

2. Inactivation of pathogenic microbiological organisms

The treatment plant uses chlorination to disinfect the water against non-protozoan microbiological organisms. The catchment assessment of the Twizel water supply has found that the catchment has a low risk of contamination with protozoa. Chlorination provides a **partial barrier to contamination.**

3. Prevention of contamination of treated water while it is in the network reticulation

The following measures contribute to provision of a **partial barrier against recontamination** of water following treatment:

- Chlorine dosing is done at a level to ensure it is available to protect the water against microbiological contamination throughout the system.
- Hygiene procedures are documented and followed for all distribution system maintenance.
- Operators are trained and experienced.

8 Improvement Schedule

The improvement schedule outlines improvements that have been recommended for preventing, reducing or eliminating the identified public health risks in the Twizel drinking water supply. Possible improvements to the water supply have been identified in the 'Additional Measures That Could Be Put in Place' column of the risk tables. The most suitable option to improve the management of each uncontrolled risk has then been included in the improvement schedule. It should be noted that costs are estimates only. Each project is ranked according to the priority to which projects should be completed.

A major upgrade of the Twizel drinking-water supply at a cost of approximately $2.6 million is currently underway. The upgrade will improve the bore field, provide a new water treatment plant and replace the reticulation service pumps as well as a number of other improvements. The upgrade will result in the supply complying with the DWSNZ. Decisions have not yet been finalised on the detail of the upgrade and further investigation of options is underway.

The improvement schedule below includes improvements that will be undertaken as part of the planned supply upgrade.

Key to persons responsible: AM - Asset Manager UM - Utilities Manager

Table 3. Capital Improvements and Significant Projects

Priority	Risk level	Water Supply area	Reference to risk table	Proposed works	Person responsible	Expected cost	Intended completion date
1	Moderate	Catchment Bores Chlorination	1.1, 1.2, 2.2, 7.7	Install a treatment process to provide a barrier to protozoa	AM, UM	$1,4000,000	2017
2	Moderate	Bores	2.3	Install new bore pumps where required and upgrade the bore electrical controls and borehead piping	AM, UM	$213,000	2017
3	Moderate	Service Pumps	5.1	Replace diesel pump with a generator capable of running the electric pumps as well as other essential functions of the treatment system	AM, UM	$160,000	2017
4	Moderate	Catchment	2.1	Investigate installing security fences around the bores and power boxes	AM, UM	$10,000	2018
5	Moderate	Service Pumps	5.2, 5.3, 5.4	Replace service pumps with modern, efficient units that have variable speed controls and soft starts.	AM, UM	$265,000	2017
6	Moderate	Chlorination	4.1	Investigate installing treated water storage to provide chlorine contact time or a treatment process that does not require contact time for effective disinfection	AM, UM	$5000 Investigation only	2017
7	Moderate	Chlorination Other	4.3, 4.6, 4.7, 7.2, 7.6	Install telemetry to provide on-line FAC data to the Council office with alarms to operators (if upgraded treatment includes chlorination)	AM, UM	$60,000	2017
8	Moderate	Chlorination	4.4, 4.5, 4.8	Investigate installing automated chlorine dosing with dose rate determined by downstream chlorine analyser if chlorine is retained in treatment system	AM, UM	$5000 Investigation only	2017

Table 4. Operational Improvements and Minor Projects

Priority	Risk level	Water Supply area	Reference to risk table	Proposed works	Person responsible	Expected cost	Intended completion date
1	High	Chlorination	4.2	Investigate the benefits of changing to gas chlorination with multiple storage cylinders with auto changeover if chlorination is retained.	AM, UM	$5000	2016
2	Moderate	Bores	2.5	Undertake cleaning of bore screen that is occluded and check the condition of all screens from time to time.	UM	Staff time	2016
4	Moderate	Catchment	1.3, 1.4	Implement regular (5 yearly) raw water chemical testing regime to test for contaminants in raw water	AM, UM	$1500	2017
5	Moderate	Reticulation	6.4	Prepare and implement a backflow policy which assesses all backflow risks and ensures all backflow devices are tested annually with results recorded by Council	AM, UM	Staff time	2017
6	Moderate	Other	7.5	Upgrade training for operators to National Certificate in Drinking Water (Operator)	AM, UM	$5000 Staff time	2017

9 Benefits of Proposed Improvements

The proposed improvements will provide public health benefits by reducing the risk of adverse health outcomes associated with poor drinking water quality.

Installation of treatment processes to reduce turbidity and provide a protozoa barrier will reduce the risks of illness in consumers of water from the supply. Improved monitoring and telemetry will improve the operation of the supply. Installation of new service pumps and a generator will improve the reliability of the supply

When the proposed upgrades are completed it is expected that the supply will comply with the DWSNZ.

10 Methodology

This WSP has been prepared consistent with the approaches recommended by the Ministry of Health. Supporting documents include the PHRMP Guides and *A Framework on How to Prepare and Develop Public Health Risk Management Plans for Drinking-water Supplies*, Ministry of Health (2005). A qualitative risk assessment approach has been taken following the guidance notes in Appendix 2 of the "Framework" allowing the prioritisation of improvement needs and development of the Improvement Schedule.

Risk tables have been prepared which identify the event, cause, risk without preventative measures, indicators that the event may be occurring, preventative measures that are currently in place to prevent the event, whether the risk is controlled, the residual risk, additional measures that could be put in place and the person(s) who is primarily responsible for managing that risk. The risk without preventative measures provides an indication of the risk level of the event related to that cause if nothing was in place to prevent the event. The residual risk is the remaining level of risk, taking account of the measures that are in place to prevent the event related to that cause.

Indicative cost estimates and implementation timeframes have been prepared for the required improvement measures and included in the improvement schedule. These will be carried forward to the next Asset Management Plan (AMP) and Council Long Term Plan for approval and inclusion in annual budgets following the statutory public consultation process. Implementation of the Improvement Schedule is ultimately subject to Council funding approval.

The Asset Manager is responsible for implementation of the Improvement Schedule within the timeframes indicated, subject to community and council approvals, funding constraints and availability of resources. The Asset Manager is responsible for on-going review and updating of the WSP.

Contingency Plans have been prepared to provide guidance in the event that control measures fail to prevent the occurrence of a risk event that may present acute risk to public health. The Asset Manager and the Utilities Manager are responsible for implementation of the Contingency Plans when monitoring has identified the occurrence of a risk event.

Separate risk tables have been prepared for: catchment, bores, supply main, raw water storage, chlorination, service pumps, reticulation and other.

11 Risk Ranking Procedure

Potential public health risks have been evaluated using the Likelihood and Consequence scales tabulated below to determine a risk level – low, moderate, high, very high, or extreme. The assessed risk level allows prioritisation of the associated improvement measures.

Table 5. Likelihood Scale

Likelihood	Description
Almost certain	Is expected to occur in most circumstances.
Likely	Will probably occur (once in 1 or 2 yrs)
Possible	Might occur at some time (once in 10 yrs)
Unlikely	Could occur at some time (once in 50yrs).
Rare	Only in exceptional circumstances (once in 100yrs).

Table 6. Consequence Scale

Consequences	**Description**
Insignificant	Insignificant public health impact
Minor	Minor public health impact or inconvenience to supply users
Medium	Moderate public health impact and/or short term loss of supply
Major	Major public health impact and/or loss of supply for a long period. Small number of water-borne illnesses
Catastrophic	Major public health impact. Significant water-borne illness

Table 7. Risk Level Allocation Table

	Consequence				
Likelihood	Insignificant	Minor	Medium	Major	Catastrophic
Almost certain	Moderate	Moderate	Very High	Extreme	Extreme
Likely	Low	Moderate	High	Very High	Extreme
Possible	Low	Moderate	Moderate	Very High	Very High
Unlikely	Low	Low	Moderate	High	Very High
Rare	Low	Low	Low	Moderate	High

12 Drinking Water Standards and Grading

At the time of writing of this report the Twizel water supply does not fully comply with DWSNZ. Table 8 below shows a summary of the compliance with the drinking water standards to date. The Twizel water supply treatment plant is currently graded E and the distribution zone is graded e.

Table 8. Summary of Compliance with DWSNZ

Standards compliance assessed against	**DWSNZ 2005 (revised 2008)**
Secure bore water	NA
Bacterial compliance criteria used for water leaving the treatment plant	2B
Protozoa log removal requirement required for the supply	Assessed as 4-log protozoa treatment.
Protozoa treatment process	None in place
Compliance criteria 6A or 6B is used for water in the distribution zone.	6A
Bacterial compliance for water leaving the treatment plant has been achieved for the last 4 quarters.	No, compliance has not been demonstrated because random sampling as required by the DWS is not achievable
Protozoa compliance for water leaving the treatment plant has been achieved for the last 4 quarters.	No, compliance has not been demonstrated
Bacteria compliance for water in the distribution zone has been achieved for the last 4 quarters.	No, compliance has not been demonstrated because random sampling as required by the DWS is not achievable
P2 determinands allocated to supply	Cu, Pb
Chemical compliance achieved for the last 4 quarters.	No
Cyanobacteria identified in the supply	No
Cyano-bacterial compliance has been achieved for the last 4 quarters.	NA

13 Consultation

On May 7 2014 a site visit to the Twizel water supply was carried out by Opus with Bernie Haar, Geoff Horler and Dave Officer. An inspection of the bores, raw water storage, treatment plant/pumphouse, and other parts of the supply was undertaken. Operation of the supply was discussed including the operation and performance limits, the critical points, the treatment barriers, the risks that have been identified, how these risks are managed currently and the improvements that could be put in place.

Subsequent to the site visit further information was provided to complete the plan which was then reviewed by Bernie Haar prior to completion.

14 Monitoring Requirements

The Twizel supply is sampled for *E. coli* weekly at the treatment plant/pumphouse and in the reticulation. This frequency complies with the requirements of DWSNZ. Analysis is undertaken by a Ministry of Health recognised laboratory.

15 Contingency Plan

Table 9. Contingency Plan

Twizel Water Supply Contingency Plan	
Type of Event	***Required Contingency Action***
Severe microbiological contamination of source water (such that treatment is ineffective) **Indicators: A contamination event in the catchment may be observed by or reported to MDC staff. May also be indicated by reported illness among consumers or positive *E. coli* monitoring results.**	**Issue "Boil Water' notice** **Advise Drinking Water Assessor (DWA)** **Inspect area around bores to identify source of contamination and rectify problem as quickly as possible** **Consider provision of emergency treatment or alternative water supply (eg tankers)** **Increase chlorination level and flush mains** **Keep customers informed and advise once regular supply is restored**

Twizel Water Supply Contingency Plan	
Type of Event	***Required Contingency Action***
Chemical contamination of source water **Indicators: A contamination event in the catchment may be observed by or reported to MDC staff. May also be indicated by reported water quality concerns from consumers (taste, odour, colour) or illness among consumers.**	**Advise Drinking Water Assessor (DWA)** **Assess situation and advise customers regarding use/treatment/disposal of contaminated water** **Arrange emergency water supply (tankers) if necessary** **Inspect area around bores to identify source of contamination and rectify problem as quickly as possible** **Flush contaminated mains** **Keep customers informed and advise once regular supply is restored**
Insufficient water available for abstraction from bores. **Indicators: Observed or reported low yield from bores. Raw water reservoir level indicator.**	**Advise customers to conserve water** **Implement demand management strategies as required** **Arrange emergency water supply (tankers) if necessary** **Keep customers informed and advise once regular supply is restored.**
***E. coli* transgression in water leaving treatment plant or distribution zone** **Indicators: *E. coli* transgression reported following routine monitoring.**	**Follow transgression response procedure in DWSNZ** **Advise Drinking Water Assessor (DWA).** **Commence daily *E. coli* testing at Water Treatment Plant.** **Use an enumeration test method.** **Sample in distribution system.** **Investigate cause, inspect plant and bores.** **Take remedial action.** **Continue to sample for *E. coli* until 3 consecutive samples are free of *E. coli*.** **If *E. coli* is found in repeat samples consult with DWA, intensify remedial action, increase disinfection, consider 'Boil Water' notice, consider alternative supply.**
Inadequate chlorination **Indicators: Low FAC reported from treatment plant monitoring.**	**Inspect treatment plant to identify cause of problem and rectify as quickly as possible.** **Advise DWA and issue boil water notice if appropriate, ie if cannot reinstate adequate chlorination.** **Make arrangements for provision of emergency treatment or alternative water supply.** **Keep customers informed and advise once regular supply is restored**

16 Risk Tables

AM - Asset Manager UM - Utilities Manager TPO - Treatment Plant Operators

Table 10. Risk Tables

1. Catchment

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Risk Managed	Residual Risk	Additional Measures That Could be put in Place	Resp.
Microbiological Contamination	1.1	Surface runoff from catchment	Extreme (almost certain x major)	High raw water *E. coli* results Turbidity in raw water. Illness in community	Shallow bores provide low turbidity water Chlorination controls bacterial and viral contaminants	Partially Doesn't meet DWSNZ protozoa requirements	Moderate (unlikely x medium)	Install a treatment process to provide a barrier to protozoa	AM UM
Microbiological contamination	1.2	Discharges from community wastewater systems, dairy effluent ponds or septic tank systems.	Very high (possible x major)	High raw water *E. coli* results. Turbidity in raw water. Illness in community	No dairy or community wastewater discharges in catchment and only a few septic tanks. Shallow bores provide good quality water Chlorination controls bacterial and viral contaminants Council planning controls restrict activities which contribute contaminants	Partially Doesn't meet DWSNZ protozoa requirements	Moderate (unlikely x medium)	Install a treatment process to provide a barrier to protozoa	AM UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Risk Managed	Residual Risk	Additional Measures That Could be put in Place	Resp.
Chemical contamination	1.3	Surface runoff containing chemical contaminants from agricultural activities. (e.g. pesticides, fertilisers etc)	Very high (possible x major)	Taste and/or odour. Complaints or information provided by public about activities in catchment.	Chemical suite has been analysed from time to time MoH p2 programme did not identify any chemicals related to agricultural activities Council planning controls restrict activities which contribute contaminants	Partially.	Moderate (unlikely x medium)	Implement regular (5 yearly) raw water chemical testing regime to test for contaminants in raw water. (Including pesticide screen, herbicide screen, ammonia, nitrate, phosphate, consult further with laboratory to finalise list)	AM UM
Chemical Contamination	1.4	Naturally occurring chemical contaminants	High (almost certain x medium)	Taste and/or odour. Results of raw water chemical testing Results of MoH P2 chemical testing programme	Chemical suite has been analysed from time to time MoH p2 programme identified Cu and Pb though these are likely to be plumbosolvancy metals Regular notification is made of the requirement to flush taps due to plumbosolvancy	Partially	Moderate (unlikely x medium)	Implement regular (5 yearly) raw water chemical testing regime to test for contaminants in raw water. (Including naturally occurring contaminants including arsenic, fluoride, nitrate, ammonia, phosphate, consult further with laboratory to finalise list)	AM UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Risk Managed	Residual Risk	Additional Measures That Could be put in Place	Resp.
Chemical Contamination	1.5	Chemical spill contaminates ground water in catchment	High (unlikely x major)	Chemical spill is reported Regular testing identifies unexpected contaminant Complaints of taste or odour	Transit time of ground water to bores means considerable delay between water being contaminated by a spill and being abstracted at the treatment plant Temporary connection could be installed to the Twizel River	Yes	Low (unlikely x minor)	None required	UM
Loss of Supply	1.6	Drought lowers water table reducing or preventing abstraction	High (unlikely x major)	Low flows in local rivers Prolonged drought conditions Reduced/no flow to treatment plant/pumphouse	Water conservation measures can be implemented Groundwater recharge zone is extensive with many sub-catchments Temporary connection could be installed to the Twizel River Resource consent limits abstraction when Twizel river flows are low Emergency management plan can be activated	Yes	Moderate (unlikely x medium)	None required	AM UM

2. Bores

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Risk Managed	Residual Risk	Additional Measures That Could be put in Place	Resp.
Loss of Supply	2.1	Intentional vandalism to boreheads and/or bore electrical components	Very High (possible x major)	Obvious signs of damage to boreheads Reduced/no flow to treatment plant/pumphouse.	Three bores allow water to be supplied if any of the others is damaged Bores installed in locked below ground chambers An additional emergency bore could be quickly installed 2 days of stored raw water is available at average demand Bores are near to houses	Partially	Moderate (possible x minor)	Investigate installing security fences around the bores and power boxes	AM UM
Loss of Supply	2.2	Damage to boreheads and electrical components from flooding	Very high (likely x major)	Obvious signs of flooding, or heavy/prolonged rainfall in the area Reduced/no flow to the treatment plant/pumphouse	Bores are in an area that is not affected by flooding. Some treatment is provided	Yes	Moderate (unlikely x medium)	Install a treatment process to provide a barrier to protozoa	AM UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Risk Managed	Residual Risk	Additional Measures That Could be put in Place	Resp.
Loss of Supply	2.3	Failure of bore pump, electrical controls or bore piping	Very high (possible x major)	Reduced/no flow to treatment plant/pumphouse.	Three bores allow water to be supplied if any of the others is damaged 2 days of stored raw water is available at average demand Bore pumps can be easily and quickly replaced	Partially Bore pumps, electrical controls and some borehead piping is old and in poor condition	Moderate (possible x medium)	Install new bore pumps where required and upgrade the bore electrical controls and borehead piping	AM UM
Loss of Supply	2.4	Failure of bore structure	Very high (possible x major)	Reduced/no flow to treatment plant/pumphouse. High turbidity in water flowing to plant	Three bores allow water to be supplied if any of the others is damaged A new bore could be installed close to existing bores within a week	Yes	Low (unlikely x minor)	None required	AM UM
Loss of Supply	2.5	Bore screens become clogged with fine particles	Very high (Possible x major)	No or reduced flow to treatment plant/pumphouse.	Inspection of bore screens identifies a need for screen cleaning	Partially Inspection has identified the need for one bore screen to be cleaned	Moderate (rare x major)	Undertake cleaning of bore screen that is occluded and check the condition of all screens from time to time.	UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Risk Managed	Residual Risk	Additional Measures That Could be put in Place	Resp.
Loss of right to take Water	2.6	Consent to take water is not renewed or is declined by Regional Council.	Very High (possible x major)	Expiry date of existing resource consents.	Current consent expires in 2047	Yes	High (unlikely x major)	None required	AM
Insufficient water for supply	2.7	Bores unable to meet demand.	Very High (possible x major)	Low or reducing raw water storage levels at times of high demand Monitoring wells indicate excessive drawdown during time of high demand	Current consent conditions restrict quantity that can be extracted Demand management plan can be implemented during times of high demand Bore field could be extended with further bores if required	Yes	High (likely x medium)	None required	AM UM

3. Supply Main

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Risk Managed	Residual Risk	Additional Measures That Could be put in Place	Resp.
Insufficient pipe capacity	3.1	Pipe design capacity is insufficient to meet water demand	Very high (likely x major)	Difficulty in maintaining raw water storage reservoir near full capacity High pipe pressures due to high pumping volumes	Supply main has been demonstrated to be suitable for providing up to 8000m^3/day	Yes	Low (rare x medium)	None required	AM UM
Pipeline damage	3.2	Contractors excavate along pipeline route, damaging pipe	Very high (likely x major)	Loss of supply to raw water storage reservoir Heavy machinery observed operating close to pipeline route	Pipeline route is marked with underground tape Pipeline route is marked on Council GIS Contractors are required to undertake a service assessment before any excavation	Yes	Moderate (unlikely x medium)	None required	AM UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Loss of Supply	3.3	Pipe failure.	Moderate (Possible x medium)	Raw water storage reservoir slow to fill and difficult to maintain level Visual evidence or reports of pipe break along pipe route	Pipe failures are repaired as priority Good asset knowledge is held on pipe ages, material and condition. 2 days of stored raw water is available at average demand	Yes	Moderate (Possible x minor)	None required	AM UM

4. Chlorination *(Current Treatment System)*

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Inadequate Chlorination	4.1	Inadequate contact time	High (likely x medium)	Calculation of retention time determines contact time is inadequate *E. coli* detected in water leaving the reservoir	Some contact time is provide in the supply pipeline	No	Moderate (unlikely x medium)	Investigate installing treated water storage to provide chlorine contact time or a treatment process that does not require contact time for effective disinfection	AM UM
Inadequate Chlorination	4.2	Sodium hypochlorite supply exhausted.	Very High (likely x major)	FAC is less than 0.2 mg/L or *E. coli* detected in water leaving treatment plant. Visual inspection of hypochlorite tank indicates that the level is low	Operators are at the plant daily and check hypochlorite level Hypochlorite is delivered relatively soon after ordering	Partially	High (unlikely x major)	Investigate the benefits of changing to gas chlorination with multiple storage cylinders with auto changeover if chlorination is retained.	AM UM
Inadequate Chlorination	4.3	Dosing system failure.	Very High (possible x major)	FAC is less than 0.2 mg/L or *E. coli* detected in water leaving treatment plant.	Dosing system is simple FAC in water leaving the treatment plant monitored by an analyser and checked daily	Partially	Moderate (unlikely x medium)	Install telemetry to provide on-line FAC data to the Council office with alarms to operators (if upgraded treatment includes chlorination)	AM UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Inadequate Chlorination	4.4	Chlorine dose rate incorrect	High (likely x medium)	FAC is less than 0.2 mg/L or *E. coli* detected in water leaving the treatment plant.	Dose rate is adjusted by operators based on FAC analyser results and flow rate	Partially Dose rate is very operator dependent	Moderate (unlikely x medium)	Investigate installing automated chlorine dosing with dose rate determined by downstream chlorine analyser if chlorine is retained in treatment system	AM UM
Inadequate Chlorination	4.5	Chlorine demand exceeds chlorine dose due to high raw water turbidity	High (likely x medium)	High turbidity in water. FAC is less than 0.2 mg/L or *E. coli* detected in water leaving the treatment plant.	Raw water turbidity is continuously monitored and data logged Chlorine dose rate is adjusted by operators based on FAC analyser results and flow rate Source water has stable low turbidity	Yes	Moderate (unlikely x medium)	Investigate installing automated chlorine dosing with dose rate determined by downstream chlorine analyser if chlorine is retained in treatment system	AM UM
Inadequate Chlorination	4.6	Lack of chlorine due to dosing line failure or leak.	High (likely x medium)	FAC is less than 0.2 mg/L or *E. coli* detected in water leaving the treatment plant. Strong chlorine smell at treatment plant/pumphouse	FAC monitored by analyser and checked daily by operators	Partially	Moderate (unlikely x medium)	Install telemetry to provide on-line FAC data to the Council office with alarms to operators (if upgraded treatment includes chlorination)	AM UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Over Chlorination	4.7	Dosing system failure.	High (likely x medium)	FAC level high. Odour and taste complaints	Dosing system is simple FAC in water leaving the treatment plant monitored by an analyser and checked daily	Partially	Moderate (unlikely x medium)	Install telemetry to provide on-line FAC data to the Council office with alarms to operators (if upgraded treatment includes chlorination)	AM UM
Over Chlorination	4.8	Chlorine dose rate incorrect	High (likely x medium)	FAC is more than 0.5 mg/L in water leaving the treatment plant Odour and taste complaints	Dose rate is adjusted by operators based on FAC analyser results and flow rate	Partially Dose rate is very operator dependent	Moderate (unlikely x medium)	Investigate installing automated chlorine dosing with dose rate determined by downstream chlorine analyser if chlorine is retained in treatment system	AM UM

5. Service Pumps

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Loss of Supply	5.1	Pump failure due to power outage.	Moderate (possible x medium)	Reduced/no flow from treatment plant/pumphouse. Telemetry transmitting no pump activity	Diesel powered pump automatically starts pumping when mains power fails	Partially Diesel engine old and parts are not available	Moderate (possible x medium)	Replace diesel pump with a generator capable of running the electric pumps as well as other essential functions of the treatment system	AM UM
Loss of Supply	5.2	Mechanical or electrical failure of service pumps	Moderate (possible x medium)	Reduced/no flow from treatment plant/pumphouse. Telemetry transmitting no pump activity	Six pumps provide some redundancy Regular maintenance regime in place. Replacement pumps can be readily sourced.	Partially Pumps are old, inefficient and in need of replacement	Moderate (possible x medium)	Replace service pumps with modern, efficient units that have variable speed controls and soft starts.	AM UM
Loss of Supply pressure	5.3	Demand exceeds pumping capacity	Moderate (possible x medium)	Reduced/no flow from treatment plant/pumphouse. Low pressure in reticulation	Six pumps provide sufficient capacity	Partially Pumps are old, inefficient and in need of replacement	Moderate (possible x medium)	Replace service pumps with modern, efficient units that have variable speed controls and soft starts.	AM UM
Damage to reticulation pipes	5.4	Water hammer damages pumps or pipes	High (likely x medium)	Damage to pumps or pipes Evidence of water hammer	Pressure/balance tanks installed at treatment plant/pump house	No Some problems continue with water hammer	High (likely x medium)	Replace service pumps with modern, efficient units that have variable speed controls and soft starts.	AM UM

6. Reticulation

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Loss of Supply	6.1	Pipe failure.	Moderate (Possible x medium)	Complaints from consumers about loss of supply. Change in flow or pressure in reticulation.	Pipe failures are repaired as a priority under contract by Whitestone Contracting Ltd. Good asset knowledge is held on pipe ages, material and condition Failures, maintenance and renewals are recorded in council asset management system Age and expected quality of pipe infrastructure is known.	Yes	Moderate (Possible x minor)	None required	AM UM
Loss of Supply	6.2	Excessive demand in network or inadequate system capacity.	Moderate (possible x medium)	Complaints from consumers about low pressure or loss of supply. Change in flow or pressure in reticulation.	Network demand is known Some consumers are metered	Yes	Moderate (unlikely x medium)	None required	AM UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Microbiological Contamination	6.3	Inadequate controls on maintenance and construction work.	Moderate (possible x medium)	Complaints from consumers about taste or odour *E. coli* present in reticulation system Less than expected FAC in reticulation	All care taken when repairs undertaken. Written procedures in place for Whitestone Contracting Ltd staff undertaking repairs to pipe breaks. Contractor staff are supervised by a staff member who has passed National Certificate in Water Reticulation (Service Person)	Yes	Moderate (unlikely x medium)	None required	AM UM
Chemical or Microbiological Contamination	6.4	Backflow from consumer connections.	Very high (likely x major)	Contaminants identified in the reticulation system. Taste or odour complaints from consumers.	Backflow devices are installed at risk premises New or replaced connections have manifolds with check valves installed FAC maintained throughout the reticulation	Partially	Moderate (unlikely x medium)	Prepare and implement a backflow policy which assesses all backflow risks and ensures all backflow devices are tested annually with results recorded by Council	AM UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Loss of water	6.5	Unidentified leakage or illegal connections	Very high (likely x major)	Results of leak detection surveys. Per head consumption exceeds calculated expectation	Known breaks and leaks repaired as a priority. Network demand is known Some consumers are metered	Yes	Moderate (possible x medium)	None required	AM UM
Supply of Turbid Water	6.6	Silt build up within reticulation pipes.	Low (Unlikely x minor)	Reduced flows in reticulation. Complaints from consumer about quality of water	Flushing undertaken in response to complaints and before influx of summer holiday makers	Yes	Low (Unlikely x minor)	None required	UM
Inadequate Supply of Water	6.7	Poor quality workmanship or inappropriate materials used for reticulation pipes and fittings	Moderate (possible x medium)	Contaminants identified in the reticulation system. Taste and odour complaints from consumers Reduced FAC in water	MDC requires all work and materials used in reticulation to meet standard specifications Best practice reticulation approach taken to reticulation work	Yes	Moderate (unlikely x medium)	None required	AM UM

7. Other

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Sampling Failure	7.1	Inadequate sampling programme or sample collection error.	High (likely x medium)	DWSNZ compliance failure due to days of week, days between samples, insufficient samples, information gaps, positive results or sampling error	Sampling programme prepared and checked against standards.	Yes	Moderate (possible x medium)	None required	UM
Unidentified Operational Failure	7.2	Chlorination is not sufficiently monitored or alarmed	Very High (likely x major)	Chlorination or other failure not identified before supply is contaminated. Contamination identified in supply. Operational near miss identified	FAC in water leaving the treatment plant monitored by an analyser and checked daily	Partially	Moderate (unlikely x medium)	Install telemetry to provide on-line FAC data to the Council office with alarms to operators	AM UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Failure of Equipment due to Inadequate Maintenance	7.3	Supply equipment fails due to inadequate asset information and inadequate maintenance planning	Very high (Almost certain x medium)	Unexpected plant equipment failure. Not having an asset register and maintenance programme	Updated and current information held on all water supply assets allowing maintenance to be planned and undertaken	Yes	Moderate (Unlikely x medium)	None required	AM UM
Failure of Supply due to Inadequate Operating Procedures	7.4	Insufficient, inadequate out of date or incorrect manual of operational procedures	Very high (almost certain x medium)	Operational manuals not used. Operational Manuals not up to date. Operational manual copies are not the same.	Operational procedures exist for the treatment plant	Yes	Moderate (possible x medium)	None required	AM UM
Operator Error or Mismanagement	7.5	Inadequate training, professional development and up-skilling of operators	Extreme (almost certain x major)	Poor operation of plant. Plant compliance failure. Loss of supply.	Operators hold National Certificate in Water Reticulation Asset Manager is a qualified engineer	No	Moderate (possible x medium)	Upgrade training for operators to National Certificate in Drinking Water (Operator)	AM UM

Event	No	Cause	Risk Without Preventative Measures	Indicators	Preventative Measures in Place	Controlled	Residual Risk	Additional Measures That Could be put in Place	Resp.
Failure to Provide Safe Water	7.6	Inadequate data collection, reporting and control systems	High (likely x medium)	Information about how the supply is operating is not available Manual collection and recording of data Manual operation of treatment plant	Data is collected by operators and written into a book	No	Moderate (unlikely x medium)	Install telemetry to provide on-line FAC data to the Council office with alarms to operators	AM UM
Failure to meet the DWSNZ	7.7	Treatment processes are not sufficient to comply with the requirements of the DWSNZ	Extreme (almost certain x major)	Treatment processes at the treatment plant do not comply with the DWSNZ	Supply is chlorinated	No	Moderate (almost certain x minor)	Install a treatment process to provide a barrier to protozoa	AM UM

Mackenzie District Council

Aoraki/Mount Cook

16 May 2014

TPDA
PO Box 4
TWIZEL 7944

Dear Mandy

Twizel information Centre Opening Hours

Thank you for your letter of 7th April.

The opening hours for the Information Centre are determined by the Twizel Community Board. I am aware that Board members been giving some informal consideration to the hours of availability. Your letter may well prove the catalyst to promote formal consideration.

I will submit your letter for inclusion in the next Community Board Agenda (3rd June meeting).

Yours faithfully

Wayne Barnett
CHIEF EXECUTIVE OFFICER

REF:

http://docshare/corporate/comas/lbcmt/2014-05-16 reply to tpda letter re info ctr hours.docx

twizel.info
TWIZEL PROMOTIONS AND DEVELOPMENT ASSOCIATION

TWIZEL PROMOTION & DEVELOPMENT ASSN INC.

TPDA
PO Box 4
Twizel 7944

28 APR 2014

Wayne Barnett CEO
Mackenzie District Council
PO Box 52
Main Street
Fairlie 7949

7th April 2014

Dear Sir

Twizel Information Centre Opening Hours

The TPDA committee would like to raise their concern over the short opening hours at the Twizel Information Centre at the weekends. Local people have voiced these concerns to committee members when seeing tourists trying to find advice in the centre of Twizel and some local tourist businesses are worried that they may miss out on potential clients when these people move onto the next town. We have also been made aware of an occasion recently when the office did not open until at least half an hour after the advertised time.

The Information Centre is currently only open between 11am and 2pm on Saturdays and Sundays. As it seems weekends tend to be busier with tourist traffic than weekdays, would it not be sensible to open the office at the same times 7 days a week?

We look forward to hearing from you.
Regards

A. Spearing

Mandy Spearing
Secretary TPDA