In The Matter		of the Resource Management Act 1991 ("the Act") And
In The Matter	of	Proposed Plan Change to the Operative Selwyn District Plan – PC 79

SUMMARY STATEMENT OF HUGH BLAKE-MANSON

Birchs Village Limited

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 Masters in 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. I confirm that the matters on which I express my opinion are within my field of expertise.
6. I prepared this Statement of Evidence on 2 April 2023.

Scope of Review

7. 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 submission of Birchs Village Ltd (the applicant) at Birchs and Hamptons Road.

8. The applicant seeks rezoning of the land to medium-density residential zoning (MDZ). This zone would implement the MDRS allowing for the establishment of residential units, each up to three stories high (12 metres).

9. I have read the infrastructure evidence provided by the applicant.

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 (hhold/ha).

11. Whilst ultimate household numbers in greenfield areas under MDRZ 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 hhold/ha then it will yield some 440 houses, increasing to 530 households if the yield increases to 15 hhold/ha through either smaller average lot sizes and/or pockets of medium density/ terraced housing.

12. If each of the 530 lots was then in turn developed for 3 units (as enabled in the MDRZ), then the site would yield some 1,600 households. Whilst such a yield is theoretically possible under MDRS, 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.

13. 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.

14. Further water and wastewater modelling is being undertaken and may be available from May 2023. This will indicate the infrastructure requirements to ensure safe water can be provided to areas including this. Staging and timing can be considered from that point.

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 byproduct 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 have 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.

19. The same approach applies to all infrastructure.

Prebbleton Water Supply

20. 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.

21. The water supply provides both customers with 'on-demand' water at their connections through water meters and for rural residential properties "trickle feed" supply.

22. 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.

23. Water take consents (CRC202353 and CRC010900) limit the maximum rate of water take based on a range of controls - Table One. The consented maximum total water taken from the scheme is limited to 1,576,800 m3/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 One: Water Take and Use Consents

Consent Number	Bores	Water Take Limits
CRC010900	M36/0870 M36/4795	25 litres per second
CRC202353	M36/7504 M36/0870 M36/4795 BX23/0421 BX23/087	75 l/s Instantaneous 25 l/s Instantaneous 25 l/s Instantaneous 75 l/s Instantaneous 100 l/s Instantaneous
1,576,800 m3 from 1 July - 30 June each year + limits for individual bores		

24. Over the period 1 July 2017 to 30th June 2021, the maximum demand was 5,352 m3/day (December 2017) and 742,348 m3/yr (2020-2021). This equates to approximately 1.2 cubic metres per connection per day (peak).
25. There is currently sufficient water at the council's source wells to meet the daily needs of the applicant's proposed development. An assessment of the scale, extent and timing of any additional infrastructure to meet instantaneous or peak demand needs will be required. This is discussed further below.
26. 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.
27. 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

28. Council has planned for additional water sources (bores), storage and pipeline infrastructure to meet the needs of existing development areas over time. These have been identified over the next 30 years, based on information available at the time. Funding for foreseeable works has been included in Council's Long-Term Plan (LTP), and this is reviewed annually.

29. Because the PC79 site is outside of the anticipated growth areas as shown in the Canterbury Regional Policy Statement 'Map A', demand from PC79 has not been factored into current Council asset planning.

30. Council's water infrastructure growth plans do not, therefore, cover the applicant's property. While this could be addressed, it has previously been noted that this is not necessarily the most efficient use of existing infrastructure.

31. As noted above, under MDRS it is unclear what the actual water demand requirements will ultimately be, given a probable yield of 530 households up to a theoretical yield of more than 1,500 households.

32. Any reticulated water supply for the proposed rezoning area will need to be designed to meet the Fire Fighting Code of Practice guidelines as stated in the Engineering Code of Practice.

33. 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.

34. The applicant has identified five water take and use consents over the proposed rezoning area. Should rezoning be approved, then all water take and use consents should be transferred to Council.

35. It should be noted that development contributions would be payable for development identified by the applicant should the variation proceed.

Conclusion – Prebbleton Water Supply

36. At this time, additional capacity at Council's water sources is likely to be available dependant on review of the applicant demand requirements and capacity allocated to any preceding plan change requests.

37. There is currently no capacity within the existing piped water network to service this proposed rezoning area. Work would be required by Council including to determine the most efficient scale, extent and timing of works.- Water model data is not currently available to provide this information.

38. It should be noted that, for three-storey dwellings, the Council's target level of service of 310 kPa at the point of connection may not be achieved at some times.

39. The applicant should be aware that this may have an impact on internal property water pressure and flows – particularly for upper-storey water fixtures.

40. Any water takes and use consents within the plan change area should be transferred

to Council should rezoning approval be provided.

41. Compliance with the Fire Fighting Code of Practice guidelines as stated in the Engineering Code of Practice will be required should rezoning be approved.

42. It is noted that development contributions are payable for any additional lot developed.

Wastewater

Pines Wastewater Treatment Plant (Pines WWTP) – Rolleston

43. 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.

44. 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.

45. Following its approach of efficient and effective utilisation of infrastructure, Council's infrastructure programme focuses on servicing existing township service areas.

46. There is currently capacity for receiving additional wastewater and treating it at the Pines WWTP.

Wastewater Conveyance

47. Council requires that local gravity wastewater networks are installed wherever possible, with conveyance to a pump station. From there, pressurized pumping can be managed to another part of the network with capacity.

48. There is limited remaining capacity in the existing Prebbleton network to accommodate additional flows i.e. whilst there is sufficient capacity at the Pines WWTP to process the wastewater generated by the PC79 site, there is currently no capacity to get the additional wastewater from Prebbleton to the Pines WWTP.

49. Priority access to the Prebbleton wastewater network is provided to land within the existing wastewater serviced area, which aligns with its approach to efficiency and effectiveness. Council has planned and programmed infrastructure works

which include network capacity and pump station improvement works within the existing serviced area.

50. Recently approved PC68 and PC72 in combination take up the capacity in the existing network. Both of these recent plan changes are subject to MDRZ zoning, 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.
51. The applicant's land is outside the current Prebbleton township wastewater service area. This proposed rezoning area would require that a new rising main and terminal pump station be installed in Prebbleton. This is programmed to be available from 2063, being based on Council's township growth project data.
52. As noted in s13, further work is being undertaken to confirm capacity for all planned and proposed growth.
53. Vesting of land within the proposed plan change area to facilitate capacity upgrades may be required e.g. to construct. Detailed network modelling is not currently available to confirm what requirements Council may have.
54. Any proposal will be the subject of an engineering approval process in the future.
55. It should be noted that development contributions would be payable for development identified by the applicant should the variation proceed.

Conclusion – Prebbleton Wastewater

56. There is currently no viable means to transfer wastewater for this plan change area through to Rolleston.
57. 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.
58. 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 application.

Stormwater

59. Council does not have global consent for stormwater treatment and disposal across Prebbleton.
60. The applicant considers that the soakage 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.

61. Stormwater management will be subject to further investigations, design and review should the plan change be approved and the development progress to the engineering approval stage.

62. A consent to manage stormwater during construction and for final treated discharge will be required from the Canterbury Regional Council as part of any subdivision consent application.

63. 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. Subject to engineering design work, the applicant's site should be able to discharge stormwater to the ground.

Conclusion - Stormwater

64. The applicant has stated that it intends to discharge stormwater to a constructed stormwater management area (SMA)

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

66. All systems will be subject to Councils engineering approval process.

Waterraces

67. Council's waterrace is located adjacent the applicants land- Birchs Road. Closure may not be possible. Any change to the location and use (or piping) will need to be undertaken in accordance with Councils waterrace policy should such be necessary to obtain new vehicle or road accesses to the site.

Hugh Blake-Manson

2 April 2023