Resource Management Act 1991

Proposed Plan Change 8 & 9 to the Selwyn District Plan

Technical Report on Servicing

To:	Hearings Panel
From:	Hugh Blake-Manson, Selwyn District Council
Date:	17 April 2011

Note: ***The recommendations contained within this report do not constitute Council decisions until accepted.***

This report has been prepared under Section 42A of the Resource Management Act 1991. The purpose of the report is to assist Selwyn District Council's Hearing Commissioners to evaluate and decide on submissions on provisions in Proposed Plan Change 8&9 to the partially operative Selwyn District Plan by providing expert advice on technical matters. The report does not make recommendations on submissions but the information and conclusions contained within it may be used by planning officers as a basis for making recommendations on submissions. This report should be read in conjunction with the planning officer's report and any other relevant reports identified.

1. Introduction

1.1 My name is Hugh Maxwell Blake-Manson. I am the Asset Manager Utilities for Selwyn District Council. I have held this position for approximately 6 years. I have been asked to prepare a report commenting on water servicing-related matters and associated submissions on Proposed Plan Change 8 & 9 (PC8 & 9) to the partially operative District Plan (District Plan).

1.2 I have a Bachelor of Engineering (Natural Resources) degree. I am a Chartered Professional Engineer (Civil and Environmental), an affiliate to the APEC Engineers - IntPE(NZ), a member of the Institution of Professional Engineers of New Zealand, a member of the Association of Local Government Engineers (Ingenium) and Board Member of WaterNZ (NZ Water and Waste Association).

1.3 I commenced my employment with Selwyn District Council as the Asset Manager Water in 2004 (now Asset Manager Utilities). My current role entails strategic asset management for Council's wastewater, water, water race, land drainage and stormwater assets. I will refer to these collectively as the "5Waters"

2. Background Information

2.1 The evidence provided is principally based on:

i. Information from the Urban Development Strategy (UDS) and the subsequent Regional Policy Statement (RPS) Change 1 process,
ii. Selwyn Community Plan "LTP":, 5Waters strategic goals and 5Waters Activity Management Planning "AcMP",
iii. Previous servicing assessments pertaining to the implementation of privately requested plan changes
iv. Local knowledge and experience with the utilities network, and

v. Conclusions and recommendations

Urban Development Strategy - Community Growth

2.2 Selwyn District Council "the Council" has consistently had the highest population growth rate in New Zealand since 2004.

2.3 The Council, along with its partners is part of the UDS. The UDS includes Rolleston. It is predicted that 90% of SDC population will reside in the UDS area, with 40,039 population equivalents "PE" expected to be connected to the reticulated sewerage schemes.

2.4 PE is a measure of equivalent people connected. It accounts for industry and dwellings, water and stormwater schemes.

2.5 The major current physical constraints to growth from a Utilities perspective are the provision of consented wastewater and stormwater, land and treatment/disposal areas. These matters are discussed in detail later in my evidence.

3. Community Outcomes, Strategic and Activity Management

Selwyn Community Plan - LTP

3.1 Council has stated its 5Waters Community Outcomes via the LTP. The 5Waters activity contributes to the Community Outcome "Selwyn people have access to appropriate health, social and community services" via:

"providing water, wastewater and drainage services necessary to support community and public health services"

3.2 As stated in the LTP, council intends to ensure wastewater treatment and disposal for all communities proceeds in a manner that does not impede development within the district. This will include:

"Development of a centralised Eastern Selwyn treatment and disposal area at the Pines site, Rolleston, to meet the Greater Christchurch Urban Development agreement"

Strategic and Activity Management

3.3 Council is also responsible for the Strategic and Activity Management activities including:

- Strategic planning – 60 year view identified via the adopted 5 Waters Strategy.
- Sustainable delivery of utilities services in line with the purpose of the Local Government Act 2002 – identified via 5Waters Principles of Sustainability.
- Delivery of 20 Year Activity Management Plans which cover all scheme

components, including risks, costs, and improvements.

- Confirmation of the level of Asset Management dependant on the 5Waters service requirements e.g. for Lincoln and Rolleston "core plus" Asset Management practices are required given the relatively significant importance to the District of these communities.

3.4 I have undertaken a significant level of community consultation to determine both the priorities of, and appropriate Levels of Service, the 5Waters customers expect. This consultation recognised i) customer desires, ii) environmental constraints and iii) affordability.

3.5 The 5Waters Customers confirmed that they place a high value on a cost effective service which protects their health and property. This directly aligns with efficient an effective provision of 5Waters infrastructure.

5 Waters Strategic Goals

3.6 Council adopted a 5Waters Strategy in August 2009, which includes 7 sustainability principles for the management of water. The 5Waters are wastewater, reticulated water supply, waterraces, stormwater and land drainage.

3.7 There are a number of initiatives within the 5Waters Strategy. The method and manner in which 5Waters infrastructure is managed is directed by this Strategy.

3.8 Council has adopted an Asset Management Policy. This prescribes the standard to which Council will manage, operate, maintain, review, construct and document significant infrastructure.

3.9 In relation to this police the term 'core plus' identifies that the asset will be managed etc to the highest level. Rolleston's' wastewater, water and stormwater services are required to meet the core plus standards.

Engineering Code of Practice

3.10 In 2010 Council updated and adopted engineering standards. These clearly state that is the responsibility of those constructing infrastructure intended for community use (e.g. water and wastewater pipes) to ensure the materials, installation techniques and commissioning meet prescribed standards.

3.11 Particular attention is now required to investigating the damaging effect of earthquakes, particularly via liquefaction. It will be the PC 8 & 9 developers responsibility to provide sufficient information where they intend the vest utilities to Council at the time of subdivision should the requests be adopted.

3.12 The Geotechnical Requirements include:

i. Responsibilities of the geotechnical engineer
ii. Design report
iii. Geotechnical completion report
iv. Foundation stability
v. Local Conditions – Liquefaction

Subdivision Design Guide

3.13 The Design Guide identifies the 5Waters Strategy of the Council and recognises that the ideal time to ensure the opportunities presented by the site are capitalised upon is when planning the subdivision design. In particular, the opportunity should be taken to reduce water wastage through re-use by such means as :

- Holding stormwater collectively in retention ponds or tanks to be used for irrigation of public areas.
- Supplying collective water systems to public areas via a 'third pipe' (recycled water).
- Installing rainwater storage tanks on individual sections.
- Considering the use of wastewater for irrigation. This can be easiest achieved on individual lots where a simple greywater reuse system can be used without the need for treatment.

Rolleston Wastewater

3.14 I will now cover the PC8 & 9 specific attributes relating to the Rolleston wastewater scheme. Note that in time this is expected to form part of the UDS based Eastern Selwyn Sewage Scheme.

3.15 Rolleston is currently serviced by two biological wastewater treatment plants "WWTP" referred to collectively as Pines I. Wastewater from them is disposed of to land. Land disposal is essential for the wastewater system to operate and hence to support maintenance of community health. The first biological plant is known as the "Helpet" plant, and is consented to 4,400 population equivalents "PE". The second plant is located at Burnham School Road, which is referred to as Pines . This has been operational for 4 years, with a consented treatment and disposal capacity of 22,000 PE. The current design treatment capacity is 6,000 PE and 10,400 PE between the two plants.

3.16 Pines I provides sufficient capacity to accommodate only the Rolleston and environs predicted growth. The current environs extend to West Melton, Rolleston Prison and the

Rolleston Industrial Zone land.

3.17 Pines I and Pines II wastewater systems are detailed in Table 1 – below, noting:

i. Pines II would consist of a new treatment system including major modifications to the Pines I bioreactor on the Burnham School Road site.

ii. The equivalent of 700 PE in connections are expected from Rural Residential lots up to 2041. Locations for these are expected to be confirmed via the Plan Change 1 (Regional Council) and Plan Change 17 (Selwyn District Council) processes within the next 2 years

3.18 Other UDS communities feed into Pines II and future stages, though the Rolleston only PE estimates are provided for 2041

Table 1 – Rolleston Wastewater

Community	**Treatment and Disposal**		**Population Equivalent PE (Year)**	
	Existing	**Future**	**2010**	**2041**
Rolleston	Helpet WWTP - Extended aeration with nitrogen removal with spray irrigation Pines I WWTP- Activated sludge plant with nitrogen removal with spray irrigation	Pines II - Activated sludge plant with nitrogen removal and spray irrigation	8,300	26,224 (includes West Melton)

Consents – Wastewater Discharge and Designation

3.19 In December 2010 and January 2011, Selwyn District Council (Asset Delivery) obtained consent for discharge and Notice of Requirement for an expanded, Rolleston based wastewater treatment operation - the Eastern Selwyn Sewerage Scheme "ESSS".

3.20 I represented Council in negotiations with the Selwyn Plantation Board regarding spray irrigation of Pines wastewater in the area adjoining the applicants land. Agreement was reached with the applicant on the methods and controls Council would put in place should PC8 and 9 be granted – refer CRC101109.

3.21 Selwyn District Council has purchased the 402 ha required for the ESSS treatment and discharge to occur for the foreseeable future.

4. Proposals

4.1 The development is adjacent to and essentially a satellite of the PC7 development area. This is not efficient when considered against the PC7 managed growth, which will include provision of staged utilities infrastructure. The proposals will require a sewage scheme including pump station – refer Connell Wagner Report 26/02/2010.

4.2 As these requests seek rural residential zoning, they will be required to connect to wastewater services and to align with the sequencing of residential growth within the metropolitan urban limit. Both proposals will necessitate "orphan" infrastructure that is an incremental increased burden on the existing community. It is more efficient for Council to provide and maintain infrastructure within the PC7 area.

4.3 The timing of residential development is important in this regard as rural residential areas will be required to connect to the wastewater infrastructure established in immediately adjoining subdivisions, prior to connecting with the wastewater main to the ESSS. PC8 generally aligns with the residential growth promoted under the Rolleston Structure Plan and PC7, whereas PC9 is likely to have to wait some time for wastewater connections to be available to adjoining subdivisions, which will in turn connect to the community network.

Selwyn District Community Water Schemes - Rolleston

4.4 I will now cover the PC 8 and 9 proposals in terms of their ability to connect to the community water network.

4.5 The Rolleston water scheme details are shown in Table 2 below:

Table 2 – Rolleston Water Scheme Details

Community	Take and Use		Household Growth (Year)	
	Existing	**Future**	**2007-2020**	**2021-2041**
Rolleston	5 wells with a consented well field up to 300 l/s at Izone (145 l/s current take)	Additional wells and headworks	2,052	3,323

Note: i) Rolleston water supply is designed to provide for industrial use facilities "wet industry" in the Industrial Zone area to the north of State Highway. There maybe significant increases in PE use as a result of wet industries need.

Rolleston Water Network

4.6 In 1996 the town water supply reticulation was extended to serve the Change 10 scheme area (designed for 4,200 people). The extension included a total revamp of the low level pumping system with the inclusion of a deep well in Kairangi Apple Orchard, decommissioning of the reservoir at George Street and increasing the network operating pressure to 35m (50psi). The new scheme came into operation in June 1997.

4.7 In 2003 a long term plan for servicing the water supply needs of the Rolleston community was approved by Council. The plan included the installation of:

- A major pump station in Izone Drive (installed 2003) that was to be the control centre for water supply in Rolleston; and
- Wells to be installed as demand increased and a major reservoir (installed 2003).

4.8 Following the installation of a well at Izone Drive in early 2004 and installation of the trunk main in late 2005 / early 2006, the Izone Drive pump station became the main control centre for Rolleston water supply.

4.9 Peak daily demand is predicted to increase from 9,000 to 30,000m^3/d by 2041 based on the projected household growth. In addition to the consented 300 L/s at Izone, a further 300L/s is required to service the estimated demand through a number of new well sites within the ODP growth areas.

Water – Consents and Growth

4.10 Consenting of water - the take and use of groundwater water for community drinking water supply purposes is not considered to be a significant issue in the PC 8&9 area. While there are constraints (eg. demand management requirements including conservation of water, effects on neighbouring wells), this type of water use has been recognised by the Canterbury Regional Council – "ECan" as having a high priority in the Canterbury Water Management Strategy. Community water supply consents obtained recently support my opinion that this high priority is reflected in granting of water.

4.11 As these proposed Plan Changes seek rural residential densities, they will be required to connect to the community network within the metropolitan urban limits of Rolleston. This network will need to be upgraded to provide for fire flow and pressure to service both PC8 and PC9 areas. At this point in time the metropolitan network does not have sufficient capacity to provide this but is expected to in time as residential development expands to the Dunns Crossing Road boundary.

4.12 Councils focus is on providing capital upgrades in the Springston-Rolleston road corridor and Brookside road areas. Timing for this work has not yet been confirmed, but is generally

reflected in the staging for the provision of infrastructure outlined in the Rolleston Structure Plan and PC7.

4.13 The area directly north of the Holmes Block is identified for development within the next five years. If PC 8 is approved prior to the Council network having been upgraded, there will be a requirement for onsite storage. Generally, this means each property will have its own tank with a capacity for 30 cubic metres of water.

4.14 Water servicing for PC9 is not expected to be available for at least 10 years based on current information. This represents a significant infrastructure constraint as the timing for when the necessary upgrades to the network will be completed to enable the anticipated level of service to be provided to the PC9 land is likely to be some time away.

Rolleston Stormwater

4.15 Council's current position regarding stormwater management is that the applicant will, as appropriate, obtain consent from the Canterbury Regional Council for treatment and disposal.

4.16 Council will on provision of appropriate evidence consider transfer of any consents to it for management.

4.17 Treatment via vegetated swales and first flush dry basins and ground infiltration systems are utilised in Rolleston. This recognises the free draining characteristics of the area. Given the porous ground conditions and relatively large lots proposed in the Plan Changes, I would anticipate that stormwater from individual sites will be disposed of to ground on-site, without the need for a community retention basin and drainage network. Road runoff would likewise be disposed of to ground via properly engineered, vegetated swales immediately adjacent to the formed carriageway. Stormwater management and disposal does not therefore present a constraint on either Plan Change.

5 Conclusions

5.1 In conclusion it is my opinon that:

a) PC 8 & 9 necessitates "orphan" sewer and water services line and wastewater pump stations, which will result in increased costs of operation, maintenance and renewal over the asset life compared with accommodating the same number of households within the MUL. Large rural residential developments do not therefore generally result in an efficient servicing network when compared to the consolidated and coordinated management of residential growth.

b) Council accepts that temporary pump stations are valid methods for servicing areas, as long as that infrastructure is removed and replaced with a larger scale system catering for all growth. This is not the case in this situation, as the pump stations will be required permanently and ongoing costs to the community will arise as a result. While this is not desirable, my opinion is that this will not result in a separate targeted rate for the ongoing operation of the service as the ongoing maintenance and operational costs will be absorbed into the wider costs of managing the wider community network.

c) There is expected to be sufficient capacity within the consented and proposed community wastewater treatment plants to accommodate the growth anticipated from both Plan Changes. Design work for the expanded treatment and disposal "Pines II" is well underway. There is also sufficient capacity in the water wells and via consent.

d) The metropolitan water supply will not have sufficient capacity to meet the demand of predicted growth in the PC7 area adjoining these sites, and will require improvements led by Council. The timing for that work is yet to be decided. It is more likely that PC8 will have access to the community water network as soon as the residential development anticipated under PC7 proceeds (i.e. it is within the first stage of development under Rolleston Structure Plan and PC7), while PC9 is not anticipated to have access within 10+ years.

e) Should the Plan Changes be approved, Council is required under conditions of the Notice of Requirement to ensure that the effects, if any, of wastewater disposal within the Pines Waste Water Treatment Plant and associated disposal area are minimised at the adjoining boundary, whilst noting the views expressed by Ms Harwood that an additional dwelling setback from the boundary would assist in further minimising the potential for reverse sensitivity issues arising in the future.

f) Stormwater treatment and disposal is readily available to ground, providing Canterbury Regional Council consent conditions are met.

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ASSET MANAGER UTILITIES