

**BEFORE HEARING COMMISSIONERS  
FOR SELWYN DISTRICT COUNCIL**

**UNDER**

The Resource Management Act 1991

**IN THE MATTER OF**

Variation 1 to the Proposed Selwyn District  
Plan

**AND**

**IN THE MATTER OF**

Submissions V1-0028, V1-0029, V1-0066,  
V1-0070, V1-0087 and V1-0098

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**SUMMARY STATEMENT OF HUGH BLAKE-MANSON  
ON BEHALF OF SELWYN DISTRICT COUNCIL**

**WATER SERVICES**

**4 MAY 2023**

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Introduction

1. My name is HUGH MAXWELL BLAKE-MANSON. My qualifications are BE (Natural Resources) and I have Diplomas in Infrastructure Asset Management, Assessor (Drinking Water Networks) and Water Treatment (Operator). I am a Chartered Engineer. These qualifications allow me to design, manage and audit any of the three waters services; water, wastewater and stormwater. I am also completing a Master of Freshwater Management at the University of Canterbury.
2. I am an Infrastructure Advisor at Waugh Infrastructure Management Limited (Waugh). I was previously employed by City Care Ltd as their Three Waters Contract Manager (2012- 2021) and prior to that, Selwyn District Councils Asset Manager Utilities (2004- 2012) covering water, wastewater, stormwater, land drainage and water race services for the Council (Council).
3. I support the Council as an infrastructure advisor specialising in strategic, tactical and operational matters across the services identified.
4. I am authorised to present these comments on the Council's behalf.

5. Whilst I acknowledge that this is not an Environment Court hearing, I confirm that I have read and am familiar with the Code of Conduct for Expert Witnesses contained in Section Nine of the Environment Court Practice Note 2023. I have complied with the Code of Conduct in preparing this statement and I agree to comply with it while giving any oral evidence during this hearing. Except where I state that I am relying on the evidence of another person, my evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

#### Scope of Review

6. My comments relate to the impact the proposed rezoning may have on the community water services in Prebbleton – specifically drinking water, wastewater, stormwater and water races infrastructure, resulting from the submissions on Variation One from:
  - a. V1-0028 A & S Pollard, T Holder, Westpark Trustees Ltd., X Chen & Y Li, N P Leeming, S Shamy & P Shamy
  - b. V1-0029 G & L Burgess
  - c. V1-0066 Birchs Village
  - d. V1-0070 Ballantrae Residents Group
  - e. V1-0087 M Springer
  - f. V1-0098 Urban Estates
7. The submitters each seek rezoning of identified land to medium-density residential zoning (MDZ). This zone would implement the Medium Density Residential Standards, allowing for the establishment of residential units, each up to three stories high (12 metres).
8. I have reviewed the infrastructure evidence provided by each submitter.

9. This statement begins with a general overview of water infrastructure in Prebbleton, and then makes specific comments on each of the above submissions.

#### Current and Modelled Density – Water and Wastewater Network Capability and Capacity

10. Currently housing density in the newer developed areas of Prebbleton is generally 11 houses per hectare (hh/ha).
11. Whilst ultimate household numbers in greenfield areas under MRZ provisions are challenging to estimate given that this is a new zone framework for Selwyn, if each submission area is developed in accordance with Urban Growth (UG)-P13 of the Proposed District Plan (PDP) as notified, a minimum density of 12hh/ha will be achieved. If UG-P13 is amended as recommended by the s42A author for the Urban Growth chapter<sup>1</sup>, then a minimum density of 15hh/ha will be required, unless there are demonstrated constraints that justify a minimum density of 12hh/ha.
12. If each of the resultant sites were then in turn developed for three units (as enabled in the MDRZ), then each site would achieve a density of 45hh/ha. Whilst such a yield is theoretically possible under MRZ, in practice, and given typical market demand for detached family homes in Selwyn, I have focussed my assessment on the more probable density of 15hh/ha.
13. Modelling of water and wastewater networks, completed in 2022 for Council did not cover most of the submission areas as it was based on known and anticipated development at that time.
14. Further water and wastewater modelling is being undertaken from May 2023, considering higher density development. The model results will indicate the infrastructure needed to ensure safe water can be provided and wastewater taken away and treated appropriately. Staging and timing can be considered from that point.

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<sup>1</sup> [https://www.selwyn.govt.nz/\\_data/assets/pdf\\_file/0018/935100/Right-of-Reply-Report-Urban-Growth.pdf](https://www.selwyn.govt.nz/_data/assets/pdf_file/0018/935100/Right-of-Reply-Report-Urban-Growth.pdf)

## Efficient Utilisation of Infrastructure

15. Applying efficient utilisation of existing infrastructure within the township and district is a long-standing approach taken by Council. This approach requires that work is undertaken in accordance with:
  - Council's 5 Waters Strategy includes observing a precautionary principle for the contingency of services and making decisions based on the four well-beings.
  - Engineering Standards including Codes of Practice
  - Prudent modular infrastructure development occurring in step with reasonable future forecast demand and capacity e.g. Pines Rolleston Wastewater Treatment Plant to minimise capital investment (Pines WWTP)
  - Operations and maintenance of infrastructure and treatment where loads and flows are managed to ensure the most effective and efficient treatment and minimise by-product emissions
16. It is relatively straightforward to access new drinking water sources in the Selwyn District e.g. obtain consent for groundwater extraction, design, build and operate water treatment, storage and piped networks.
17. While it is a more complex process to treat and dispose of wastewater, Council has a programme of the internal township, conveyance and treatment infrastructure improvements projected over at least a 30-year horizon.
18. Ensuring new infrastructure is built in step with growth is a key part of the Council's development programme, and as demonstrated at the Pines WWTP this must be carefully managed given the significant scale of investment required. The same approach applies to all infrastructure.
19. It should be noted that development contributions for water infrastructure are payable at the time of subdivision, should rezoning proceed.

## Prebbleton Water Supply

### Water Supply Capacity

20. At this time, additional capacity at Council's water sources is likely to be available to each submission area, dependant on review at the time of subdivision of the applicants demand requirements and capacity allocated to any preceding developments.
21. The Prebbleton water supply relies on the extraction of deep groundwater, which is then treated, pressurised through a piped network and provided to the customers at their point of connection.
22. The water supply provides both customers with 'on-demand' water at their connections through water meters and for rural residential properties "trickle feed" supply.
23. The Prebbleton water supply provides deep groundwater to the community from bores M36/7504, M36/0870, M36/4795, BX23/0421 and BX23/0874. Currently, water is provided directly without surface reservoir storage. Several new additional wells are planned as is a surface reservoir, but not yet been constructed or operational.
24. Water take consents (CRC202353 and CRC010900) limit the maximum rate of water take based on a range of controls (Table 1). The consented maximum total water taken from the scheme is limited to 1,576,800 m<sup>3</sup>/year. The maximum instantaneous water taken for the scheme is 300 litres per second (l/s). The daily water take limit is not specified, although daily limits exist for some bores.

*Table 1 Water Take and Use Consents*

Consent Number	Bores	Water Take Limits
CRC010900	M36/0870 M36/4795	25 litres per second

Consent Number	Bores	Water Take Limits
CRC202353	M36/7504	75 l/s Instantaneous
	M36/0870	25 l/s Instantaneous
	M36/4795	25 l/s Instantaneous
	BX23/0421	75 l/s Instantaneous
	BX23/087	100 l/s Instantaneous
1,576,800 m <sup>3</sup> from 1 July - 30 June each year + limits for individual bores		

25. Over the period 1 July 2017 to 30th June 2021, the maximum demand was 5,352 m<sup>3</sup>/day (December 2017) and 742,348 m<sup>3</sup>/yr (2020-2021). This equates to approximately 1.2 cubic metres per connection per day (peak).
26. Any water takes and use consents within each plan change area would need to be transferred to Council at the time of subdivision, should rezoning proceed.
27. The target level of service pressure at the point of connection is 310 kilopascals (kPa). Currently, the network pressure to the property boundary ranges between 400 kPa to 510 kPa depending on customer demand and location.
28. MDRS structures can be up to 12 metres above ground level. It is possible, depending on where internal building water fixtures are installed – for example in the upper level and their type, that internal property pressures will be insufficient for some applications e.g. hot water cylinders.

#### Water Network and Treatment Programme

29. Council has planned for additional water sources (bores), storage and pipeline infrastructure to meet the needs of existing development areas over time. Funding for foreseeable works has been included in Council's Long-Term Plan (LTP), and this is reviewed annually.
30. Any reticulated water supply for the proposed rezoning areas would need to be designed to meet the Fire Fighting Code of Practice guidelines as stated in the Engineering Code of Practice.

31. Vesting of land within the proposed variation area to facilitate capacity upgrades may be required. Detailed network modelling is not currently available to confirm what requirements Council may have.

## Wastewater

### Pines Wastewater Treatment Plant (Pines WWTP) – Rolleston

32. Wastewater is pumped uphill from Prebbleton to Rolleston, treated and disposed of at the Pines WWTP to the southwest of Rolleston. The Pines WWTP is designed to be progressively upgraded to accommodate up to 60,000 person equivalents (PE) of incoming flow, with plans to increase the treatment capacity up to 120,000 PE being prepared ("Pines 120"). The currently connected catchment (2021) has a population equivalent of approximately 42,000 – 45,000.
33. There are plans to expand the irrigation area to cover 302 ha (currently irrigating 189 ha). This equates to servicing for more than 120,000 PE, or more than 100,000 PE if the largest irrigator is not in operation. Ultimately, additional areas within the 486 ha of land owned and consented could be developed for land-based disposal, while remaining in compliance with the existing Resource Consent conditions.

## Wastewater Conveyance

34. Council's current and consistent approach is the conveyance of all wastewater via gravity to local pump stations, and from there under normal events to the Pines WWTP for treatment and disposal.
35. Following its approach of efficient and effective utilisation of infrastructure, Council's infrastructure programme focuses on servicing existing township service areas.
36. Council has planned and programmed infrastructure works which include network capacity and pump station improvement works within the existing serviced area. Network capacity improvements include works through to the 2060's, where a new rising main from Prebbleton to Rolleston would be installed.

37. Council also continues to focus on planned investment in the Pines WWTP and the network infrastructure associated with this.
38. Recently approved PC68 and PC72 in combination take up the capacity in the existing network. Both of these recent plan changes are subject to MRZ zoning through Variation One, with associated uncertainty as to the ultimate number of households that will be delivered. Depending on the order and speed that they proceed, the cumulative demand could result in the existing Prebbleton network and pump station capacity being reached between 2030-2036.
39. There are two wastewater pipeline through Prebbleton to Christchurch City. These are reserved for emergency events such as damage to a bulk pressure main elsewhere in the wider network to Rolleston
40. Vesting of land within submission areas to facilitate capacity upgrades may be required e.g. to construct pumpstations. Detailed network modelling is not currently available to confirm what requirements Council may have.
41. Any development proposal would be the subject of an engineering approval process at the time of subdivision, should rezoning of any submission area proceed.

#### Stormwater

42. Council does not have a global consent for stormwater treatment and disposal across Prebbleton.
43. Whilst subject to obtaining the necessary consents, in my experience treatment and disposal of stormwater to ground is a standard solution for stormwater management for Selwyn townships where the groundwater levels are sufficiently low.
44. Changes in ground conditions including permeability occur across Prebbleton and within proposed rezoning land. Confirmation of each areas ground permeability to adequately dispose of stormwater will be required and subject to engineering design assessment.



## Waterraces

45. Councils water rate network runs through parts of Prebbleton. As a network of open channels, it provides a habitat for important and declining remnants of native flora and fauna.
46. Council undertook an ecological survey of the water race network in 2022. This was done to inform future management decisions.
47. Any modifications to the location, channel profile e.g. change from open channel to piped network, purpose and extent will need to include consideration of the immediate site and larger network needs.

## V1-0028 Pollard *et al*

48. The submitter for PC68 stated in their 2020 infrastructure report that 1040 properties would be provided over the 67.5 ha site, being 15hh/ha.
49. Immediately adjacent to PC68, there are four areas which were not considered, two each adjoining Trents Road and Hamptons Road. I respond to these in particular, rather than the whole of the submission area, below.
50. Modelling of water and wastewater networks was completed in 2022 for Council and did not specifically cover these four areas as it was based on known and anticipated development at that time.

## Water

51. Additional capacity at source, treatment and through the piped network to service the submission areas may be available, though the timing for this has not yet been determined by Council.
52. Council has identified that a new well and treatment plant will be appropriate at some point, within the north western zone, which would supply these areas.

## Wastewater

- 53. There is no current viable means to transfer wastewater from the submission area through to the local pumpstations.
- 54. The two areas adjoining Hamptons Road could be connected into the future network, as they will have a nominal impact on flows and loads due to their size.
- 55. At this point and aligned with the first in first served approach previously stated, inclusion of the two areas adjoining Trents Road would not be appropriate.

## Stormwater

- 56. The submitter has stated that they intend to discharge stormwater via a constructed stormwater management area (SMA) which has been designed for the land development.
- 57. Consent would need to be obtained by developers from the Canterbury Regional Council for stormwater treatment, attenuation and disposal. This would need to be obtained by the applicant and provided to Council as part of any subdivision application.
- 58. All systems would be subject to Councils engineering approval process.

## Waterraces

- 59. A water race runs immediately adjacent to the submission area on Hamptons Road. As part of engineering design work and subject to Council approval piping will be required, particularly at vehicle crossing points.

## V1-0029 Burgess

- 60. The submitter has stated that this land could provide for a minimum of 12 hh/ha and that services for 360-420 lots need to be allowed for (17 hh/ha).

61. Modelling of water and wastewater networks, completed in 2022 for Council, did not include this area.

#### Water

62. Additional capacity at source, treatment and improvements to the piped network to service the submission area can be provided, though the timing for this has not yet been determined by Council.

#### Wastewater

63. The submission area is outside the current Prebbleton township wastewater service area. There is no current capacity in the existing network, including the Tosswill Road pumpstation, to accommodate additional flows.

#### Stormwater

64. Consent would need to be obtained by developers from the Canterbury Regional Council for stormwater treatment, attenuation and disposal. This would need to be obtained by the applicant and provided to Council as part of any subdivision application.
65. All systems would be subject to Councils engineering approval process.

#### Waterraces

66. Council's waterrace network is unaffected by this submission.

#### V1-0066 Birchs Village

67. Ultimate household numbers in greenfield areas under MRZ provisions are challenging to estimate given that this is a new zone framework for Selwyn. If the site is developed at standard recent densities for a greenfield area of 12 hh/ha then it will yield approximately 440 houses, increasing to 530 households if the yield increases to

15 hh/ha through either smaller average site sizes and/or pockets of medium density/terraced housing.

68. If each of the 530 sites was then in turn developed for three units (as enabled in the MRZ), then the submission area would yield some 1,600 households. Whilst such a yield is theoretically possible under MRZ, in practice, and given typical market demand for detached family homes in Selwyn, I have focussed my assessment on the more probable yield of 530 households.
69. Modelling of water and wastewater networks, completed in 2022 for Council did not cover the submission area as it was based on known and anticipated development at that time.

#### Water

70. Because the submission area is outside of the anticipated growth areas as shown in the Canterbury Regional Policy Statement 'Map A', demand from the area has not been factored into current Council asset planning. Council's water infrastructure growth plans do not, therefore, cover the submission area. While this could be addressed, this is not necessarily the most efficient use of existing infrastructure.
71. There is currently no capacity within the existing piped water network to service this submission area. Work would be required including to determine the most efficient scale, extent and timing of works.
72. There is currently sufficient water at the council's source wells to meet the daily needs of the submitter's proposed development.
73. The submitter has identified five water take and use consents over the proposed rezoning area. Should rezoning be approved, then all water take and use consents would need to be transferred to Council at the time of subdivision.

## Wastewater

74. There is currently no capacity for receiving additional wastewater and treating it at the Pines WWTP from the submission area.
75. Installation of a new terminal pump station, Prebbleton gravity and pressure mains and a dedicated new pressure main to Rolleston would be required to meet the ultimate demand requirements of this submission area. A new rising main and terminal pump station in Prebbleton is programmed to be available from 2063, based on Council's township growth project data, and a falls outside Councils LTP and Infrastructure Strategy timeframes.
76. The 2022 estimate for this work was \$16.4 million, and is based on various assumptions.

## Stormwater

77. The submitter attenuation and treatment of stormwater to the ground is feasible in this area. They have referred to the CCC Waterways Wetlands and Drainage Guide and provided some values related to storage.
78. Consent would need to be obtained by developers from the Canterbury Regional Council for stormwater treatment, attenuation and disposal. This would need to be obtained by the applicant and provided to Council as part of any subdivision application.
79. All systems would be subject to Councils engineering approval process.

## Waterraces

80. A Council waterrace is located adjacent the submission area, along Birchs Road. Any change to the location and use (or piping) would need to be undertaken in accordance with Councils waterrace policy, for example to obtain new vehicle or road accesses to the site.

#### V1-0070 Ballantrae

81. Modelling of water and wastewater networks, completed in 2022 for Council, included this area, as it is within the existing Prebbleton township.

#### Water

82. The area has water connections to the Prebbleton water supply. An increase in the density in this area can be accommodated with some programmed network upgrades.

#### Wastewater

83. There is currently capacity for receiving additional wastewater and treating it at the Pines WWTP from the submission area.

#### Stormwater

84. Consent would need to be obtained by developers from the Canterbury Regional Council for stormwater treatment, attenuation and disposal. This would need to be obtained by the applicant and provided to Council as part of any subdivision application.

85. All systems would be subject to Councils engineering approval process.

#### Watteraces

86. A Council watterace is located adjacent the submission area, along Trices Road. Any change to the location and use (or piping) would need to be undertaken in accordance with Councils watterace policy, should such be necessary to obtain new vehicle or road accesses to the site.

#### V1-0087 M Springer

87. The submitter has stated this land could provide for 40 lots or 33 hh/ha. They then note that this could also be 18-20 lots (17 hh/ha). I have based my assessment on 17hh/ha.

88. Modelling of water and wastewater networks, completed in 2022 for Council did not cover the applicant's land as it was based on known and anticipated development at that time.

#### Water

89. The submitter has provided some details regarding water demand. These are based on Council's Engineering Code of Practice and do not apply to MDRS type development.
90. Additional capacity within the network to fully service this proposed rezoning is not available. However, a water network model review is underway from May 2023 and will consider inclusion of this area into Council's network.

#### Wastewater

91. Noting my earlier statements that PC 68 and PC72 have priority on a first in first served basis, there is no remaining capacity in the wastewater network.
92. Further network modelling is underway from May 2023, which will include the submitters area.

#### Stormwater

93. The submitter considers that soakage of stormwater to ground is feasible in this area and has been found to be suitable in other areas of Prebbleton with similar ground conditions. Consent would need to be obtained by developers from the Canterbury Regional Council for stormwater treatment, attenuation and disposal. This would need to be obtained by the applicant and provided to Council as part of any subdivision application.
94. All systems would be subject to Council's engineering approval process.

## Waterraces

95. Council's waterrace network is unaffected by this submission.

## V1-0098 Urban Estates

96. The submitter has stated that it intends to provide 950 houses over developable land of 53 hectare area. This equates to an average of 18 hhold/ha.
97. Modelling of water and wastewater networks, completed in 2022 for Council did not cover the applicant's land as it was based on known and anticipated development at that time.

## Water

98. The submitter has provided some details regarding water demand. These are based on Council's Engineering Code of Practice and do not apply to MDRS type development.
99. Additional capacity within the network to fully service this proposed rezoning is not available nor currently considered in Council's infrastructure programme. However, a water network model review is underway from May 2023 and will consider inclusion of this area.

## Wastewater

100. There is currently no viable means to transfer, treat and dispose of wastewater for this submission area through to the Pines WWTP.
101. Councils programme, which must also take account of the Pines WWTP treatment work would allow connection from 2036, based on current growth projections.
102. The submitter has identified conveyance options. Councils current and consistent approach for wastewater management includes conveyance of all wastewater via



gravity to local pumpstations, and from there to the Pines WWTP for treatment and disposal.

#### Stormwater

103. Soakage of stormwater to ground is not feasible in this area. The submitter proposes that stormwater treatment and attenuation would be provided for within the area, and has identified a number of options for this. No specific capacity and treatment volume and rate details have been provided by the submitter.
104. Consent would need to be obtained by developers from the Canterbury Regional Council for stormwater treatment, attenuation and disposal. This would need to be obtained by the applicant and provided to Council as part of any subdivision application.
105. All systems would be subject to Councils engineering approval process.

#### Waterraces

106. Council's waterrace terminates at a boundary of the property and discharges into a naturalised drain through the land. Allowance for continued discharge of waterrace water should be made in any future stormwater and land development work.
107. Waterraces do not provide water at all times, therefore any water amenity feature should be designed around an intermittent flow profile.

#### Summary

108. A summary of the availability of services for each submission area is provided in Table 2 below.

*Table 2 Summary of water services*

<b>Submission</b>	<b>Water</b>	<b>Wastewater</b>	<b>Stormwater</b>	<b>Waterrace</b>
V1-0028 Pollard et al (Hamptons ~8 connections)(Trents ~300 connections)	No current network available. Model review underway.	Capacity for x2 lots off Hamptons Rd.  No current capacity currently for x2 lots off Trents Rd	Consent required, SMA (above ground).	On boundary (Hamptons Road)
V1-0029 Burgess 360-420 lots, 12-17 hh/ha	No current network available. Model review underway	No current capacity (network, Pines WWTP). From 2036.	Consent required.  To be confirmed	n/a
V1-0066 Birchs Village (PC79) 530 lots, 15 hh/ha	No current network available. Model review underway.	No current capacity (network, Pines WWTP). From 2063.	Consent required. Ground soakage	On boundary (Birchs Road)
V1-0070 Ballantrae 163 lots, 15 hh/ha	Capacity in network available.	Capacity in network and Pines WWTP.	Consent required.  To be confirmed	On boundary (Trices Road)
V1-0087 M Springer 40 lots, 17hh/ha.	No current network available. Model review underway.	No current capacity (network, Pines WWTP). From 2036.	Consent required. Ground soakage	n/a
V1-0098 Urban Estates 53 ha, 950 houses, 18hh/ha	No current network available. Model review underway.	No current capacity (network, Pines WWTP). From 2036.	Consent required. Above ground treatment	On boundary

**Hugh Blake-Manson**

**4 May 2023**