

In the Environment Court of New Zealand
Christchurch Registry

I Te Koti Taiao o Aotearoa
Ōtautahi Rohe

ENV-2018-CHC-26 to 50

Under the Resource Management Act 1991 (**RMA**)

In the matter of appeals under clause 14 of Schedule 1 of the RMA relating to the proposed Southland Water and Land Plan (**pSWLP**)

Between **Gore District Council, Southland District Council and Invercargill City Council (TLAs)**

Appellants in ENV-2018-CHC-31, and section 274 party to appeals:
ENV-2018-CHC-37 Southland Fish & Game Council; ENV-2018-CHC-39 Alliance Group Limited; ENV-2018-CHC-40 Federated Farmers of New Zealand; ENV-2018-CHC-50 Royal Forest and Bird Protection Society of New Zealand; ENV-2018-CHC-41 Heritage New Zealand Pouhere Taonga; ENV-2018-CHC-47 Te Rūnanga o Ngāi Tahu, Hokonui Rūnaka, Waihopai Rūnaka, Te Rūnanga o Awarua & Te Rūnanga o Oraka Aparima

And **Southland Regional Council (Environment Southland)**
Respondent

Evidence of Malcolm Loan

22 March 2019

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**anderson
lloyd.**

Introduction

- 1 My name is Malcolm Ronald Loan.
- 2 I am Invercargill City Council's (**ICC**) Drainage and Solid Waste Manager. I have held this position with respect to the Drainage Activity for 33 years and with respect to the Solid Waste Activity for 7 years. The role includes preparation and management of asset management plans and annual and long term budgets, management and supervision of staff involved in delivery of the activities, and procurement and management of consultant and contractor services required to meet the objectives of the activities.
- 3 I hold a Bachelor of engineering degree and am a member of the Institution of Professional engineers of New Zealand.

Scope of evidence

- 4 My evidence covers:
 - (a) Benefits and need for infrastructure;
 - (b) Sewerage Network;
 - (c) Stormwater network;
 - (d) Connections to networks from private properties;
 - (e) Ongoing need for Infrastructure;
 - (f) Operation and maintenance provisions;
 - (g) Consenting and Compliance Programme; and
 - (h) The problem with the pSWLP.

Executive summary

- 5 ICC operate stormwater and sewerage networks as essential elements of Invercargill's infrastructure to protect public health, to reduce the risk of property damage, and to enhance the urban and natural environments. This infrastructure will continue to be required as long as the city is inhabited.
- 6 Operators and maintenance contractors continuously maintain the pipe networks and mechanical plant to ensure optimum performance, and to attend to emergency and contamination events.

- 7 The networks have grown with the city, and ICC have developed asset management plans which provide for the maintenance, development, upgrading and renewal of assets, to enable the infrastructure to continue to meet the needs of the community.
- 8 Over 20,000 private properties are connected to the drainage networks, with on property drains in total exceeding the length of the public networks, and with a similar age profile to the public networks. Maintenance of these private systems is the responsibility of property owners, and ICC's ability to manage these connections is limited to building consent conditions when a property is being redeveloped, and in response to contamination events that are traced to a specific property.
- 9 ICC holds consents for discharges from the drainage networks to the rivers and streams through the city and to the coastal marine area. The consents include conditions to manage their performance, and the quality of discharges. ICC strives to improve the quality of discharges within the network, but the majority of contamination is believed to originate within private properties, and this is much more difficult for ICC to deal with.
- 10 ICC opposes amendments to the pSWLP objectives that seek to reduce the plan's recognition of the need to continue to provide drainage infrastructure which will meet the needs of the community, and enable ICC to continue to effectively improve the environmental effects of its discharges.

Benefits and need for infrastructure

- 11 Invercargill's drainage networks were first established over 100 years ago to protect public health, to reduce the risk of property damage due to flooding, and to enhance the urban environment. Over the intervening years the systems have grown with the city, and have been improved to provide better separation of the two networks, to improve their performance in terms of the protection of public health and of property, and to reduce adverse effects on the environment.

Sewerage network

- 12 The sewerage network includes 368km of pipes in Invercargill, Otatara, Omaui, and Bluff, 31 pump stations, and three treatment plant, located at Bluff, Omaui, and Clifton. The Clifton and Bluff treatment plants both produce tertiary quality effluent, and the Omaui Plant is consented to discharge to land. Discharges from each of the treatment plants consistently comply with their consented quality standards. The network collects and treats sewerage and tradewaste from more than 20,000 residential commercial and industrial properties. The removal and treatment of sewage and tradewaste provides health benefits to the community and provides one of the building blocks for business to establish and contribute to

the prosperity of the community. The sewerage activity has an Optimised Replacement Value of \$274M and the activity has an annual budget of \$7.1M, including an asset renewal budget of \$2.3M.

Stormwater network

- 13 The stormwater network includes 419km of pipes in Invercargill and Bluff, and nine pump stations. The system discharges at more than 250 locations along the five streams through the city and within the coastal marine area. The discharges to the fresh water streams have been consented since 2011. These consents were most recently renewed in December 2017, with a complex set of monitoring conditions to identify issues with the quality of the discharges and requiring responses to improve quality when found to be deficient. ICC operates the network as a complete system and endeavours to reach the same quality standards at all discharge locations, whether in the fresh water areas, or the coastal marine area.

- 14 The stormwater network collects rainwater from rooves of buildings and from ground level surfaces through mudsumps. Stormwater is susceptible to contamination from a number of sources including contaminants which can accumulate on the surfaces from which water is drained, cross connection or overflow from the sewerage system due to blockage or damaged pipes, and overloading of both drainage systems due to high intensity rainfall. The system receives stormwater from more than 20,000 residential, commercial, and industrial properties. The drainage of stormwater provides health benefits to the community and protects properties from damage due to flooding. Following the major flooding of Invercargill in 1984, the stormwater network has been significantly upgraded to provide sufficient capacity for similar storms in the future. The upgrade included new and larger pipes to all the areas flooded in 1984, and has provided trunk mains to extend improved drainage into areas not yet upgraded. This upgrade has contributed to improved stormwater quality by reducing the frequency of stormwater overflow to sewerage, which in turn reduces the risk of sewage overflows entering the stormwater system and the receiving waters. The stormwater activity has an Optimised Replacement Value of \$321M and the activity has an annual budget of \$ 4.28M including a renewal component of \$2.8M.

Connections to networks from private properties

- 15 In addition to the public networks, each connected private property has stormwater and sewerage pipes which in total exceed the length of the public networks. While installation of these private systems are subject to building consent issued and supervised by territorial authorities, ongoing maintenance is the responsibility of property owners. These systems have similar age profiles to

the public systems, and cross contamination can occur through open and failing joints or through damaged pipes, particularly in the older properties. Because both stormwater and sewerage pipes are typically laid in the same trench, cross contamination is more likely to occur within private systems. With maintenance of these systems being the owner's responsibility, maintenance is often neglected, and quick fix solutions to a problem can result in illegal work and direct cross connections between the two drainage systems. These issues can be difficult to identify, and ICC officers often spend many frustrating hours locating contaminant sources, but these must be clearly identified before property owners can be required to rectify.

Ongoing need for infrastructure

- 16 The drainage infrastructure is essential to the health and wellbeing of the community, and will continue to be required as long as the city is inhabited. To ensure the service is continually available, ICC has developed asset management plans which provide for the maintenance, development, upgrading, and renewal of assets.

Operation and maintenance provisions

- 17 Operators and maintenance contractors continuously maintain the pipe networks and mechanical plant to ensure continuing optimum performance, and are on 24 hour call to respond to emergency events including mechanical breakdown, blockage, system overflow, and contamination events.
- 18 The networks are regularly monitored for performance and condition using CCTV inspection, flow monitoring, and maintenance records, and assets are scheduled for renewal to ensure continued optimum performance. The oldest parts of the piped networks have now reached their anticipated asset life of 100 years, and renewal programmes for these assets are underway. Annual asset renewals are currently budgeted at \$2.3M for sewerage, and \$ 2.6M for stormwater (33% and 54% of respective activity budget) and are planned to increase to \$2.5M for sewerage and \$ \$3.9M for stormwater by 2022 (35% and 65% of activity budget), and will then continue indefinitely. With the current drainage budget amounting to 17% of the total city rate draw, and this percentage expected to rise further as renewal programmes ramp up, these are very significant commitments on ICC's part to the maintenance and continual improvement of the drainage activities.
- 19 Notwithstanding the improvements that can be made to water quality through renewals of the drainage systems, the majority of stormwater contamination is believed to originate on private properties, and this is much more difficult for ICC to deal with. As the housing stock ages and is demolished and replaced, ICC can, and does, require new property drainage systems for the new structure, but

where maintenance issues arise with aging systems serving buildings still in use, the issue must first be identified and proven before remedial work can be required. This can be a long and frustrating process.

- 20 As part of its recent stormwater consent application, ICC has considered the possibility of treatment of stormwater. Treatment systems are available which will remove sediments and attached contaminants from stormwater, but these come at very significant cost which is expected to at least double the total city rate draw over the 25 year anticipated life of the devices. Unfortunately, due to the high variance of stormwater flows, systems are not available to treat the contaminants of most concern, being nitrogen and phosphate nutrients, and sewage. ICC has therefore proposed, in its consent application, strategies to target and reduce contaminant sources as a means to improve stormwater quality. There is a concern that the pSWLP is directed towards achieving major quality improvements over a very short time frame and is not able to easily accommodate the historic issues of urban drainage networks.

Consenting and compliance programme

- 21 ICC has consents for discharges from each of its three wastewater treatment plants. The Omaui oxidation pond discharge is to land, and the Clifton and Bluff discharges are to water in the coastal marine area. The Clifton discharge is to the New River Estuary, and the Bluff discharge to the Bluff Harbour. The Bluff discharge consent will expire in 2024, and the Omaui and Clifton consents in 2029. ICC monitors discharge quality as required by the consents and consistently complies with the consent conditions. The discharges have negligible impact on the receiving environments, and the monitoring has shown an improvement of the benthic communities in the vicinity of the discharges over the period of the consents.
- 22 ICC has a consent for stormwater discharges to streams through the urban part of the city, granted in November 2017. The consent has conditions requiring extensive monitoring and, where contaminants are identified, follow up investigations to identify and remove contaminant sources.

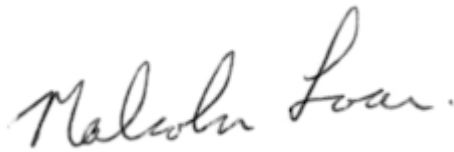
The problem with the pSWLP

- 23 Changes sought by parties to modify Objective 6 to read that water quality is not reduced, or is improved in degraded water bodies, alongside the preference of Policy 14 for discharges to Land will make it very challenging to obtain consents to discharge effluent to water, irrespective of the degree of treatment or actual environmental effects. Suitable land disposal sites have not been identified close to the Invercargill wastewater treatment plant sites, and the requirement to pump over long distances to suitable sites is extremely expensive.

- 24 It is important to ICC that the objectives enable the current benefits to the community and to the environment that reticulation networks provide. These systems were developed in accordance with the prevailing standards of the time, and within the limits of available technology. Standards and technology have developed over time, and new assets have been constructed to the latest standards. The pSWLP requires a major step change in discharge quality, although these requirements will be reviewed as limits are eventually developed.

Conclusion

- 25 ICC manages stormwater and sewerage drainage networks throughout the urban areas of Bluff and Invercargill. These networks accept stormwater and sewerage discharges from over 20,000 individual properties within the city, and are essential for the health and wellbeing of the community. The networks discharge to fresh water rivers and streams, and to the coastal marine area, and are managed in accordance with consents held by ICC for these discharges. ICC is concerned to ensure that the objectives of the pSWLP do adequately provide for this infrastructure to be consented operated, maintained and upgraded over time.
- 26 ICC supports the objectives in the pSWLP as decided by Environment Southland, but opposes some of the changes to them other parties have sought.

A handwritten signature in black ink that reads "Malcolm Loan". The signature is written in a cursive, flowing style.

Malcolm Loan