

GP Friel Ltd.

Moir St Stormwater  
Culvert Emergency Repair

CCNZ Award Entry

*March 2019*

**G.P. FRIEL LTD**  
UNDERGROUND INFRASTRUCTURE  
**20 YEARS OF EXCELLENCE**



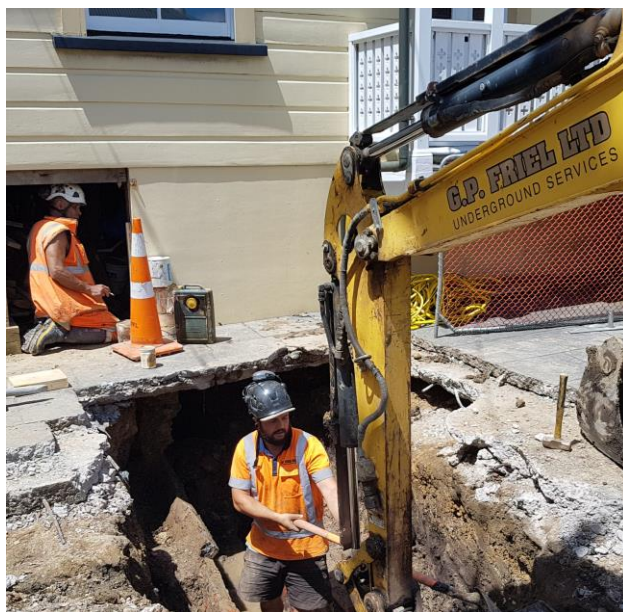
# Table of Contents

I.	<b>Overview .....</b>	<b>3</b>
II.	<b>Construction .....</b>	<b>3</b>
	Urgent Response	
	Operational Solution	
	Collaboration & Customer Experience	
III.	<b>Customer Satisfaction.....</b>	<b>7</b>
IV.	<b>Health &amp; Safety .....</b>	<b>7</b>
V.	<b>Planning &amp; Execution.....</b>	<b>8</b>
VI.	<b>Why this is a Winning Project.....</b>	<b>9</b>

# Overview

PROJECT NAME	Moir St stormwater culvert emergency repair
CUSTOMER	Wellington Water Ltd.
VALUE	\$80k
PROGRAMME	Jan 2019 – Feb 2019

# Construction

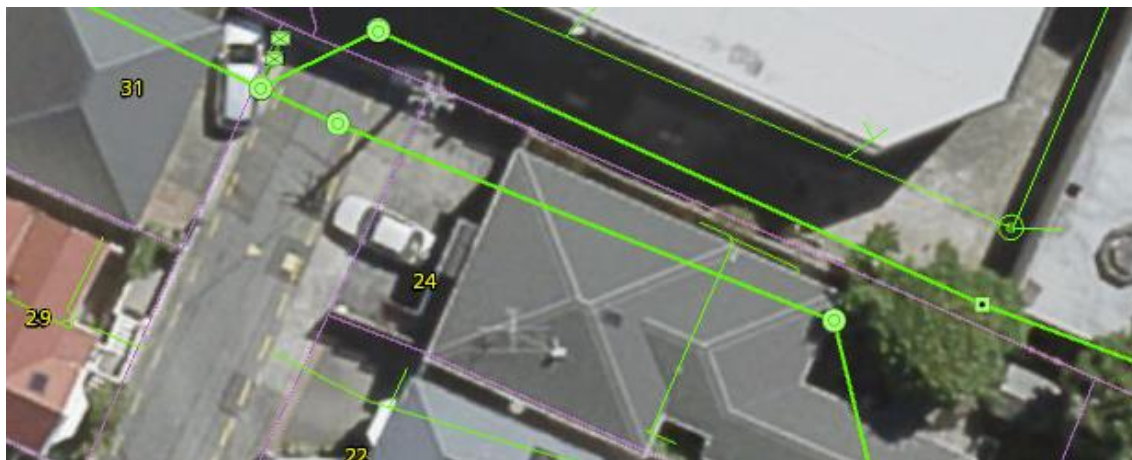


*Charlie & Cody cleaning up the damaged culvert*

Victoria St Wastewater Renewal	
Customer	Wellington Water Ltd.
Engineer	N/A
Scope	Sliplining a culvert with approx. 20m of 560OD PE100 SDR17 and repair of the surrounding area following a blowout of the existing asset.
Resources	3.5T Yanmar Excavator 1.8T Komatsu Excavator Hino 500 Truck PE Butt Fusion Welder

There are three key aspects of this project that make it an award winner:

- The Urgent Response
- Developing an Operational Solution
- Collaboration & Customer Experience



*GIS Extract showing the location of the stormwater culvert under a house*



## Urgent Response

On the night of Wednesday 23<sup>rd</sup> January a rain event caused an existing brick culvert to blow out under a property in Moir St. The culvert was a 640mm dia. brick structure pre-dating the property that was constructed in 1892. An amazing piece of engineering that is at the end of it's life.

The asset had been blocked with debris that was caught on a communications service that had been drilled through the culvert. The resulting blow out undermined some of the foundation piles of the house, undermined the driveway and lifted the concrete footpath. It caused debris to blow out into the basement and into the street. A bit of a mess.

Citycare attended the site on the 24<sup>th</sup> January and did a great job of cleaning up the debris and making the road safe. Wellington Water Limited (WWL) arranged their own CCTV investigation to investigate the problem and called G P Friel Ltd. (GPFL) to see if we could provide any assistance.

On 25<sup>th</sup> January WWL and GPFL attended the site to put together a plan to repair the damage and get the culvert back into operation. By 7<sup>th</sup> February the culvert was back in operation, the house foundations had been repaired, the manhole had been replaced and the road had been put back together. Concrete for the footpath and driveway followed over the next couple of weeks

---

The culvert was a 640mm dia. brick structure pre-dating the property that was constructed in 1892.

---



*CCTV showing the blockage in the existing culvert*



*The stormwater surge had blown out the top brick courses of the culvert into the basement of the house*

## Operational Solution

In only 2 weeks from the initial report GPFL had the asset back up and running; the damage had been repaired and the risk of a follow on incident had been mitigated. A good effort by all involved.

Moir St is a typical narrow Wellington street in a built up residential area. The available space for construction was tiny and had to be negotiated with the residents. The street is a dead end meaning that access for plant and vehicles to the workface was a real challenge. Our traffic management team did an outstanding job of keeping things moving for the work and the residents.

We engaged a specialist to assess the stability of the structure and install an arrangement to support the undermined piles off the adjacent piles. Once this was completed we were able to dig out the blockage, get the culvert flowing and create a launch pit to make an access into the culvert.



*The stormwater surge had blown out the top brick courses of the culvert into the basement of the house*



*560OD PE100 SDR17 being butt fusion welded*

GPFL slip lined the existing culvert with a 560OD PE100 SDR17 pipe – the largest that could be fitted. They enlisted the help of E Carson & Sons (ECS) to weld the lengths of pipe into one continuous string that could be pulled through the culvert. This task was a real challenge as there is no access to the upstream end of the existing culvert. A pipe of this diameter is fairly inflexible and the available space for a launch pit was limited. With a can do attitude and a bit of Kiwi ingenuity the team on site got the job done.

In only 2 weeks from the initial report GPFL had the asset back up and running



## Collaboration & Customer Experience

A key feature that made this project a success was the way the way that all of the parties in the supply chain were able to collaborate and deliver a solution that was the best outcome for the customer. In particular it was an opportunity for GPFL to work together with our new Wellington Water CAPEX Panel Partner – ECS; and they added to the project with their welding skills and team working abilities.

On Moir St the delivery of the product was complimented by a strong focus on the customer experience. We were working in peoples gardens, in the access to their property and outside their living room windows. GPFL undertook to get to know the property owners and tenants who had been affected by the incident and would be affected by the work. We distributed regular email updates so that the stakeholders were kept up to date with progress. They understood who to talk to if they had any issues to raise and the project was able to work with them to manage access to the street and to the properties as required.



*Lindin, Tom & Gerry manoeuvring the new pipe around a neighbouring property*



*Dan, Lindin & Cody excavating in a driveway to expose the damaged culvert*

# Customer Satisfaction

Feedback has been excellent:

*I was impressed with the prompt and effective management of the problem by WWL and GP Friel Ltd. Communication during the event was well done and there good management of the site during the works.*

WWL, City Care, GPFL, ECS and other members of the Wellington Water family should be proud of the work they did in Moir St, the way they delivered it and of the impression that they made on the affected customers.

## Ross Jones - The Street Property Management Limited



To whom it may concern

We recommend you consider G.P Friel Ltd for the CCNZ awards for their recent reactive works associated with the Moir St Stormwater repair.

Wellington Water Ltd manage a three waters network that has grown organically with the city. This has come with a whole host of legacy issues that make operation and maintenance activities a real challenge. Moir St Stormwater Culvert is a classic example, a 100' year old, approximately 600 diameter brick culvert in a narrow street under a private residence.

Third party damage caused the culvert to blow out into the basement of the property and compromise the foundations of the house. Stormwater issues like this one can escalate rapidly if they are not dealt with immediately so WWL engaged G.P Friel Ltd to make an operational fix. Together we developed a plan to slipline the culvert and GPFL undertook the work with purpose. Within a day GPFL had the problem under control and the culvert back in operation. Within a couple of weeks the whole area had been put back together.

It is important to keep the customer on-side during this type of work and Gerry and his team did a great job of talking with the residents, sending them updates and fielding their questions. Positive customer interactions are critical to generating the good will and understanding that we need to go about the day to day business of maintaining the network.

Moir St is not an ideal working environment. It is very narrow – like a lot of Wellington Streets – and the team were in close quarters with residents who had already suffered significant disruption due to this issue. Delivering a fix required a real can do attitude and the team should be proud of the work they did.

Having contractors, like GPFL, that WWL can rely on to react quickly and effectively is critical to maintaining an operational network.

Best Regards

Malcolm Giles  
Contracts Officer

Private Bag 39804, Wellington Mail Centre 5045  
Level 4, IBM House, 25 Victoria Street, Petone, Lower Hutt  
+64 4 912 4400 [www.wellingtonwater.co.nz](http://www.wellingtonwater.co.nz)

**Our water, our future.**

Wellington Water is owned by the Hutt, Porirua, Upper Hutt and Wellington city councils and Greater Wellington Regional Council. We manage their drinking water, wastewater and stormwater services.

“Having Contractors, like GPFL that WWL can rely on to react quickly and effectively is critical to maintaining an operational network.”

Malcolm Giles, WWL Contracts Officer



## Health & Safety

The project was on site for a really short period and there were no incidents reported but health and safety was at the heart of the delivery. Public interface and Traffic Management were some of our biggest risks but their successful management on site enhanced the overall delivery of the work.

Confined spaces were identified early in the delivery as a potential risk that would need to be managed. With no access to the upstream end of the repair; connecting the liner to the existing pipe and manhole was a bit of a puzzle. GPFL wanted to eliminate any requirement for a person to enter the pipe so we installed a CIPP patchliner to seal the liner to the existing culvert and manhole. An engineering solution that put People First.



*Schematic of a CIPP Patch Liner being installed in a pipe*

## Planning & Execution

This was an emergency repair and as such it did not have a formal programme or budget. The important issues were to make the asset operational and to minimise disruption to the affected stakeholders. Completing the work quickly and continuously would be the key to success.

The repair was completed within two weeks of the original issue being reported with the concrete driveway and footpath following. A pretty fast turnaround for a complex repair with no lead in.

With no fixed budget to work to we tested each decision against the criteria above to ensure that we delivered value for the customer.



Before



After

## Why this is a Winning Project

---

We reacted quickly to respond to an emergency repair situation on the Stormwater network. We collaborated with WWL to develop a solution and then we successfully executed that solution on site. The result was an operational asset in only 14 days from go to whoa.

We focussed on customer experience throughout the delivery – minimising disruption caused by the original blowout and subsequent construction works was a key deliverable of the project. We engaged with the affected stakeholders and kept them up to date throughout the work. Feedback during construction and after completion has been excellent.

Even though the project was on the fast track we kept Health and Safety at the heart of the planning and execution of the work. By implementing an engineering solution that eliminated confined space working we demonstrated that we put our people first.



---

We focussed on customer experience  
throughout the delivery

---





# The Places we Work

Moir St Stormwater Culvert  
Emergency Repair

**G.P. FRIEL LTD**  
UNDERGROUND INFRASTRUCTURE  
20 YEARS OF EXCELLENCE

