

This Presentation provides my Expert Evidence, the “Expert” status is supported by the following Qualifications and Experience:

## **QUALIFICATIONS**

1. Chartered Professional Engineer, NZ (IPENZ)
2. Higher National Certificate in Building (UK)
3. NZTA Road Safety Engineering (Road Safety Auditor) & STMS
4. MSc Water, Energy and the Environment
5. Degree & Diploma in Pollution Control (DipPollCon)
6. NZTA Cost Estimation Review Panel

## **EXPERIENCE**

1. Consulting Engineer – Hydraulic Network Analysis
2. Council - Residential Development Engineering
3. Council - Environmental and Drainage Engineer
4. Contractor – Site Construction Engineer and Supervisor
5. Over 47 Years Engineering Experience
6. UK 30 Years, NZ 15 Years, Qatar 2 Years & Australia 8 Months

The Recommendations made in the Councils Section 42A Hearing Report on my Submission 15/2 is Refuted.

- The Recommendation is not supported by any Evidence.
- The Council does NOT Comply with the Law ([Refer below](#))
- The Council does NOT Comply with Technical Requirements of the Subdivision Manual (2015 Part 6)

1. **LEGAL** – Local Government Act 1974 – Section 647

2. **LEGAL** – Fire and Emergency New Zealand Act 2017 - Section 74

3. **STANDARDS** – New Zealand Fire Service Firefighting Water Supplies Code of Practice SNZ PAS 4509:2008

There is a **LEGAL** requirement for Waipa Council to provide and maintain Fire Hydrants under the **Local Government Act 1974** and the **Fire and Emergency New Zealand Act 2017**

**1.3 Legislative requirements of territorial local authorities** SNZ PAS 4509:2008

**1.3.1 Local Government Act**

**1.3.1.1 Summary overview**

Under the Local Government Act 1974, territorial authorities are required to install fire hydrants, and to keep them charged.

The requirement to install fire hydrants is contained in section 647 of the Local Government Act 1974, which requires territorial authorities to provide fire hydrants on all reticulation water mains in such convenient places as it determines for extinguishing any fire, fire district under section 26 of the Fire Service Act, as Zealand Fire Service Commission approves.

The requirement to keep pipes charged on which hydrants are contained in section 648 of the Local Government Act 1974.



SNZ PAS 4509:2008  
Publicly Available Specification  
**New Zealand Fire Service  
Firefighting Water Supplies  
Code of Practice**  
Superseding SNZ PAS 4509:2003






**Fire and Emergency New Zealand Act 2017**

Public Act	2017 No 17
Date of assent	11 May 2017
Commencement	see section 2

WAIPA COUNCIL Subdivision Manual states the Water Supply  
“SHALL” Comply with **SNZ 4509**

Part 6: Water Supply	 The image shows the cover of the 'Waipa District Development and Subdivision Manual'. The title is written in white, bold, sans-serif font over a background of green grass. The text is arranged in three lines: 'Waipa District', 'Development and', and 'Subdivision Manual'.	May 2015
<b>6.2.2 Level of service</b>		
6.2.2.1	The design of the reticul provided to the 'front' of	tion can be readily e installed).
6.2.2.2	The water supply reticulation shall comply with the New Zealand Fire Service Fire Fighting Water Supplies Code of Practice (SNZ PAS 4509:2008 and subsequent amendments) and shall be the relevant minimums for the usage as shown in Clause 6.4.4.	
6.2.2.3	For firefighting, the minimum residual running water pressure shall be 100 kPa (1 atmosphere, 10m head of water) at any hydrant.	
6.2.2.4	The working residual water pressure, in other than firefighting conditions, shall be 100 kPa (1 atmosphere, 10m head of water) at the ground level at the building site in each lot. Designers may be limited by the water pressure available and Council will consider the implications of any such limitations in assessing the engineering plans with the possible outcome that special water supply conditions may apply to the affected properties.	

NZ Legislation requires Hydrants to be inspected and in EFFECTIVE working order

SNZ PAS 4509:2008

#### APPENDIX D – LEGISLATIVE REQUIREMENTS

##### Part 39 Local Government Act 1974 – Prevention of fires

##### Section 647 – Fire hydrants

- (1) In every part of the district in which there is a water supply provided under section 130 of the Local Government Act 2002, the council shall fix fire hydrants in the main pipes, other than trunk mains, of the waterworks at the most convenient places for extinguishing any fire as the council determines, or, in any part of the district that is included in a fire district under section 26 of the Fire Service Act 1975, as the New Zealand Fire Service Commission approves, and shall keep those fire hydrants in effective working order.

#### **G4 Fire hydrant inspections**

All fire hydrants must be inspected and flushed every five years by an approved tester. To achieve this, a progressive inspection programme must be agreed between the Fire Service and the WSA.

Hydrant Frequency Testing Every 5 Years to verify 100kPA  
Minimum Water Pressure (SNZ 4509)



Cambridge Park is at 60m RL, a High Point, alongside Industrial users

NOTE –

- (1) It is important to identify fire hydrants that will experience the lowest supply pressure in order to assess the minimum allowable pressure of 100 kPa in any part of the reticulation.
- (2) Consideration should also be given to the pressure available to fire hydrants at high points in the reticulation when water is being drawn from lower levels, either from hydrants, by large industrial users, or at times of peak domestic demand.

Hydrant Testing Records were provided by the Manager of Water Services on 6<sup>th</sup> June 2021

The Council has not carried out Testing  
for the last 10 Years

That's 2 Sets of Missing Tests

## Why are Fire Hydrant Tests Essential?

1. Compliance with Legal Requirements
2. New Water Demand from Development in Cambridge Park
3. Create a **VALID** Water Supply Network Model
4. Legal compliance for Sub-Divisions
5. Establish Requirements for New Infrastructure for  
Treatment Plants and Trunk Mains

**Water NZ** have published the following Water Distribution Guidelines for a Water Supply Model. With 7 Basic Steps.

Water New Zealand

Water Distribution Modelling Guidelines

## 5 Model Calibration And Validation

Before any use, the model must be calibrated to **establish its credibility** and allow decisions about physical and **operational developments in the real system to be made with as high a degree of confidence as possible.**

Validation is usually the next step of a two staged model credibility establishing process, used to check the results of the model to simulate an independent – additional set of data not used in the calibration procedure.

### 5.1 Model Calibration

Calibration is the process of comparing the model results to field observations, and if necessary, adjusting the model parameters until model results reasonably agree with measured system performances over a range of operational conditions. Water Supply model calibration process involves adjustments of the following primary network model parameters: pipe roughness coefficients, spatial distribution of nodal demand, altering pump operating characteristics and some other model attributes **until the model results sufficiently approximate actual measured values.**

In general, a network model calibration process consists of the following seven basic steps:

- a) Understanding the purpose of the model
- b) Initial estimate of the model parameters
- c) Calibration data collection**
- d) Evaluating the results of the model
- e) Macro calibration analysis
- f) Sensitivity analysis; and
- g) Micro calibration.



## Technical Compliance Failure with the Development and Subdivision Manual

### Part 6: Water Supply

# Waipa District Development and Subdivision Manual

May 2015

#### 6.2.2 Level of service

- 6.2.2.1 The design of the reticulation shall be such that the water supply reticulation can be readily provided to the 'front' of the lot (i.e. the reticulation can be readily installed).
- 6.2.2.2 The water supply reticulation shall comply with the New Zealand Fire Service Fire Fighting Water Supplies Code of Practice (SNZ PAS 4509:2008 and subsequent amendments) and shall be the relevant minimums for the usage as shown in Clause 6.4.4.
- 6.2.2.3 For firefighting, the minimum residual running water pressure shall be 100 kPa (1 atmosphere, 10m head of water) at any hydrant.
- 6.2.2.4 The working residual water pressure, in other than firefighting conditions, shall be 100 kPa (1 atmosphere, 10m head of water) at the ground level at the building site in each lot. Designers may be limited by the water pressure available and Council will consider the implications of any such limitations in assessing the engineering plans with the possible outcome that special water supply conditions may apply to the affected properties.

## Flow Testing of Existing Water System is Required

Part 6: Water Supply	<i>Waipa District Development and Subdivision Manual</i>	May 2015
6.4.5 Design basis		
6.4.5.1 Pressures		
(a)	Details of the working pressure or pressures at the point or points of connection to the existing reticulation are contained in the table below. These details shall be used for design purposes.	
6.4.5.2 Existing Flows		
(a)	Existing Waipa District Council reticulation is generally designed to provide a water supply classification - FW 2 of NZS PAS 4509:2003. Flow testing of existing water reticulation is required to confirm available flow.	

6.5.4 In order to provide firefighting water supplies in excess of the FW2 standard, principal mains shall be laid on both sides of the street. To provide sufficient flow for firefighting, principal mains may need to be larger than the minimum 100mm nominal bore; this will depend on the proximity of trunk water mains and the adequacy of the selected pipe size may need to be proved with reticulation flow modelling. At street intersections the arrangement of pipe connections shall spread firefighting flow rates to both sides of the adjoining street.

Fire and Emergency NZ support my Submission.

They state that “There is a significant risk to Health”

They agree that Fire Hydrant testing needs to be undertaken

**Waipā District Council – Proposed Plan Change 13  
Further Submission on behalf of Fire and Emergency New Zealand**

*Further submission in support of, or in opposition to, submission on publicly notified proposed policy statement or plan*

*Clause 8 of Schedule 1, Resource Management Act 1991*

To: Waipā District Council

Further Submission on: Proposed Plan Change 13 – Uplifting Deferred Zones

**Name of organisation: Fire and Emergency New Zealand**

Address for service: C/- Beca Limited  
PO Box 448  
Hamilton 3240

Attention: Alec Duncan

Phone: 07 980 7259

Email: [alec.duncan@beca.com](mailto:alec.duncan@beca.com)

This is a further submission on behalf of Fire and Emergency New Zealand (Fire and Emergency) in support of submissions on Proposed Plan Change 13 – Uplifting Deferred Zones.

Fire and Emergency is a party who has an interest in Proposed Plan Change 13 – Uplifting Deferred Zones that is greater than the interest the general public has, and also represents a relevant aspect of the public interest. This is for the following reasons:

- The role of Fire and Emergency prescribed in legislation includes promoting fire safety and fire prevention, and extinguishing fires. Proposed Plan Change 13 has the potential to impact on this in terms of provision of (or lack of) infrastructure required to enable people and communities to provide for their social and economic wellbeing, and for their health and safety with regard to fire safety, fire prevention and fire extinction.
- It is essential that Fire and Emergency is able to meet its responsibility of providing an efficient and effective emergency service to all New Zealanders, so as to avoid, remedy or mitigate the adverse effects of fire and other emergencies (as required by the Fire and Emergency New Zealand Act 2017).

Fire and Emergency's further submission

Fire and Emergency's support of a submission made by Submitter 15 including the reasons for support are identified in the table included in Appendix A (attached).

Fire and Emergency wish to be heard in support of their submission.

If others make a similar submission, Fire and Emergency will consider presenting a joint case with them at the hearing.



## SUMMARY

The Council's Recommendation in the Executive Summary of the 42A Hearing Report to: “[Accept the Uplifting Deferred Zones](#)” needs to include Conditions.

The following **Conditions** are Requested to be Included in the Plan Change before Accepting the Uplifting

1. Test Cambridge Hydrant Pressures
2. Create Cambridge Validated Water Network Model (Cambridge Existing)
3. Verify Hydrant Pressures for New Network with the 5,900 New Houses Included from Plan Change Cells C1, C2, C3 and C4