
Mapua/Ruby Bay wastewater overflows

3 messages

Mike Schruer <Mike.Schruer@tasman.govt.nz>

Fri, May 26, 2023 at 3:50 PM

To: "jheijnsz@gmail.com" <jheijnsz@gmail.com>

Cc: "info@ourmapua.org" <info@ourmapua.org>, Chris P Hill <chrisp.hill@tasman.govt.nz>, Richard Kirby <Richard.Kirby@tasman.govt.nz>, Becky Marsay <Becky.Marsay@tasman.govt.nz>, Christeen Mackenzie <Christeen.Mackenzie@tasman.govt.nz>, Julie Baker <Julie.Baker@tasman.govt.nz>, Kim Drummond <kim.drummond@tasman.govt.nz>

Dear Jan,

Further to your presentation to the Environment and Regulation Committee on 4th May, I have been asked to reply to the recommendations you made to the Committee, which were as follows:

1. Establish an agreed and affordable performance target
2. Provide reliable network models and undertake performance assessments using best practice
3. Justify and scope improvement works based on this
4. Put consent in place before transfer to new water entity for all networks
5. Allow for all of the above in the LTP

1. We already have mandatory measures, also reflected in the levels of service in our Activity Management Plans, which are monitored and reported to Council annually through the Annual Report (refer **Attachment 1** – Wastewater Annual Report 2022).

In addition, for the past eight years we have participated in the annual National Performance Review, undertaken by Water New Zealand, where we are able to compare our service level performance against most New Zealand local authorities (refer **Attachment 2** – Water NZ NPR Wastewater Overflows and I/I).

2. We only develop network models on demand for upgrade works or specific growth and development investigations. It is too costly to build and maintain models for all our wastewater networks. We do however have “backbone” models of our critical networks to assess capacity when major developments are proposed. We do not have the resources to operate and keep models up to date, and using consultants to do so would be an excessive cost.

There are, however, many other methods of monitoring performance of wastewater networks, and we have budgets for this work. We have an annual budget of \$100k for CCTV inspections and another of \$100k for Inflow/Infiltration investigations and mitigation measures, in addition to a reactive maintenance budget to undertake remedial work and repairs.

We have manhole sensors in several of our key catchments to monitor surcharging of manholes and we monitor pump station performance during and following rainfall events. Our typical design for wastewater networks is for a peak flow of six times the average dry weather flow and many of our at-risk pump stations have between six- and 10- hours storage depending on the location and risk to water bodies.

Where the design criteria is exceeded and overflows occur we investigate those catchments further to understand the cause behind the excessive flows. We cannot accommodate rainfall events in excess of our design limits in our networks, so overflows are inevitable, especially with the extreme events we have recently experienced. Using a combination of visual inspections, dye testing (we very seldom use smoke testing nowadays), overflow reports, CCTV and DTS (Distributed Temperature Sensing) we are able to identify both inflow and/or infiltration and determine the likely cause of the fault; whether illegal connections, cross connections, overland flow into manholes or gully traps, failed private laterals, failed pipes or joints, failed manholes, damaged manhole lids, swimming pool discharges, etc and undertake repairs.

Appropriate practice is maybe a better objective to aim for rather than best practice, which is often unaffordable to most communities.

I would suggest our practices are better than most around the country and we have a very good level of service, but we do experience I/I issues in low lying areas with high groundwater tables. Although we may not achieve best practice, our wastewater rates are currently the

fifth highest in the country, according to the Water NZ NPR. What would the community think if we were to raise rates to meet the best practices requested by MDCA? Would they be prepared to pay significantly higher targeted rates for Mapua/Ruby Bay, bearing in mind that this would not only be for wastewater but for stormwater rates as well, as you cannot upgrade one without the other to manage the risk of overflows resulting from storm events.

Since we obtained a global discharge consent for stormwater, we have a clearer idea of what we need to target and we are now in the process of developing catchment management plans and catchment monitoring plans for each of our 15 Urban Drainage Areas (UDA), followed by renewals and upgrades of the infrastructure to control stormwater and restrict I/I of stormwater into the wastewater networks leading to overflows. To date, we have developed a catchment management plan for Richmond, and we are in the process developing a monitoring plan. We will target the Motueka UDA next, and then proceed to prioritise other UDAs.

3. We scope and justify improvement works through the Activity Management Plans, based on the data collected, as described above. There is still no guarantee that we will get funding to undertake these works.

Typically, every proposed Annual Plan and Long-Term Plan has a request for increased funding to undertake such works, far in excess of what would result in a reasonable rates increase and hence budgets are cut and work is not undertaken.

4. We cannot get a consent for what is not permitted. The Tasman Resource Management Plan would need to be updated, which is already being progressed.

5. It is highly unlikely that the above requests, in particular item 2, would be affordable for the next LTP.

Regards

Mike

Mike Schruer

Waters and Wastes Manager

DDI +64 3 543 8686 | Mobile +64 27 244 8103 | Mike.Schruer@tasman.govt.nz

Private Bag 4, Richmond 7050, NZ

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2 attachments

 **Water NZ NPR Wastewater Overflows and II.docx**
1166K

 **WW compliance from annual report June 22.pdf**
452K

Jan Heijs <jheijnsnz@gmail.com>

Thu, Jun 15, 2023 at 10:02 AM

To: Mike Schruer <Mike.Schruer@tasman.govt.nz>

Cc: "info@ourmapua.org" <info@ourmapua.org>, Chris P Hill <chrisp.hill@tasman.govt.nz>, Richard Kirby <Richard.Kirby@tasman.govt.nz>, Becky Marsay <Becky.Marsay@tasman.govt.nz>, Christeen Mackenzie <Christeen.Mackenzie@tasman.govt.nz>, Julie Baker <Julie.Baker@tasman.govt.nz>, Kim Drummond <kim.drummond@tasman.govt.nz>, John Ridd <john.ridd@tasman.govt.nz>, Paul McIntosh <pmcintosh64@yahoo.com>

Hi Mike,

Thanks for coming to the meeting last Monday and I would be grateful if the discussion with me and/or the MDCA could continue on this topic in an effort to seek a solution.

I acknowledge that TDC is putting considerable effort into managing Inflow and Infiltration (I/I) and wastewater overflows. Examples are the \$200k per annum to combat I/I using a range of methods and the fact that TDC uses a generous design standard of 6 * ADWF and significant storage at some of the pumping stations.

Although I don't want to go into an extensive technical discussion. I do want to point out a few of my learnings. If you'd like me to advise TDC on these matters, for example by doing a technical/professional presentation or workshop with wastewater network planners, I'm happy to do that.

Using CCTV, DTS, overflow reports, smoke/dye testing, etc are inadequate to reduce I/I to a level it will reduce overflows. I have never seen a quantitative investigation where these measures have been successful. There are better and more effective methods around.

The Inflow and Infiltration graph you have provided showing dry weather flow ratios at treatment plants concerns me a lot. I know that this graph is provided by Water NZ and I have pointed out many times to them that this is a very unreliable way to score Inflow and Infiltration in relation to wet weather overflows. Flows to any treatment plant, especially the treatment plant at Bell Island is restricted by the capacity of the pumpstations pumping into the treatment plant. Assuming these pumpstation are designed to the 6 * ADWF, the total flows won't exceed this. It is very common that wet weather flows during a rainfall event are well in excess of 6* ADWF. I have often seen measured wet weather flows of 20-30 * ADWF and sometimes up to 60* ADWF. In my professional opinion only a measure such as Rainfall Induced Inflow and Infiltration (RDII) is a reliable measure. This is explained in the Inflow and Infiltration Manual from Water NZ. (I have seen this attribute been used inappropriately so I urge you to seek expert advice on this.)

It is commonly accepted that wastewater networks do not perform as designed. So, an understanding of the actual performance is essential to identify, justify and scope improvement works. Although the observation and measurement you have listed are very useful, these are not

adequate to scope improvement works. Consequently, these improvement works are likely to be over or under designed.

Although I acknowledge that building and maintaining network models is expensive, these costs dwarf in comparison with the investments and potential savings related to capital works.

In addition, combatting I/I is often not cost effective compared to other options available to TDC such as network capacity, network re-configuration and storage. These other options also have more predictable benefits, while I/I reduction hasn't. Undertaking network optimisation has proven to render significant savings.

The improvement programmes I have been involved in have shown me that:

- 1) Combatting I/I is extremely hard, expensive, and outcomes extremely variable.
- 2) Using reliable network models are the only tool to measure performance and help scope improvement programmes (despite their costs).
- 3) Network optimisation is likely to render savings
- 4) Improvement programmes aimed at reducing wet weather overflows often take 10-20 years or longer – there is no quick fix.

Regards,

Jan Heijs

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Ngā mihi

Jan Heijs

14 Lionel Place, Mapua 7005

Mob: [++64 21 354 782](tel:++6421354782)

I stand for a joyful, just, sustainable world

Paul McIntosh <pmcintosh64@yahoo.com>
Reply-To: Paul McIntosh <pmcintosh64@yahoo.com>
To: Marion Satherley <marionawayfromhome@gmail.com>

Thu, Jun 15, 2023 at 10:13 AM

More correspondence

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