

ENSURING RECYCLED WATER COMPLIANCE DURING THE VICTORIAN COVID-19 LOCKDOWNS

Rebecca Rees, *Recycled Water Scheduler*, Yarra Valley Water
Darren Pearson, *Recycled Water Inspector*, Yarra Valley Water

ABSTRACT

Recycled Water (RW) is a resource that is recovered from sewage and treated to a class that is appropriate for its end use. The RW classes (A, B and C) are the standards the water is treated to with set acceptable microbiological and biochemical parameters for each class (**EPA Victoria 2021**). Supply of RW to residential properties, which this paper will focus on, is treated to Class A standard.

Yarra Valley Water (YVW) provides RW services to over 38,500 homes and businesses, mostly in Melbourne's Northern Outer Metro Region, with most services being connected during the construction of new houses (**Yarra Valley Water 2021**). In order to ensure the safe supply of RW to residential and commercial properties, YVW's RW Inspections Team undertake a series of inspections on the RW supply assets as the properties are being built. During the Victorian Covid-19 lockdowns in both 2020 and 2021, the ability for the RW Inspections Team to undertake these inspections was hampered by the restrictions and the need to socially distance. In order to overcome this, the RW Inspections Team pivoted to offering virtual appointments for plumbers to ensure that core inspections could still occur. These virtual inspections not only ensured that YVW could continue to monitor the risk associated with the installation of new RW supply assets, but it also allowed YVW to continue to service and support its plumbers and customers during this time. The shift to virtual inspections has seen broader benefits beyond the lockdown period with the team continuing to utilise the virtual method to reduce travel risk between appointment locations, achieve a greater efficiency in meeting inspection demands and offering increased flexibility for customers.

1.0 INTRODUCTION

The purpose of this paper is to demonstrate how the RW Inspector's at YVW adapted to major changes to their work due to the various restrictions introduced by the Victorian Government as a result of the Covid-19 pandemic.

Prior to the pandemic, YVW's RW Inspectors were out in the field 5 days a week attending up to 30 sites each per day, meeting with several people at each site. YVW has an area in the Northern Outer Metro region that has been mandated as a RW area whereby any residential building which is built in these areas must have a RW supply for the use in gardens, toilets and laundries. YVW's RW mandated area covers suburbs from Epping through to Wallan in the North and in addition to this YVW also provides RW services to suburbs in Melbourne's Eastern Suburbs of Chirnside Park and Croydon. Throughout the Covid-19 pandemic many of the suburbs in the Northern region were consistently considered hotspots of infections causing YVW to have to seek alternative ways to ensure the compliance of RW assets.

There are 4 main types of inspections that the YVW RW Inspectors undertake to ensure the risk of cross contamination is mitigated. These inspections are listed below with a brief description of their purpose.

- R1 – an R1 Inspection focusses on the underground pipework from the meters (Figure 1 shows a typical meter configuration) to the front of the dwelling before it is backfilled. The

RW Inspector will ensure that there is a 300mm separation between RW and Drinking Water (DW) pipes, and that they are at a depth of 300mm in the ground. The last step of this inspection is to ensure that the colour of the pipe used for the RW supply is purple and the DW supply is black.

- R2 – an R2 Inspection occurs at rough in/frame stage (above ground) – the RW Inspectors look for 100mm separation, throughout the entire dwelling, and making sure the pipes are on the correct side (RW left DW right). They also make sure the configuration of the washing machine points is correct and has a 5/8 thread which is on the right side of the cold tap connection. The rear garden tap must also be a 5/8 thread.
- R3 – an R3 Inspection is the final commissioning inspection. This ensures there is no cross connection anywhere throughout the property and it is safe for occupation. The RW Inspector will cut the yellow pin on the RW meter and Isolate the DW then check taps and toilets in the house to make sure nothing is cross connected. (DELWP 2018)
- Mandatory Sewer Inspections – For a mandatory sewer inspection the RW Inspector will check that sewer pipes are compliant before they are backfilled during the construction of the property. YVW undertakes these inspections on behalf of Melbourne Water to ensure no leaks into their catchment areas. This inspection includes verifying the separation and depth of the pipes and undertaking an air pressure test. The RW Inspectors will also ensure there is surge protection for the property and correct ventilation.



Figure 1 RW meter set up which is inspected at the R1 Inspection stage. The RW meter is on the left coloured purple.

2.0 DISCUSSION

Stage 4 Covid-19 Restrictions and Impact

Stage 4 Covid-19 restrictions came into effect on August 2nd, 2020, which involved a strict permit system for all authorised workers. This impacted the RW Inspectors as YVW made a business decision to move to a virtual only approach, which meant the RW Inspectors were unable to conduct onsite inspections and moved to working from home for the first time. As the construction and plumbing industries did not have the same restrictions as the YVW RW Inspectors, requests for inspections onsite were still coming through, which meant that defects or non-compliant works were at risk of being missed. YVW's RW Inspectors were required to conduct inspections and ensure compliance for our customers virtually, without physically being onsite with plumbers.

The restrictions also meant that YVW had to suspend the backlog R3 inspections, which engages with customers who have moved into properties where the plumber has failed to book the appropriate inspection during the end of the build process. Traditionally YVW would seek to get plumbers back to these properties to do the technical work on the meters, however it was not feasible to conduct video calls with the residents and step them through the technical checks.

It was a particularly challenging transition for YVW's RW Inspectors, who are normally permanent field-based staff, to shift to using computers all day and navigating the virtual inspections. However, this was also a challenge for the plumbers YVW works with which meant the RW Inspection team had to create its own processes and new ways of working and adapt it to address any issues that arose.

Figure 2 below shows the impact that this transition had on the number of inspections that were able to be conducted in Stage 4 Covid-19 Restrictions compared to the same time in 2019 when no such restrictions were in place. As shown, there is a 16% decrease in bookings between 2019 and 2020 for the period between August to November.

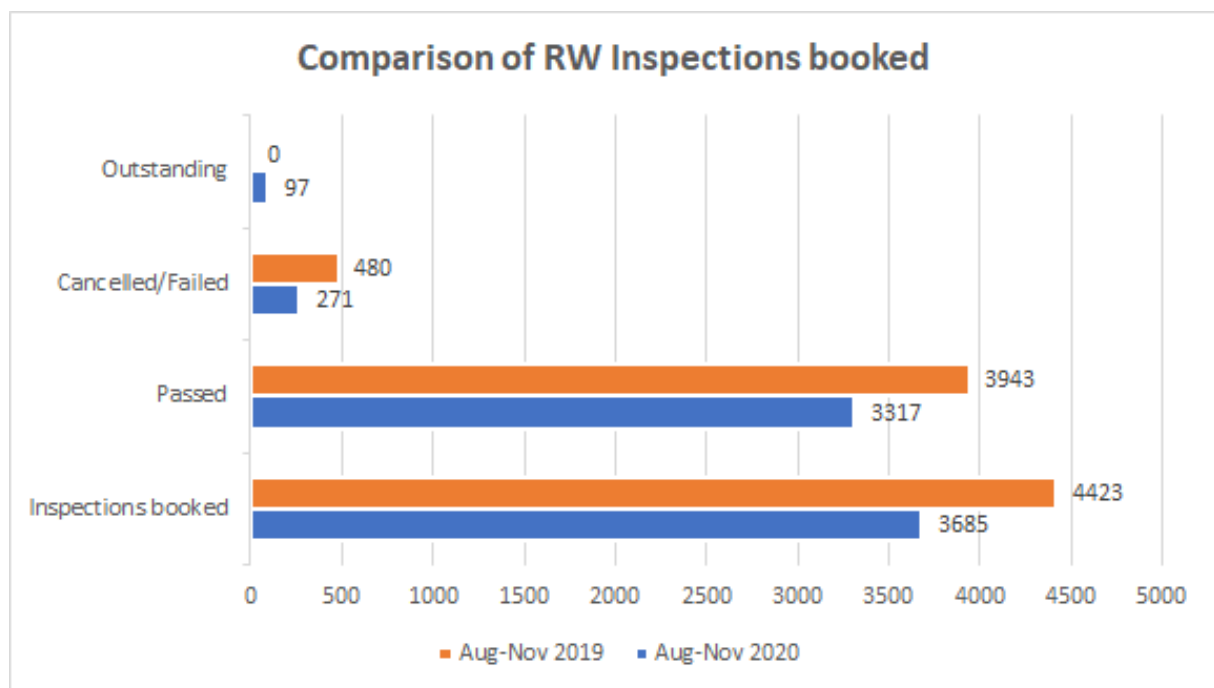


Figure 2 There was a reduction in the number of Recycled Water Inspections booked for between 2019 and 2020 due to Stage 4 Covid Restrictions

Preliminary Platforms for Virtual Inspections

The first virtual inspections YVW implemented were the R3 and the Mandatory Sewer Inspections, as these are the most important inspections to prevent a cross connection at the

property for customers and ensure no leaks into Melbourne Water's catchment areas, respectively. As the plumbers were still out in the field, the preference was to conduct these inspections via a video call. The best platforms for this which ensured the best connection stability was either via Facetime or WhatsApp.

The next inspections YVW looked at were the R1 and R2 Inspections. In lieu of visiting the sites, the YVW RW Inspectors instead required the plumbers to still book the inspections as per normal into YVW's plumbing audit booking portal, KNACK, and then supply photos of the open trench, and videos of the rough in via email to ensure vital points in their work were compliant. Compliance of the plumbers to follow this new process became increasingly challenging to enforce, as many often failed to send their photos or videos through after booking their inspection in KNACK. The RW Inspectors adapted during the process to also accept these images and videos via text message as some plumbers found it challenging to upload files to an email format. YVW also updated KNACK to accept photos directly, streamlining the process for the plumbers to book and submit their evidence of compliance in one location and making it easier for the RW Inspectors to verify works at each site. While undertaking the inspections virtually the RW Inspectors had to revisit the field-based risk assessment and make a few changes to adapt to the new ways of working such as ensuring the plumber onsite had a padlock in case the R3 was to fail, and the RW meter needed to be locked again.

As with any virtual based technology there were issues with network coverage which resulted in services dropping out and inferior quality on video calls when using facetime or WhatsApp. It was also not ideal to be using third party platforms without any YVW branding as it did not look professional nor offer confidence of security for YVW's plumbers and customers.

Virtual Assist

Throughout 2020 YVW begun trialling and collaborating with a company called Codafication to trial a new method to conduct inspections via video calls, a platform called Virtual Assist (**Codification 2020**). This platform was computer based, which suited the RW Inspection Team during lockdown. All video calls were automatically recorded and stored in a centralised database and each call was branded with the YVW logo, bringing the professional look and assurance of security that had been lacking with the use of Facetime and WhatsApp.

As the use of Virtual Assist was only a trial, the ability to customise the platform was limited, however there were a few opportunities the RW Inspection Team noticed where the use of Virtual Assist made inspections more efficient. This included the platform having the ability to easily change contact details for each inspection as required allowing for the appropriate contact details of the plumber who would be on site for the inspection to be updated, streamlining communications. There were also efficiencies gained through the reduced amount of travel time YVW RW Inspectors now had to undertake each day. When the team is working in the field the YVW RW Scheduler tries to geographically clump an Inspectors list of jobs as close together as feasibly possible to ensure efficiency during travel. However, whilst working virtually Inspectors were able to jump between suburbs and sites making the scheduling of inspections easier. It also provided the RW Inspectors with more time to contribute to team and company process improvements in addition to undertaking RW Inspections. This proved to be a valuable opportunity to bring a lot of the experience and knowledge the RW Inspectors have in the field, back into the team to share and collaborate with office based staff leading to updated procedures, project collaboration and involvement in working groups.

While Virtual Assist offered many positives, it also tended to have the same issues with network connectivity due to poor coverage and black spots similar to Facetime and WhatsApp. This

problem however is not the fault of Virtual Assist and outside of control for YVW to fix and an issue which will persist as the team continues to work in newly established suburbs.

Transition back to the field

As restrictions eased, YVW's updated procedures and permit system allowed for the RW Inspectors to return to the field and conduct inspections onsite. Before recommencing field inspections, the team undertook another risk assessment to ensure the safety of both the YVW RW Inspectors and the plumbers and customers they interact with. This included several precautions such as, not entering properties that were occupied or sites which had high numbers of tradespeople onsite, using QR codes on every building site that they attended, as well as complying with the directions of the Victorian Government's Chief Health Officer including maintaining physical distancing and wearing masks.

The inspectors would revert to using Virtual Assist where necessary for occupied properties, or where a worksite was too densely populated with tradespeople for the safety of all parties. Using Virtual Assist also helped when plumbers were delayed and not prepared for their designated inspection times, so that the RW Inspector could reschedule them and still undertake the inspection virtually later that day when the plumber was ready. This was a function that was appreciated by the construction and plumbing industry as it helped to streamline the approvals of their work and offered more flexibility for unexpected delays.

One of the key problems with focussing on R3 Inspections during the period of working remotely was there were a lot of R1 and R2 Inspections which were missed due to the delay in getting plumbers on board with the virtual inspections. This meant that a lot of properties and sites had combined inspections with the R3 Inspection which was not ideal. By not being able to conduct the R1 and R2 Inspections in advance of the R3 any issues or non-compliant work that was picked up at the R3 Inspection stage was much more difficult for a plumber to rectify causing delays for plumbers, builders and customers.

Lockdown 6 - 2021

When the Victorian Lockdown 6 was announced on August 5th, 2021, it saw the reinstatement of stage 4 restrictions which had YVW's RW Inspectors working from home and reverting to virtual inspections. Utilising the learnings from 2020 the team were well versed in what to expect and what to do, ensuring it was much easier to transition back to working virtually and undertaking inspections via Virtual Assist. It was also easier to engage and bring the plumbers on this journey as they had experienced this process the previous year with YVW. The YVW RW Inspection team is committed to making processes as easy as possible and will continue to engage with plumbing companies to ensure ease of use and a high level of engagement and compliance with YVW's procedures and requirements.

3.0 CONCLUSION

While the transition to being able to provide RW Inspections virtually offered many challenges, the flexibility of the RW Inspection Team and the plumbing and construction industries ensured that the supply of RW to YVW's customers could continue to occur safely. Technology and new platforms were embraced, and processes and risk assessments updated to reflect the new ways of working. While the RW Inspection Team have resumed to mainly being in the field conducting

physical inspections, Virtual Assist and other platforms still continue to provide flexibility and support for the team to ensure the most efficient outcomes for our stakeholders.

Another benefit gained from working virtually was the feed in of knowledge and experience from traditionally field based RW Inspectors to office-based staff. This occurred through collaboration on projects and working groups and has seen the comprehension and understanding of RW compliance dramatically increase at YVW. The effects of the Stage 4 restrictions in Victoria have made the RW Inspection Team more resilient, dynamic, and flexible. This flexibility ensures that YVW's customers are receiving safe and compliant RW services now and into the future – regardless of any future unprecedented events.

4.0 ACKNOWLEDGEMENTS

Thank you to the entire YVW RW Inspection Team for being flexible throughout the challenges of working virtually and having to adapt all of our processes. Thank you to our plumbing and construction industry partners who worked with us to ensure the continued safe supply of RW to YVW's customers. Thank you to Andy Chan and Jon Hyland at YVW who were instrumental in helping us to upgrade and implement our virtual platforms KNACK and Virtual Assist. Lastly, thank you to our manager Brendan Moore for your assistance with writing this paper and encouraging us to share our knowledge and experiences with the broader industry.

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