LAUNCH OF NEW ONLINE MAP FOR LEAKS AND BREAKS

HOW SYDNEY WATER IS KEEPING THEIR CUSTOMERS AT THE HEART OF WHAT THEY DO

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INTRODUCTION

Sydney Water supplies over 1.4 billion litres of drinking water to homes and businesses each day through a network of over 21,000 kilometres of watermains. That is almost the distance from Sydney to Los Angeles and back.

Unplanned outages are caused by network leaks and breaks, and are an unavoidable reality for water utilities around the world. Each month we have about 50 planned and 600 unplanned outages. They are the result of various factors, including:

- ground movement
- wear and tear
- changes in water pressure, rainfall and temperature.

Year Case Study Was Implemented

2014 to 2015

CASE STUDY SUMMARY

Now more than ever, customers expect online information to be easily available and up to date. This is particularly important when customers experience the unexpected loss of the water supply they take for granted.

Until we launched the online map, we responded to customers' need for information by:

- answering calls to our Contact Centre
- manually updating our website with a very simple table showing current outages.

This was a costly, labour-intensive exercise, as information was sometimes updated eight times within an hour.

The online map displays information from two systems – 'Maximo' (asset data management system) and 'Hydra' (geographical information system) – on a Google map that is updated every 10 minutes. This reflects status changes from our field crews.

Our Contact Centre staff can now direct customers to the online map for regular updates throughout the day.

CASE STUDY DETAIL
Specific Issue

Both planned and unplanned water outages cause customer anxiety and inconvenience. We needed to improve the visibility of information to better inform customers about what is happening in their area and when disruptions will be rectified so they can plan accordingly.

In April 2015, we launched the 'Water supply and service updates' map on our website to help keep customers informed about the status of leaks and breaks in their area. The project took six months to design and build, and is one of our "customer at the heart" strategic initiatives.

Approach

A small project team was formed in October 2014, with representatives from each of the critical customer process touchpoints.

This enabled us to gather collective business knowledge and capture the customer 'voice' to define scope requirements. We used a mix of Six Sigma practices (business) and Agile methodology (IT).

Scope Definition

When unplanned leaks occurred, we quickly arranged field visits so we could talk directly with affected customers on site. From these informal interviews, we agreed on one simple goal that reflected both customer needs and key business requirements. The agreed goal was:

'By 5 December 2014, implement a low cost/low complexity customer self-service water outage map to enable customers to view significant planned and unplanned water service outages in near real time to reduce the number of fault calls.'

Figure 1 shows a high level Sankey diagram that displays job types, priority ratings and type of work required. This helped guide the team about what to include in a prototype map.

An initial testing prototype was designed and built within weeks. It was launched internally in December 2014 to enable staff and contractors to provide feedback and improvement opportunities.

We received an overwhelming amount of interest and suggestions. It became apparent that, although we were attempting to create something simple, we needed an enhanced design with more specific updates.
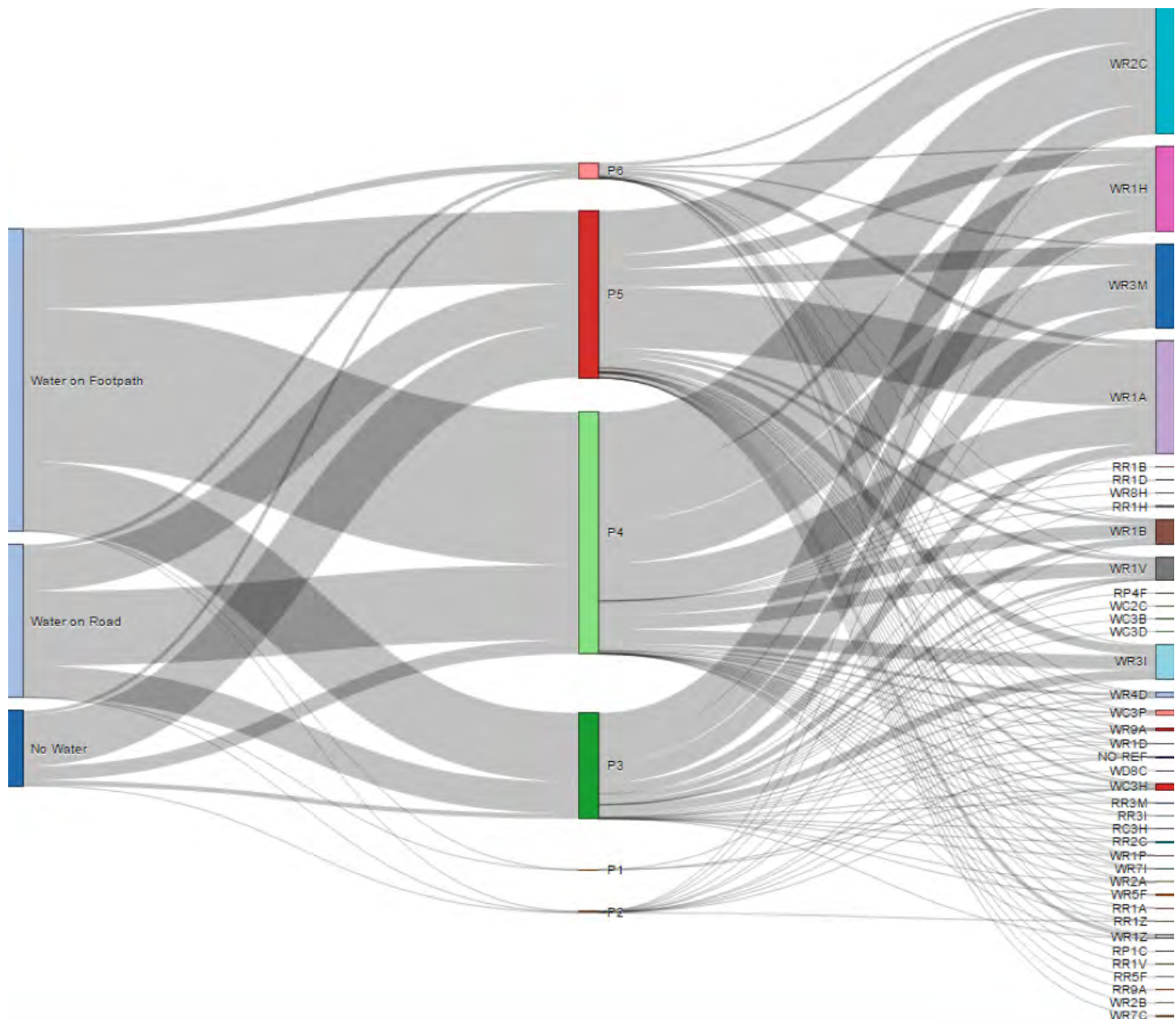
Figure 1. Sankey diagram of water problem types to priority task codes

The team created over 60 detailed business rules in addition to the original 12 simple rules. This generated over 400 combinations of possible scenarios that required mapping, data cleansing and testing to fit with our generic display icons.

In February 2015, we launched the new-look map internally to gain more feedback and show we were serious about listening to suggestions.

We used field audits to verify data accuracy and continued to make minor improvements to the 'look and feel' of the map. We then arranged roadshows for field crews and Contact Centre staff. This was an important step as we needed to ensure Contact Centre staff trusted

that field crews were accurately capturing and recording information that would be shared with customers.

On 1 April 2015, we launched the map on our website, but did not actively promote it to customers. However, the map quickly became a very popular addition to the site. It has consistently ranked in the top 10 pages viewed since the launch, with almost 82,000 page views in the first 10 months.

Figure 2 shows how we display information about all jobs in a three-kilometre radius from the search location.

Figure 3 shows the result of a watermain that broke one month

after we launched the map. We used this case to test how well field crew updated the job status and if the map kept customers adequately informed.

Although information was regularly updated during this incident, we identified some opportunities to improve field practices.

Figure 4 shows how we display information about a specific job on the map. This was one of six updates during the day before the job was completed later that night.

System Mechanics

Every three minutes, an application reads a data extract of the details of all unplanned, planned, active and recently completed work orders.
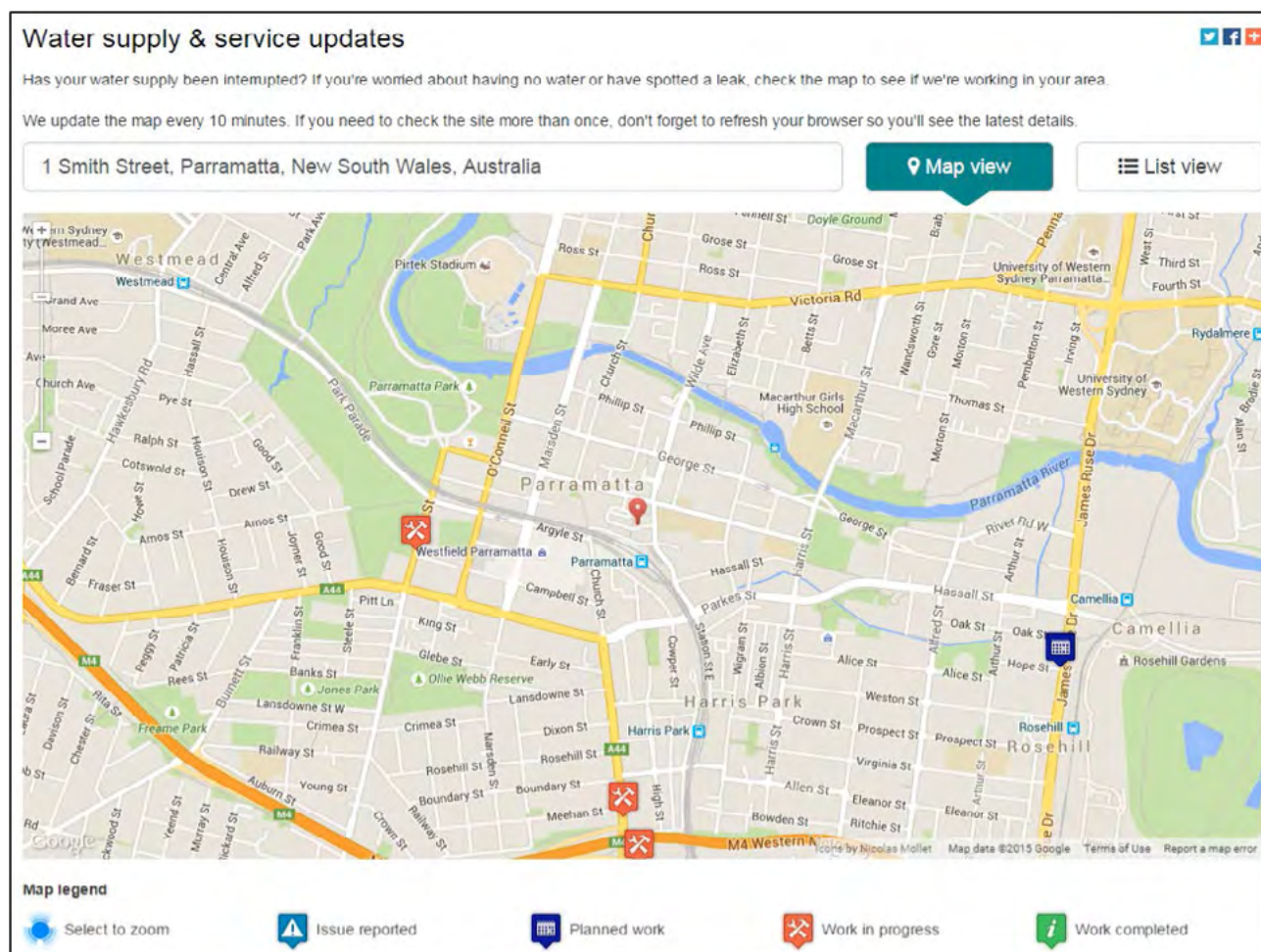
Figure 2. Screenshot showing the Map view display

Using this information, the application adds geo-spatial data from Hydra and creates a file suitable to use with Google Maps (GeoJSON). This is sent from internal IT infrastructure to the website host provider so the information is easily available for customers.

When a customer reports a problem that requires a new work order, it is captured and geo-located in the GIS system before being pushed to Maximo and despatched to field crews. At this point, pending our business rules, we display icons on the map to inform customers we are aware of a problem.

As the job progresses, the crew updates the job status and outage details using tough books. This information is transmitted back to Maximo in real time. The map refreshes every 10 minutes so customers get the latest status very quickly.

Figure 3. Photo of the result of a burst 100 mm watermain.

When the job is completed, a new icon appears. It remains visible for 24 hours to ensure customers can find out about the rectification work done.

Measurable Impacts

Since the launch, the map has attracted 81,900 page views (excluding staff views). Over 72% of these were unique views and visitors spent 4.41 minutes on the page on average.

This is higher than the overall average across our site. Statistically, we have not seen a reduction in calls since we launched the map. However, the amount of traffic to our website indicates we have made it much easier for customers to be kept informed and may have reduced the number of repeat calls about the problem.

An unexpected benefit is the ability for other business areas in Sydney Water to quickly assess whether field work is impacting network alarms or incidents that may require additional actions or proactive media attention.

Figure 5 shows the number of website page views since we launched the map. The spikes are due to extreme wet weather conditions and correlate with an increase in call volumes to our Contact Centre. Our website analytics data does not provide specific location details, but we believe customers were seeking information about overflows rather than loss of water or leaks at these times.

Mobile-friendly Improvement

Recognising that 44% of customers were viewing the map from mobile devices such as smartphones and tablets, we introduced a 'List view' in August 2015. This makes it easier for customers to see information remotely using smartphones.

Figure 6 shows how we display the same information about work in a particular area with and without a map, which can be hard to use on a small screen. Customers can easily move between the two display options to suit their needs or preferences.

Once the mobile version was implemented, we promoted the map externally, using media and other channels from 19 August 2015.

Website Research

To further improve the customer experience, we added a prominent call to action to make it easier for mobile customers to visit the map from the website's homepage. Instead of simply choosing the design we most preferred, we ran a split test to gain valuable customer insight on the preferred display options.

Split testing (also referred to as A/B testing or multivariate testing) is a method of running controlled, randomised experiments to help improve a website metric such as page visits.

After running the split test for two weeks, we analysed website traffic data to determine that the more graphic 'Option A' outperformed Option B. However, as there was no significant difference in the performance, we chose to continue using Option B with the three buttons side by side.

We chose this option as it makes the page shorter overall without really affecting the user experience. This is an important consideration for the growing number of customers using mobile devices (with limited screen size) to visit our website.

Figure 7 shows the split test used to gain customer insight into the preferred mobile homepage.

Other Information

- The project cost was just under $200k.
- The map has performed well in the past year, with only three minor faults that required minor maintenance to rectify.

Figure 4. Example of a progressive update displayed on the map just before the photo in Figure 3
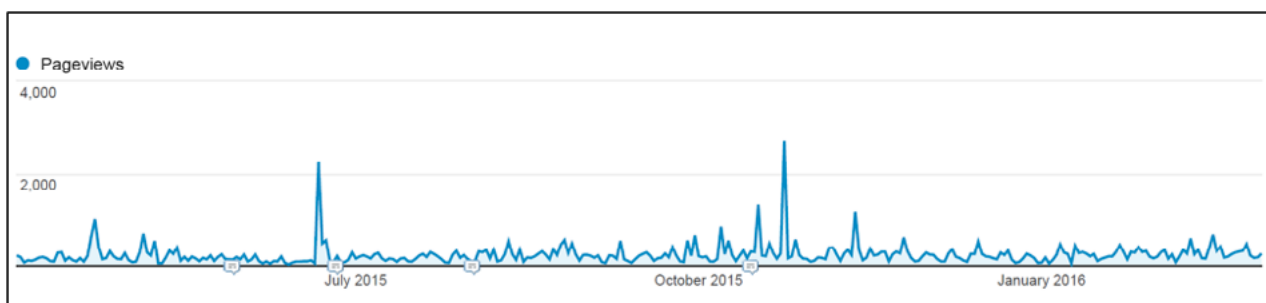
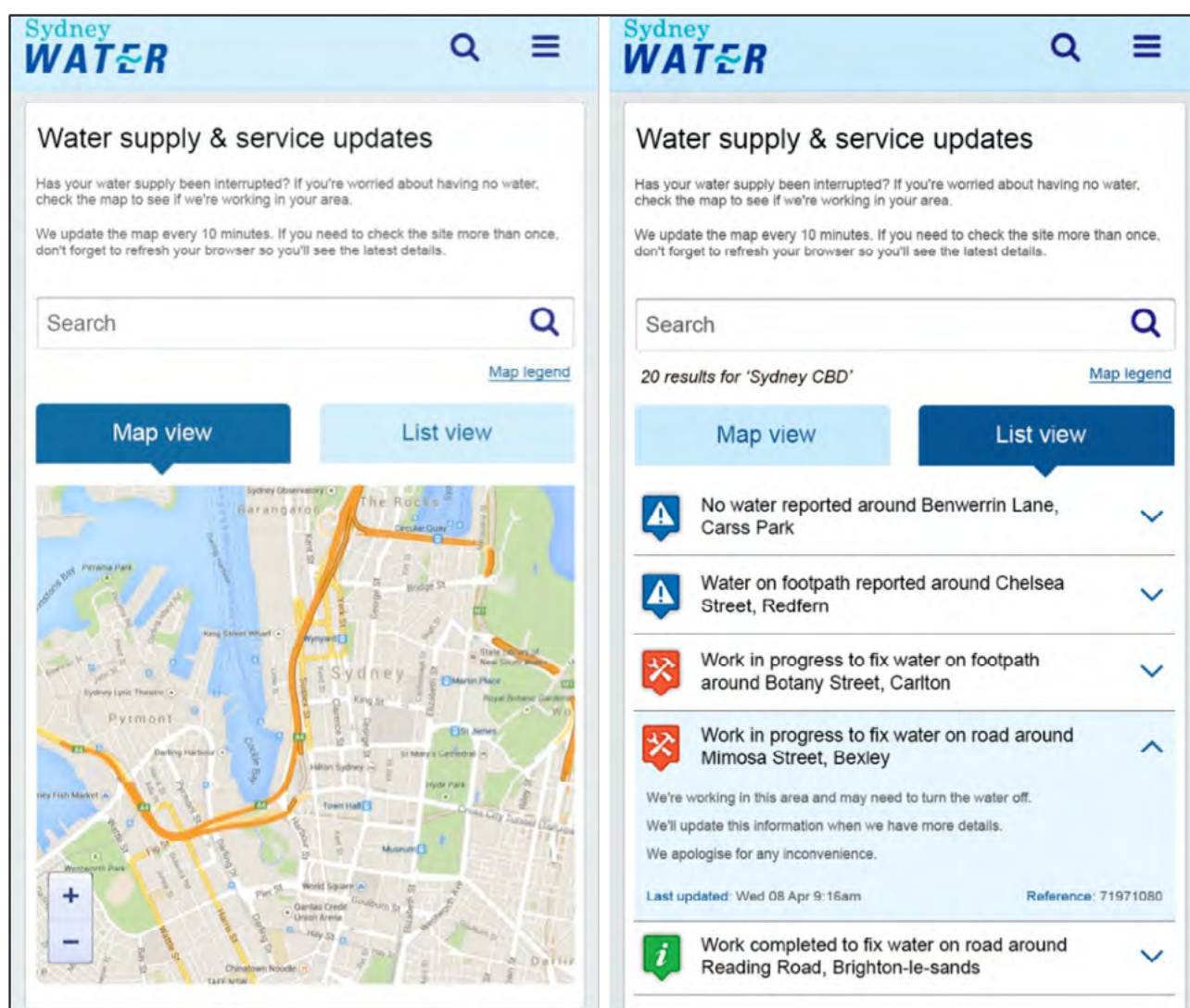Figure 5. Website pageviews for the outage map from 1 April 2015 to 1 March 2016

Figure 6. Screenshot of the map view and list view display options.

- The project team split accountabilities into three streams that ran in parallel - data and process, IT and design, and stakeholders and communications.

- Three seperate leads were all working towards a common goal.

- We visited over 60 field sites in various regions to ensure the accuracy of displayed information.

- The project took six months to design, test and implement.

- We continue to monitor the process using an automated weekly report and twice-weekly basic desktop audits.

Lesson Learnt

- Site visits were critical to ensure accurate representation of information.
- Feedback from external and internal customers was beneficial for the final design and acceptance.
- A supportive drive from several senior managers was essential to remove divisional barriers.
- Fast decision making was essential to ensure on-time project delivery, as many obstacles were thrown at the project team including process overlaps, the need to draw information from different systems, and IT and business rules. The team continually asked two simple questions – 'Is it 70% right?' and 'Can we live with it?'

Examples of Customer Compliments

Julie Hegarty, Councillor at Pittwater Council said: "The Water Map is a fantastic tool for Sydneysiders to find out, in near real-time, what is happening with their local water supply. The new mobile version is especially useful for those who are on-the-go."

Sydney Water website feedback: "Hi, just want to comment that I was really impressed by the website and being able to identify that our street
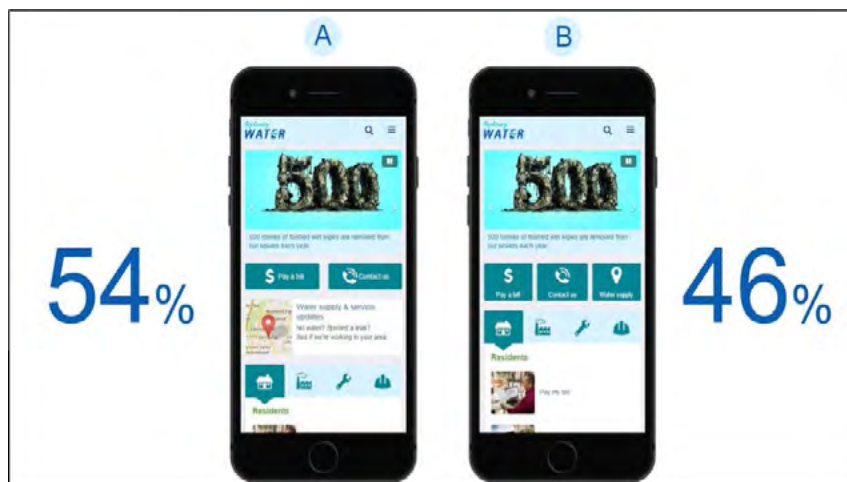

Figure 6. Screenshot of the map view and list view display options.

had an issue with water supply when it was cut off this morning. Thanks for making access to information easy and straightforward."

Sydney Water website feedback: "So impressed with your easy-to-use website and the (I'm assuming) quick work near us to fix a burst water main near Euroka St, Waverton. Husband had gone overseas this afternoon and taps didn't work and so being able to know what's going on is great. Thanks v. much."

Future Improvement Opportunities

- Design a wastewater map to enable customers to find information about wastewater problems (Figure 5).

- Investigate the opportunity to enable contractors to update system information in near real time to improve the display information.
- Enhance Contact Centre and field processes to ensure system information and customer referrals to the map are maximised.

CONCLUSION

Customers are becoming increasingly technologically savvy. To meet their needs and expectations, we need to continue to listen to customer feedback, analyse customer usage patterns and gain customer insights wherever possible.

We also need to maintain an agile approach to website enhancements and to keep adapting and improving. To try the map for yourself, visit sydneywater.com.au/watermap

THE AUTHORS

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