

DELIVERING REAL-TIME CCTV FOOTAGE TO ENABLE BETTER ASSET DECISIONS AND CUSTOMER OUTCOMES.

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ABSTRACT

ServiceStream provides end-to-end asset life-cycle services to utility, telecommunications and transport asset owners, operators, and regulators across Australia. Specialising in the design, construction, operation, and maintenance of assets across these networks, and deliver a wide range of services across, power, gas, water, renewable energies; road / rail and telecommunication networks.

Nationally, as a business, we deliver:

- **700 +** KMs of water pipeline and gas reticulation mains laid per annum.
- **20,500 +** KMs of gas pipelines operated and maintained.
- **1,500 +** Wireless telecommunication sites designed, deployed, and constructed per annum.
- **550 +**KW of solar PV installations completed per month.
- **1,000,000 +**Tickets of work for telecommunications faults, rectifications, and minor projects annually.
- **10,000 +** Intelligent Transport Systems (ITS) and electrical devices maintained annually.

On July 01, 2021, ServiceStream commenced partnering with SA Water (hereafter partner/partnership), under the Field Operations Metropolitan, Adelaide Service Delivery Contract. Providing reactive, planned maintenance and Capital project support ServiceStream operates across the metropolitan Adelaide area (map below), 24 hours a day, 365 days a year.

Customer Satisfaction results indicated that customers were significantly emotive on wastewater overflows from customers connections.

The introduction of a technology platform enabling real time delivery of CCTV footage from the field to our partner site has resulted in a significant capability uplift for SA Water.

In the past, CCTV footage would be saved onto USB and then delivered by hand or courier for analysis and storage. This arduous process was expensive, time consuming and had inherent risk with footage going missing resulting in delays and added cost. Delays in the delivery of footage also impeded the decision-making process regarding asset maintenance / repairs, ultimately affecting customer outcomes and communication.

With the introduction of cameras on our fleet, new processes to ensure every connection is CCTV'ed by our team as well as the development of an online storage platform, CCTV footage is now immediately delivered to our partner following an inspection, clean or repair, providing a vast improvement on quality assurance and cost.

For the asset team, real time access to the CCTV footage enables accurate and faster assessments of the network thereby leading to more effective planning and ultimately delivering better customer outcomes. Customer communication has also been enhanced with call centre operators able to provide instantaneous updates to customers on the remediation/repairs of any blockages or breaks on the network.

Figure 1: ServiceStream’s Water Services Metropolitan Geographical Map

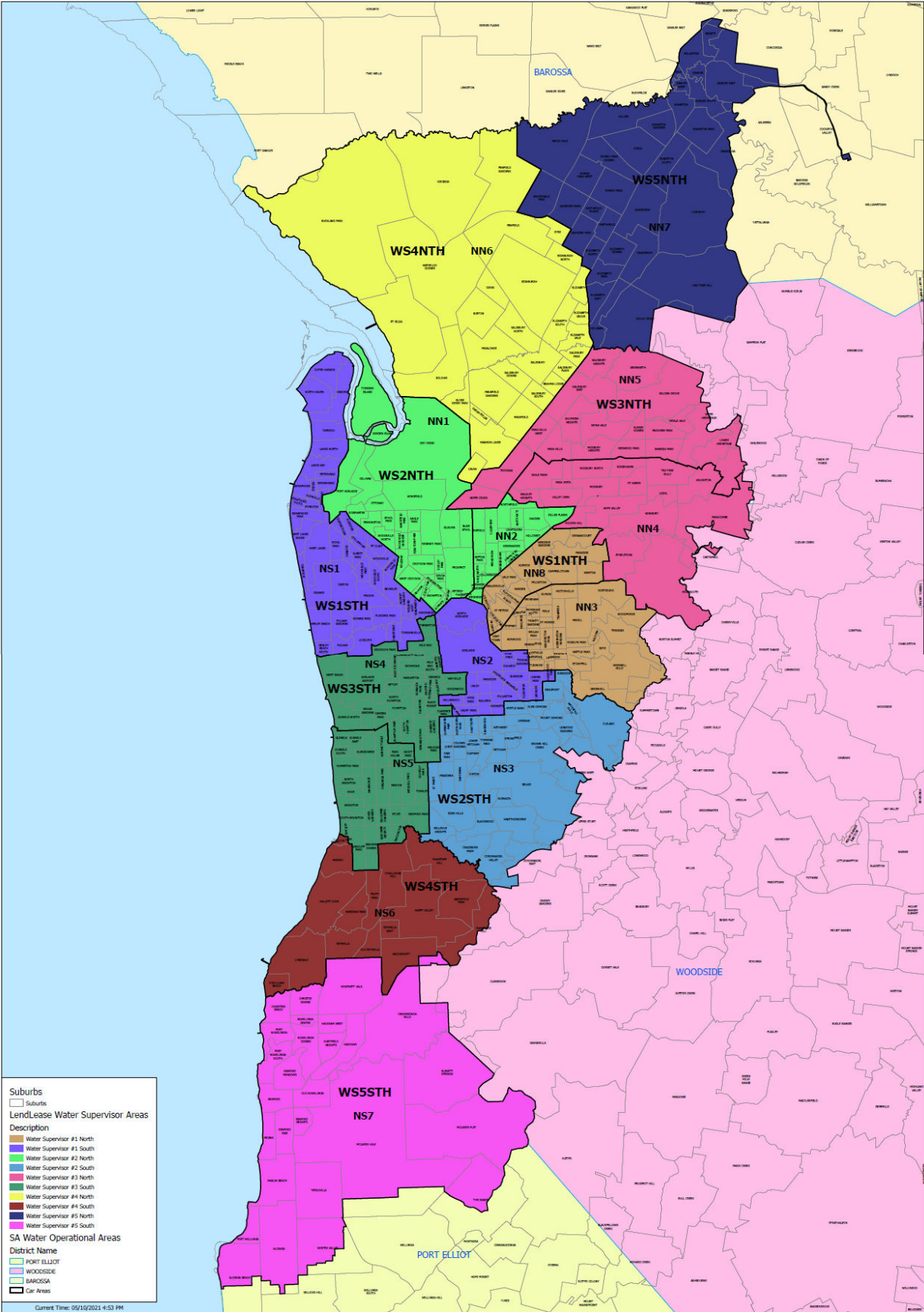
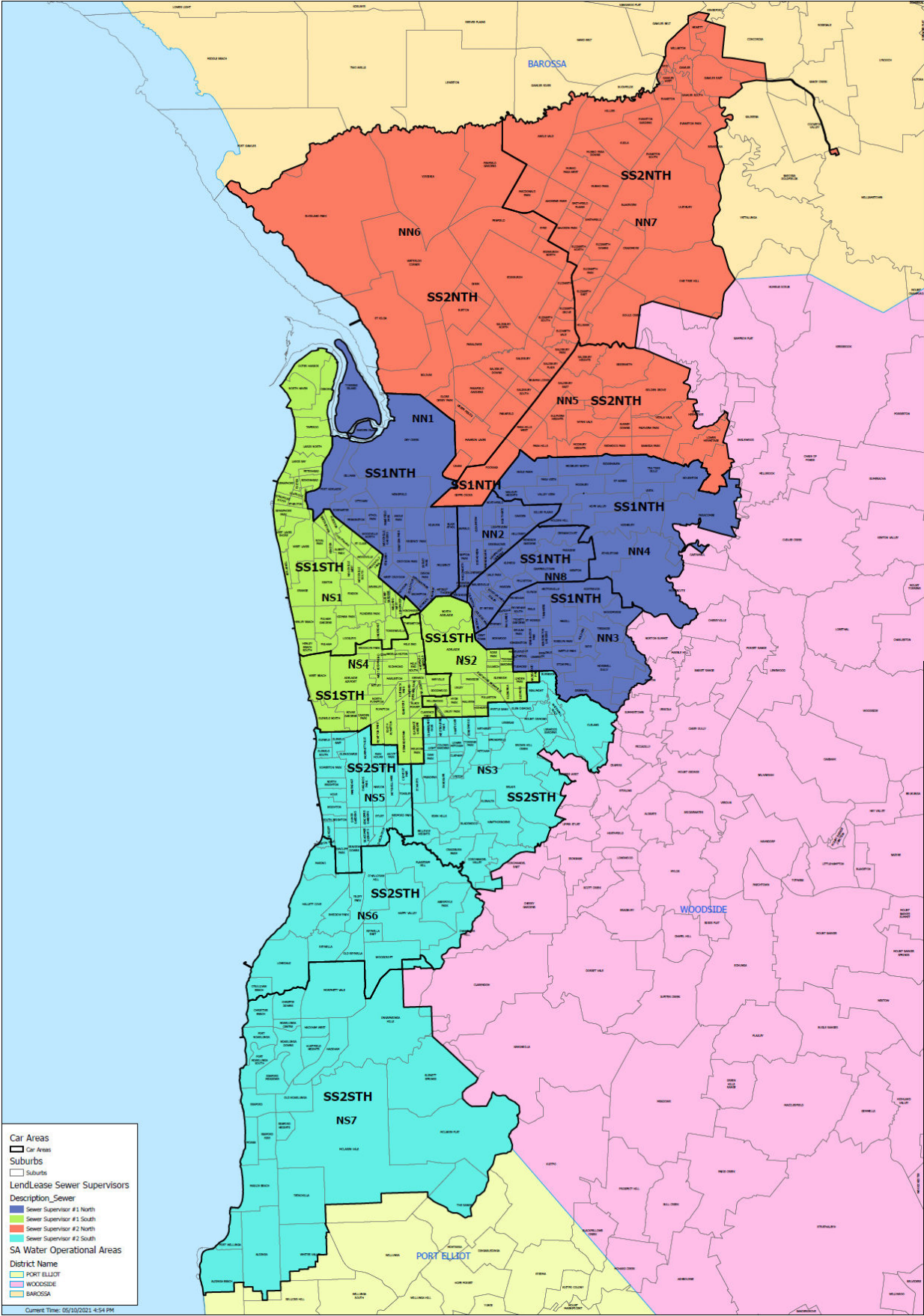


Figure 2: ServiceStream’s Sewer Services Metropolitan Geographical Map



1.0 INTRODUCTION

Driving continuous improvement is an inherent part of delivering high quality wastewater services to our customers, whilst also managing compliance with public health and environmental guidelines and our contracted requirements. As an organisation, ServiceStream has partnered with SA Water to deliver trusted water services for a sustainable and healthy South Australia

While CCTV in SA Water was a known resource for investigations into sewer-related performance issues, ServiceStream's project team quickly identified a considerable disconnect between the application and timeliness of the existing CCTV process. The primary issue identified in the process was the extensive delays in relaying information to the Customer Service Team and/or technical teams to enable faster decision making around customers wastewater connections.

The largely manual process provided improvement opportunities in the following key areas:

- Conducting CCTV operations in the field,
- Sharing CCTV footage from the field with office-based staff, including asset managers and technical experts, to enable real-time decision making
- Storage of CCTV imagery on existing systems to enable better asset management for the future.

By improving the methodology and functionality, from people; systems and processes, the use of CCTV could provide greater aid in rectifying complaints, condition assessments, forecasting issues supporting the development of improved targeted preventative maintenance on mains, mitigating future overflows to customer connections.

Rather than spending considerable amounts of Capital funding investigating cloud-based technology solutions that required significant time and development, as well as robust restrictions with IT networks and systems speaking / collaborating with each other, thinking "simple solutions" became our focus.

Timeliness and the accessibility of information for our partner was key, and our "proof of clean" footage process was developed initially to provide quality assurance around our team's performance and processes. Once proven, this solution was then enhanced by utilising a platform that integrated seamlessly with SA Water's existing software. This enabled faster and more accurate network assessments and better communication with customers with call centre operators able to provide updates to customers directly. In the field, customers were also able to see onsite blockages including the causes and proposed remediation, delivering an enhanced customer experience.

2.0 DISCUSSION

At the start of the partnership, ServiceStream identified the need and value for all sewer employees to have the ability to provide a “Proof of clean” essentially taking out the VMAX MX 2 and RIDGID SEESNAKE to ensure the customer connection was:

- clear of Debris and functioning as designed;
- clear of all blockages; and
- any other defects were identified.

This was the first step in delivering an improvement to the customer experience and providing quality assurance to SA Water regarding our processes and methodology.

In the 2021/2022 financial year we received 31,555 sewer connection jetting jobs.

- Equating to an average of 86 work requests per day, 99% with a KPI of less than 24 hours to attend and restore.
- 1,206 jobs that started as a choked connection, thereafter, requiring excavation..

With a fleet of twenty-two (22) wastewater field response units all fitted with new equipment that included: Jetwave Scorpion - 4350psi @ 26lpm HONDA GX690, multiple hose reel configurations including low pressure hose reel equipped with mini reel, extension hosing foot pedals and lance; our team were well-equipped to trial the ‘proof of clean’ concept and determine whether the equipment, together with improved processes would result in a corresponding decrease to overflows on customer connections and improve the overall customer experience.



Figure 1: Wastewater field response unit



Figure 2: Wastewater field response unit

After a few months, it became evident that our simple “proof of clean” trial did not have the desired impact we’d hoped for on the number of overflows on customer connections. While the trial did provide assurance of our quality controls to our partner, the storage of CCTV footage combined with the timeliness of the delivery of this footage from the field to office, was still an issue. Recognising this as an opportunity to further refine our processes and deliver improvement, we widened our scope to include analysis on software, systems, employee technical capability, use of information, geography, behaviours and quality.

From our investigations, it was identified that the simple attachment of a converter device to an operator’s mobile phone (or using Bluetooth), enabled the operator to upload footage directly into our partners’ existing IT systems, resulting in the ability for real-time review and analysis of CCTV footage.

After trialling, this new improved end-to-end solution was rolled out to all field employees by July 2022. Since inception, there has been a decrease in the number of:

- Internal overflows.
- Repeat internal overflows.
- Repeat IP overflows.

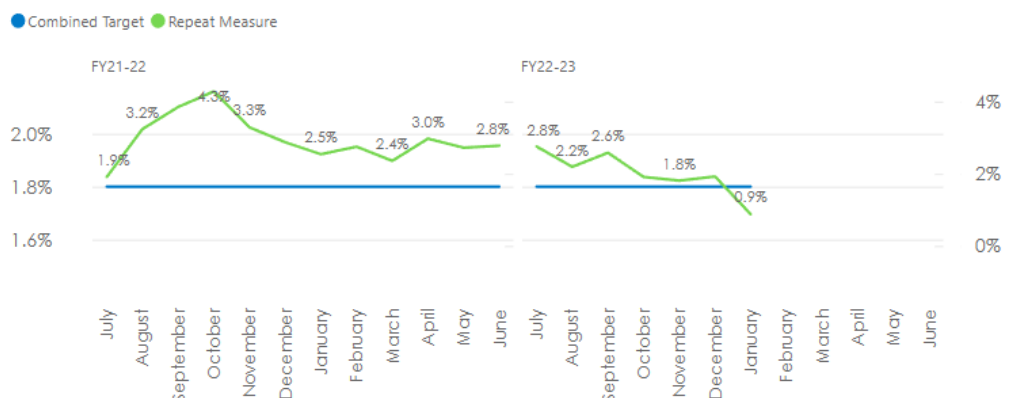


Figure 3: Repeat Sewer Boundary figures July 2021-June 2022



Figure 4: Example of CCTV Footage showing asset prior to cleaning



Figure 5: Example of CCTV Footage showing "Proof of clean" on asset

FiscalYearDisplay	FY21-22			FY22-23		
Financial Month	Repeat	Total	Repeat Measure	Repeat	Total	Repeat Measure
July	69	3621	1.9%	79	2870	2.8%
August	103	3185	3.2%	62	2832	2.2%
September	95	2470	3.8%	62	2405	2.6%
October	96	2243	4.3%	42	2201	1.9%
November	65	1980	3.3%	35	1937	1.8%
December	55	1916	2.9%	30	1562	1.9%
January	51	2009	2.5%	12	1371	0.9%
February	51	1856	2.7%			
March	57	2421	2.4%			
April	80	2694	3.0%			
May	88	3236	2.7%			
June	91	3280	2.8%			
Total	901	30911	2.9%	322	15178	2.1%

Figure 6: Repeat Sewer Boundary figures FY21-22 and FY22-23

The delivery of this solution enabled better resource planning and utilisation in the field. Reviewing CCTV footage in real-time enables supervisors, asset managers etc to undertake detailed analysis of issues in the field immediately, guiding repairs and remediation of issues in much shorter timeframes. As a result, a risk matrix has been developed based on traditional and non-traditional measures to mitigate the connection choking again, including:

- Problem clear – no further action required.
- Problem clear – but would like to monitor.
- Root foam candidate
- Partial Damage? Can the connection be re-lined.
- Dig up required.

This risk matrix has become integrated into a detailed and comprehensive reporting system for customer properties that includes any relevant issues with that location / surrounding geography, and overall asset condition. This type of historical data can be used to provide insights for new residents moving into a property, assistance with customer complaints or plumbing issues on the customers side of the connection; data on the impacts of vegetation surrounding the property or the ability to provide guidance to customers on the three P's. The ability to view CCTV and deliver footage in real time, also provides assurance and confidence to our partner that the information they are giving the customer is factually correct.



SA Water @SAWaterCorp · 24 Aug 2022

In your drive or ride around Adelaide, you may spot •• our reminder to all South Australians to be mindful of what you put down the toilet or drain. To avoid sewer overflows and blockages, the only things that should be flushed are the three Ps – pee, poo and (toilet) paper. 🍑



The new CCTV process has also enhanced operator's skills and capabilities by conducting data analysis on site and/or providing evidence and detail to our partner or the customer directly. This has delivered significant improvements to our team's ability to deliver trusted technical solutions and has enhanced our ability to respond to customer enquiries/complaints and mitigate potential environmental issues. It also provides our customers with the satisfaction and reassurance their connection is sound (clean) and the likelihood of further chokes occurring is removed.

ServiceStream has reduced cost implications, by giving the right people the right information, providing the ability to make sound informed decisions, delivering value and satisfaction to customers.

2.1 Customer First Culture

The approach we are delivering, ensures a high standard of complete clean, whilst allowing our team to quality check their work, with the ability explain the "Why", which has and continues to be a critical part to the implementation of this system. Employees are taking further accountability for their work in the field and are empowered to physically demonstrate and show customers on a screen that they have cleared their issue to a high standard or share insight as to the purpose of the blockage/damage or private issue.

A greater trusted advisor relationship and partnership has evolved from this capability. It has also shaped a greater foundation of professional and technical working levels between the field – Supervisor - asset owners, as they are now seeing what the operator sees and are able to talk through solutions in the field.

Customer satisfaction has increased dramatically since the start of the contract. We are consistently meeting our customer satisfaction key performance targets of 88%.

Field Operations Metro Customer feedback	Rolling 12-month average
Satisfaction with metro fault experience	93
Satisfaction with being kept informed	90
Satisfaction with field maintenance crew	93
Satisfaction with time taken to complete the works	91

Figure 7: Rolling 12-month average performance for Field Operations Metro

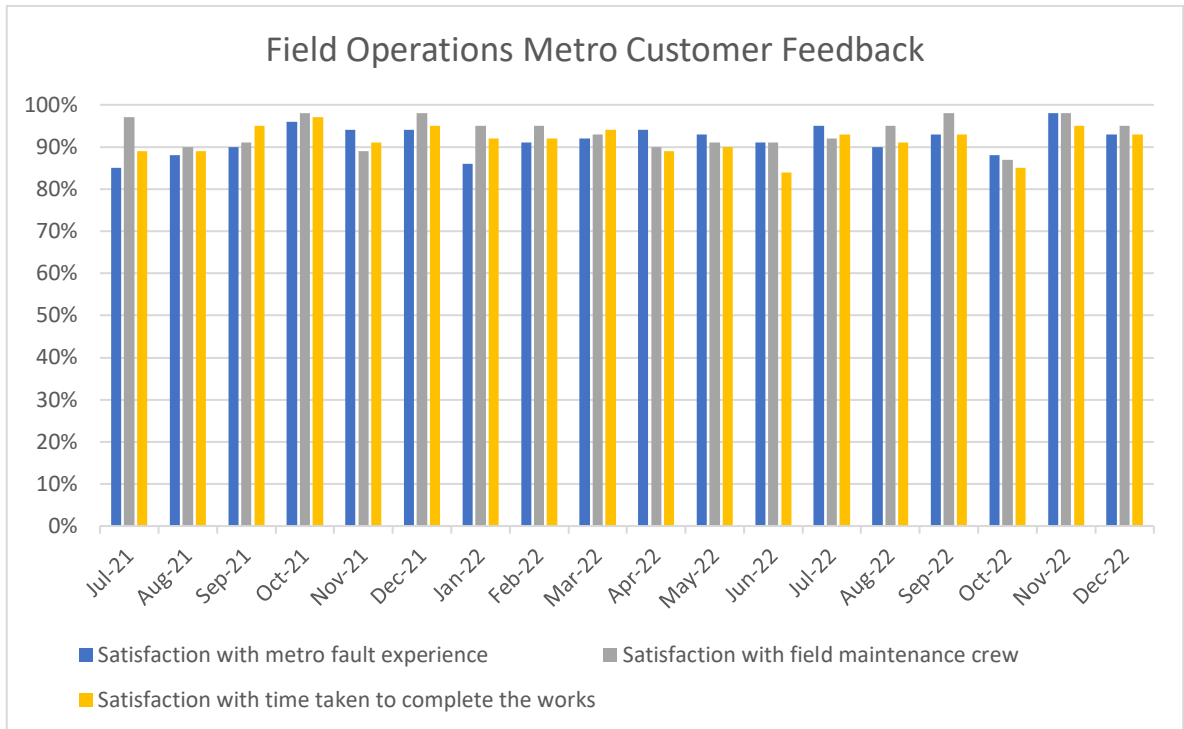


Figure 8: Customer Feedback July 2021 to December 2022

The feedback from customers directly supports the improvement in our performance data. Since July 2021, we have received over 1100 compliments, many in relation to our team’s performance and the customer’s level of satisfaction of a job well done.

“Very fast response, friendly and competent tradesman, cleared the blocked drain, checked the sewer with a camera and cleaned the footpath.” Customer – South Plympton

“The sewer man was very professional in performing his task and friendly in explaining the cause of the sewer leak issue” Customer – Holden Hill

“The 2 employees arrived earlier than I had expected, very quickly diagnosed the problem and cleared the blockage, answered all of my questions, had very good personalities. I learnt that sewer access is on my property, not in the street!! I didn't reply to survey earlier as wasn't sure what to do, being technology challenged so hope I'm hitting the right buttons!” Customer – Kilburn

“Just to give you all great feedback. My sewerage line turned out to be blocked by roots where it joined the main. The toilets couldn't be used. I phoned your hotline and the man who dealt with the issue was absolutely great, giving sympathy and reassurance, fantastic. The technician was fast and thorough, great job and very

warm personality, a pleasure to interact with. Thank you so much from me and my family.” Customer – Fairview Park

2.2 Construction

Success has also come through our decision matrix of the real time CCTV program, where we are able to turn around issues instantly, and/or plan appropriately and safely for jobs.

Our delivery also supports risk profiling, for jobs that may need to be done sooner to prevent issues and mitigate any potential risks to public health and the environment.

2.3 Innovation

Technology is highly considered and factored in to how we work, and we actively engaging with our ServiceStream colleagues nationally, our contractors and partners to continually drive innovation, upskill and deliver the highest level of wastewater services and customer satisfaction possible.

3.0 CONCLUSION

The introduction of ‘real time CCTV’ has and continues to deliver solid outcomes, including improved customer satisfaction, reduction of repeat attendances, internal overflows, environmental incidents, and overflows.

Having real time footage to our partner also delivers great cost savings, allowing the ability of ‘first time fixes’ through detailed footage of the root cause.

Our staff have greater engagement and performance output, from seeing the outcomes of their work. They are empowered to engage with customers and have the confidence to share footage and discuss situations with them.

Overall, this simple change in technology and process has had a profound impact on ServiceStream, our partners, employees, and customers.

4.0 ACKNOWLEDGEMENTS:

Our dedicated project team:

- Ben Holman; Michael Bannister; Matthew Zonta – Wastewater Supervisors
- Rhys Polomka, Field Technician
- Paul Korkodyllos, Sewer Services Planner
- Tonya Stevens, Community Stakeholder Manager