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Submission in opposition to Gisborne District Council – Community Lifelines

Application for overflow discharges frow the Wastewater Network.

INTRODUCTION

Ko Turahine toku maunga.

Ko Wainui te moana.

Ko ngati pakeha te iwi.

Ko Lex raua ko Rae oku matua.

Ko Zane Sandy Gibson toku ingoa.

I have read and complied with the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2014 in preparing this submission. I agree to comply with it in presenting this submission and to comply to it in any evidence I might give at the hearing. The opinions and assessments that I give in this report are within my field of expertise.

Background

This report has been prepared by Zane Sandy Gibson. I am a self-employed Water Cartage contactor. I am a certifying Drainlayer. I have spent 20 years as a practicing drainlayer. I am a past employee of GDC, between 2009 and 2011, where I managed the then called Inflow / Infiltration Program. Since leaving GDC employment I have worked on various Drain laying projects around the country as the on-site Certifying Drainlayer. I have actively searched for the answers to the questions of Inflow Infiltration cause in Tairawhiti and their remedy since 2009. In 2019 I was employed by a Gisborne plumbing company C&G Plumbing, on two GDC Drainwise Stormwater, pipe laying contracts. I am an expert in the field of Inflow Infiltration.

Cause of Rainwater and Ground water entering the Wastewater Network.

While working for GDC as manager of the Inflow Infiltration Program.

My crew and I investigated much of the system after midnight, when the ground was saturated, and surcharging was occurring.

Surcharging or the backing up of the system occurs when there is more liquid getting into the system than can get out. So, the Wastewater, rather than travelling in the channel at the bottom of the MH, builds up inside the MH, and then floods the next MH after that until the whole system is inundated and as a result overflows occur.

These investigations took place after midnight so that that legitimate flow from households could be largely discounted, as people were asleep and not generating wastewater.

These investigations supported my fairs that the bulk of the ingress was coming into the system through infiltration into these mains.

MHs were also seen to be leaking in vast amounts of ground water.

These investigations were well documented, and these records filed in the GDC system.

The council has investigated the main network by, using CCTV, at length. The state of the network is well known.

Some of these old sewer mains have been replaced and some of them lined which has lessened their ingress impact.

I have asked the council for a breakdown of the age, material, pipe depth and meters of the various aspect to the main network.

This information is easily accessed as it features on all main network plans. This is crucial evidence.

Flow models generated by engineers using flow loggers placed in MHs over short time frames with limited rainfall and too few rain gauges are inherently inaccurate.

Private Lateral Leaking

Private laterals leaking in ground water are also a major source of Wastewater flow when overflows are occurring. Like the mains many of these pipes are old and leak. As these pipes are not as deep in the ground, as their main counterparts, they are easier to investigate.

These ongoing investigations continue to add to my ever-growing knowledge.

Earthenware Pipes (clay) with mortar joins

These leak through a hair line crack circumnavigating these pipes just downstream of the collar.

Earthenware pipes with rubber ring joints

These leak through the rubber ring joint that has gone hard and rigid.

Concrete Pipes

Concrete pipes, that the laterals in the council domain are often constructed of are predominantly leaking at their collar joints. An alarming new development in these concrete pipes is a trickle ware along the length of these pipes. Here because of an acid like reaction the pipe has been seen to have been eroded all the way through in a path the width of a gentle trickle.

Observation 1

It is possible to discount water running into gully taps as a major cause of ingress by practiced visual observation. I would use a well-known manhole that its visual flow behavior had been frequently observed and recorded. This MH would be sited in the higher reaches of a catchment. When in times of ground saturation when the system was surcharging one can observe a higher flow. Because the number of houses feeding into this MH would not be

great, say 15 houses, one could walk around these houses to investigate whether water was running into gully traps from rainwater.

One needs to discount illegal connections through smoke testing.

One can confidently conclude that water is ingressing into the system through leaky pipes by using this method.

These observations cannot be witnessed by sitting in an office.

Observation 2

Most laterals join directly on to a connection to the main.

Some laterals are so long that a MH is sited still in private property between the house and the public sewer main. In one of these MHs in the Kaiti area close to Pickering Street, I conducted a CCTV investigation. The ground was saturated, and the wastewater network was surcharging.

- On the CCTV screen the pipeline was seen to be dripping in water along its entire length.
- The house was built in the 1950 – 60s.
- At one point the dripping in water was quicker.
- By tracing out onto the surface where this increased dripping was occurring. One noticed water pooling on the ground underneath a downpipe, that was discharging onto the ground.

This investigation added a lot to my already held views that the lateral pipes leaking were a major contributor to the Inflow Infiltration issue.

- False claims that most of the Inflow Infiltration is coming from water entering the top of Gully traps suit the purposes of a public relation campaign.
- Civil works have been conducted to remedy the incorrect theory of leaking Gully traps. These civil works achieve little in reducing flows**.**
- **Why Helen Churton was questioning project as far back as 2015 and myself since 2009.**

Roof water being piped into the top of gully traps have a medium impact on the wastewater system. If one calculates the average size of a house roof in Gisborne, divide by two, as most houses have at least two down pipes, and times this by the rainfall, one can calculate the volume of rainwater entering the system through these illegal connections. This volume can be turned into a liters per second total and this total put against a required fall in flow required to reduce overflow occurrences. A simple task.

Flood water flowing over the top of gully traps is not common and usually easily remedied.

Some water enters the system through leaking gully traps. The Inflow Infiltration team have been repairing gully traps for thirty years and most of these have been repaired. It is uncommon to have puddles of water sitting against a house. This would have to be the case for large amounts of water to enter these gully traps.

Wastewater Network Remediation

It is necessary to have a correct understanding of the sources of Inflow / Infiltration and their impact on the Wastewater network. Once this is firmly understood an effective program can be introduced to reduce water ingresses and overflows.

Questions Over Remediation Work

An exert taken out of the Infiltration and Inflow Control Manuel 2nd edition 2015.

This has been written by the, at the time, manager of GDCs Inflow Infiltration Program, Helen Churton.

Page 58 Infiltration and Inflow Control Manuel 2nd edition 2015

During this whole period flows were monitored and reductions in flow identified. However, the overall objectives of eliminating overflows and reducing discharges have yet to be achieved. A major review is currently being undertaken of all the work to date to understand why this may be.

Helen Churton managed the Inflow Infiltration at this time and in this publication, she is questioning the lack of flow reduction. At the time Helen was using the same assumption that most of the flow was coming from fast flow response and consequently using the same methods of remediation.

Helen in this publication says that there was a major review currently being undertaken.

I have asked GDC for a copy of this referred to review report but at this point I have not received a response.

Reductions have not occurred because the remediation work being conducted were aimed at reducing fast flow response inflow. Which is not a major source of ingress.

Current Network Remediation

Even though GDC claim that the wastewater leaking mains are only a minor contributor to the problem they have a relining program in place. Which is good for they are a major contributor. GDC are also upgrading pump stations which increases the networks volume capacity.

Stormwater work on private property is largely in effective in reducing ingress volumes.

How did GDC get it so wrong?

Repairing gully traps and removing down pipes from gully traps are relatively inexpensive exercises. They are the low-lying fruit. If the impact of these two scenarios was seen to be high, it would be easier to encourage the public to make these required repairs.

Ineffective Work

In recent years, the Inflow / Infiltration program have installed storm water pipes on many private properties. This work achieves little in reducing water ingress into the wastewater system. There are far easier and less costly ways to drain storm water from properties.

This work would never have been conducted if there was an accurate understanding of ingress cause.

The budgeted 32 million dollars over the next ten years needs to be spent well to reduce or to eliminate overflows.

An accurate understanding of cause is essential.

FALSE LOGIG

The Drainwise program has been based around the premise that ingress into the system is a result of fast response inflow. This is incorrect. This theory of fast flow response cause, Water running into Gully traps, is derived from the model. Where my expertise is not in model generation, and model use, I can comment on its findings being inconsistent with my experienced visual observation.

48 “As such, I consider that it is appropriate in predicting overflow volumes under different inflow reduction scenarios for single events.” GG evidence

He does not say that the model is detailed enough with enough rain gauges to predict whether the flow is fast response inflow. Fast response inflow being derived from such sources like water running over the top of Gully traps.

Fulton Hogan

The people of Fulton Hogan are our community heroes.

They work tirelessly to keep the wastewater network operating. Any criticism I have of the work being conducted is not criticism of them but rather criticism of their GDC direction.

Drain Wise.

I thank the GDC Drain Wise team for their long serving efforts in keeping our system running. Your system knowledge and your customer relationship building abilities are awesome.

Public Consultation

Property owners who have had any works on their properties must be herd from. The residents must be encouraged to independently evaluate and give feedback on all aspects of GDC involvement so GDC can even do it better next time. Or not do it at all.

Trade Forum

An effective trade forum is essential to good decision making.

Fulton Hogan and external trades with GDC engineers and Drainwise Team to be working as an equal idea sharing and problem-solving team.

IN RESPONSE TO

Gisborne District Council – Community Lifelines

TWENT YEAR Wastewater discharge applicant.

Wolfgang Adrian Kanz

Is Wolfgang's evidence given as an expert witness?

Expert witness obligations must be meet.

Graham Garside

48 "As such, I consider that it is appropriate in predicting overflow volumes under different inflow reduction scenarios for single events." GG evidence

He does not say that the model is detailed enough with enough rain gauges to predict whether the flow is fast response inflow. Fast response inflow being derived from such sources like water running over the top of Gully traps.

The model with so few rain gauges was commissioned to predict overflows, nothing else.

Much of the model was developed when there were only two or three rain gauges over the whole city. Any use of rain gauges to predict sewer modelling must be conducted with great caution.

"Accurate estimation of the spatial and time variation of rainfall across urban catchments is essential for accurate sewer and stormwater modelling and operation activities." (Water NZ Conference 2017)

I question Graham Garside whether the present method of collecting rain fall data is robust enough to be able to create a model that can direct the user as to the source of stormwater ingress.

Bridget Lucy Bosworth

20 "While elevated shallow ground water levels could potentially be a course of water ingress into the pipes, a high groundwater level does not necessarily mean that ground water is entering the pipe nor that it is a significant contributor." BLB evidence

Here Bridget suggests that the ground water level rises to the point where it could account for water entering the pipes wastewater system.

This indeed is the issue. Pipes are leaking.

Neville West

Neville states that there has been a technical review, of the model, conducted by Mr. Aitkin and that he is satisfied with the modelling undertaken. Please let us have a look at this review. If an expert is quoted as giving a point of view this evidence must be more complete than an offhand endorsement. Expert witness obligations must be meet.

Neville West in point 25 states that water ingress into the wastewater system occurs from all parts of it. (Not in those words.)

Zane sandy Gibson

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