

MACKAY REGIONAL COUNCIL QUEENSLAND

First Smart Water Network deployment with
Taggle Systems followed by Smart Sewers



Case Study

Honeywell

taggle*

SMART WATER NETWORK

The Mackay region was experiencing a booming economy and rapid population growth in the mid 2000's. The effect of this was escalating costs of delivering water and sewerage services and the requirement for capital investment in a new Water Treatment Plant on the horizon. A change was required, as “business as usual” was not sustainable and consumption was rising rapidly.

A strategy was developed and focused on two areas of change – data collection and customer engagement. Mackay Regional Council (MRC) partnered with Taggle Systems to develop a smart water network with Advanced Metering Infrastructure (AMI) to be rolled out across the entire region to collect hourly data.

METHOD FOR ADVANCED METERING INFRASTRUCTURE (AMI)

AMI devices, the MRC-1 and ADC-1, and a Low Power Wide Area Network (LPWAN) were developed and installed on every water connection in Mackay. This includes all residences, businesses, schools, sports fields, parks, council buildings and properties.

With access to large volumes of data, it was realised that a software analytical platform was required, hence MiWater was developed by MRC and Tyeware working together closely with Taggle who has since taken ownership of it. This application allows council to see how much water is being used in real time.

Once the technology was in place, leaks were quickly identified and customers notified. This greatly improved customer engagement and satisfaction with MRC.

MRC then used the information to make informed decisions in how to connect with customers to reduce their water consumption particularly in regards to outdoor water use.

CONCLUSION FOR AMI

The implementation of smart metering and the associated marketing and engagement strategy for MRC, has resulted in a significant increase in awareness of the importance of water in the region. This has resulted in reduced consumption and has led to a two-way interaction between customers and MRC. This interaction can only be beneficial, and the region continues to remain focused and committed to water conservation.



RESULTS FOR AMI

- The new water treatment plant, which in 2010 was slated for 2020, is now, as per the latest long-term financial plan, pushed back to 2032.
- The average duration of a leak reduced from over 150 days to 60 days.
- Average per capita residential consumption is down from around 240 litres per person per day (L/d) to around 210L/d, a reduction of just over 12 per cent.
- Improved customer engagement and satisfaction.
- 1,500 leak notifications sent to customers.
- The deferment of capital expenditure and the resulting savings in operational expenditure has resulted in a notable reduction in the forward price path of both water and sewer tariffs. The most recent price path shows an average residential consumer in Mackay region will pay approximately \$400 per annum less for water by 2025.
- With real time water meter data MRC found they were oversizing many of the meters.

SMART SEWER NETWORK

The way a sewer system performs has a direct impact on the ability to meet business outcomes, namely protecting public health, ensuring no environmental harm, maintaining service standards, minimising the cost to serve and protecting MRC's reputation. In order to meet these outcomes, MRC has commenced trials with Taggle's low-cost sewer monitoring technology and working with Taggle and 2 other councils and utilities on the creation of a software alerting system to make practical use of the data captured.

METHOD FOR SMART SEWER NETWORK

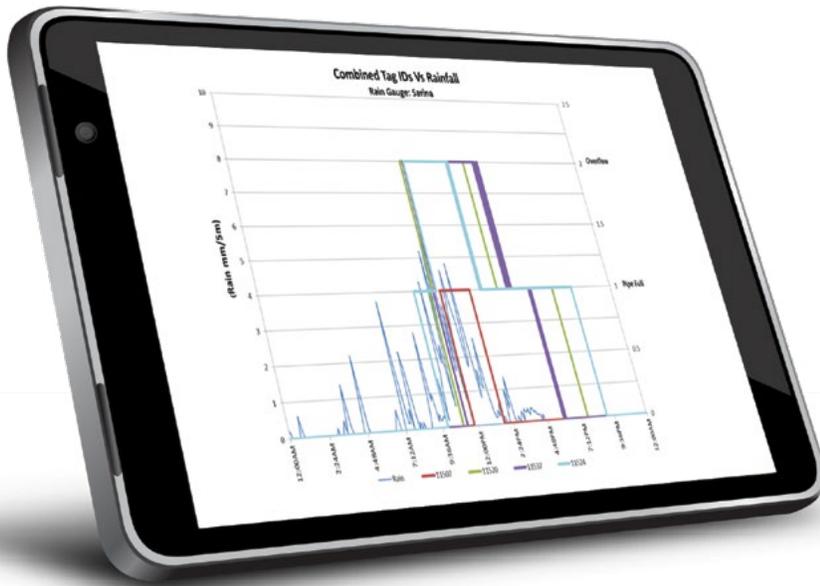
MRC worked with Taggle to design/develop a low-cost device that delivered the basic requirements to monitor sewer levels. The device consisted of two float switches, one positioned at the pipe full level and the other just below the overflow level, attached to the same transmitter used for the water meter AMI devices.

The device would make a transmission as soon as the float was beyond the horizontal level. A single float switch version was used to monitor the release from overflow outlets.

Development of the Monitoring System - To make practical use of the data captured by the monitoring devices, some basic software and an alerting system was developed termed MiSewer to compliment the previously developed MiWater.

The software includes a web-based interface that enabled the visualisation of the status of each manhole being monitored. The system also has the capability to send SMS alerts to an identified mobile number should one of the sensors be activated.





CONCLUSION

The 'Smart Sewers' initiative is still in its trial phase, but results are encouraging. MRC continues to focus on the data and analytics space to establish the relationship between system performance and rainfall.

The MiSewer software is being refined on an ongoing basis to support this driver and is further developing the mobile platform and alerts system.

MRC continues to monitor the data, costs and findings against the project objectives to ensure that business benefit/viability is realised.

RESULTS

Research and trials have been underway since 2014 and there are now over 100 low cost sewer sensors installed throughout the network.

Results so far show:

- Improved sewer network understanding and the effects of different climatic events.
- Better control and monitoring of discharges to the environment.
- MiSewer software has led to real time alerts to sewer network crews resulting in improved response times.
- Identification of the build up of debris in parts of the networks enabling targeted maintenance for better network performance.
- Better workforce planning in both dry and wet weather events.
- The real-time alerts have prevented dry weather overflow incidents from occurring and have helped the operations teams better deploy response in wet weather.
- There is improved insight gained through the data on the relationship between duration and intensity of rain and the flows (and overflows). Such insight can help direct investments such as I&I inspections and sewer relining to areas with the highest potential for return on investments.

For more information

www.smartenergy.honeywell.com
Email: smartenergy@honeywell.com

Honeywell Smart Energy

10 SW 49th Avenue Bldg 100
Ocala, FL 34474
United States
T +1 800 874 0890
F +1 352 368 1950

208 S. Rogers Lane
Raleigh, NC 27610-2144
United States
T +1 800 786 2215 (Sales Information)
T +1 886 554 9007 (Product Information)

MiWater and MiSewer are undergoing rebranding to Aqualus Water and Aqualus Sewer in Australia and Honeywell Videre Water and Honeywell Videre Sewer for the USA.

SS-20-6 ENG | 08/20
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