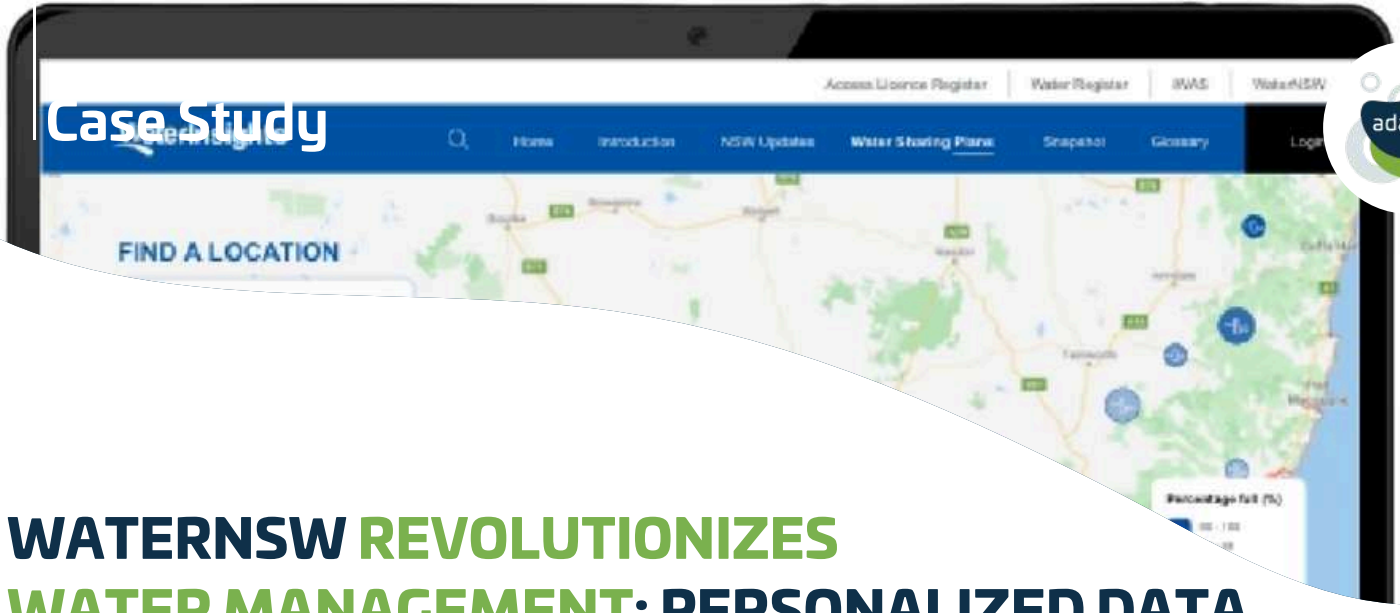
Case Study

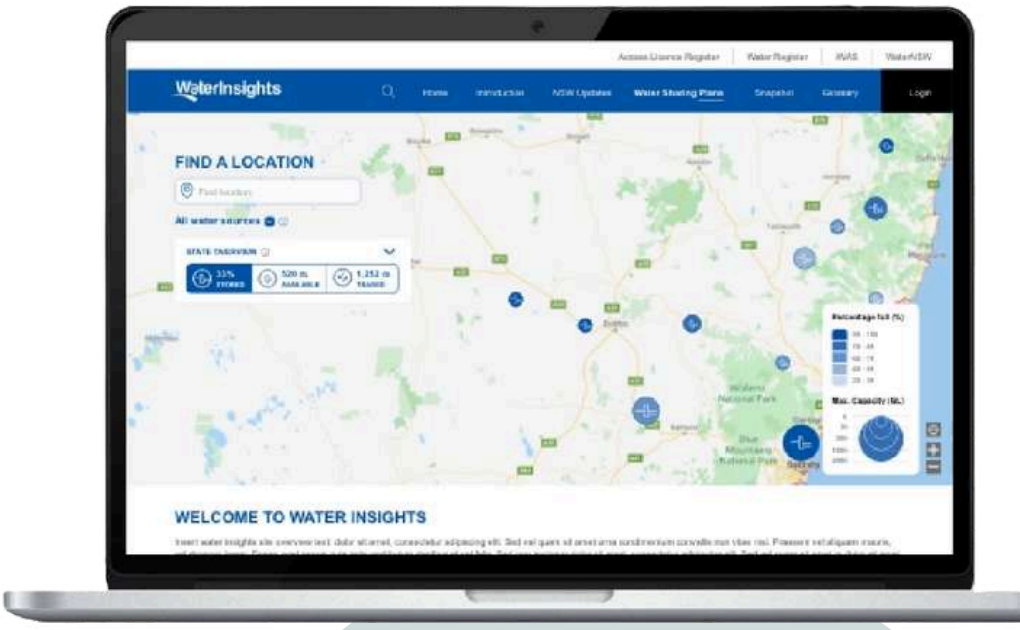


WATERNSW REVOLUTIONIZES WATER MANAGEMENT: PERSONALIZED DATA AND INTERACTIVE DASHBOARDS FOR MORE INFORMED AND TRANSPARENT DECISION-MAKING

CHALLENGE

Water information was generally **available to the public but in separate systems** with clumsy interfaces, from different agencies, using different terminology.

Consequently, **data could only be viewed in isolation without context** and in numerical or tabular form or worse, pdf reports in technical jargon.



Minimum Viable Product

The objective was to **bring all information into a single place with an emphasis on customer experience (CX)**, usability, and innovative visualisations to aid comprehension. Information included water availability, allocation, entitlement, usage, storage and aquifers, trading prices, accounting.

The starting point was to **develop a Minimum Viable Product (MVP)**. Rather than conducting extensive and expensive analysis and market research, we built a **launchable version of the product that supported minimal yet must-have features**, enough to satisfy early users and to enable concrete feedback for future development.

Desktop Research Analysis

With our UX research BlueEgg, we conducted secondary research and analysis to understand the perspective and assumptions that were being made about WaterNSW within the media at the time.

This allowed us to understand the weight of responsibility in ensuring that water data was presented rightfully and honestly.

We reviewed watering strategies, documentaries and existing water data sources within WaterNSW to deepen our contextual understanding.

CHALLENGE

Stakeholder interviews

We conducted 8 interviews with key stakeholders and SMEs to learn more about their responsibilities in communicating and meeting business goals through WaterInsights.

It was important to understand their relationships between their customers and what information was being requested from the existing sources on WaterNSW, and how WaterInsights could transition into becoming the central platform for water resources and water management.

User interviews & Testing

We conducted interviews in rural NSW to conduct in-person interviews and testing with end users.

Our research objectives were to understand the needs and painpoints of primary user groups and to test the WaterInsights MVP to determine areas of improvement.

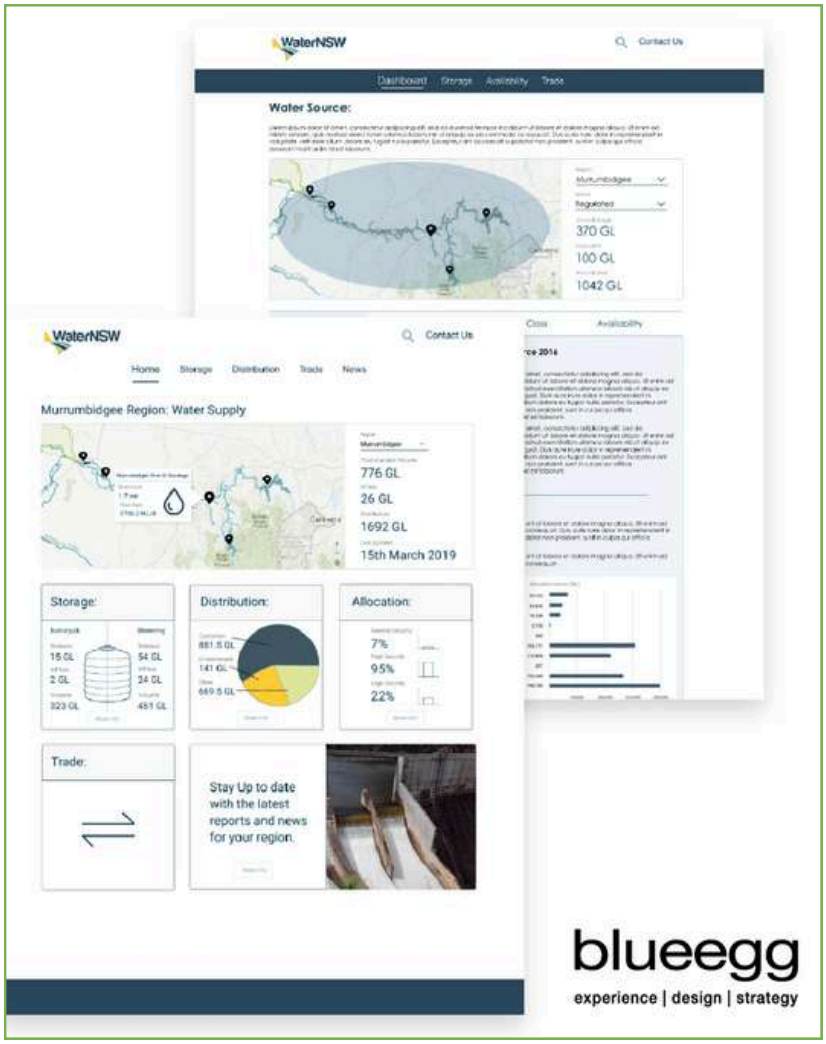
We aimed to determine the context, goals and obstacles of water user and management, and identify what the most important water information was for water users.

The team travelled to Moree, Dubbo, Griffith and Coleambally to ensure diversification and understanding of any regional differences on sentiment, needs or platform usability.

User segmentation

A total of 20 participants were interviewed from the following user groups;

- Small irrigators/farmers (primary)
- Large agricultural businesses (primary)
- Irrigation corporations (primary)
- Environmental water holders (secondary)



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CHALLENGE

Agile Networking

We adopted an agile framework with focus on quick deliveries of working software. Ideas could be tried cheaply and effectively, ideas that couldn't gain a consensus but were worth trying.

Releasing software continuously into the public domain with focussed deliveries on only the highest value work, and on debate around working software, not documents.

A cycle of build, get feedback, review and change, while new and painful at first, became the norm and took WaterInsights in directions no one could have envisaged at the time but in hindsight seem obvious to all.

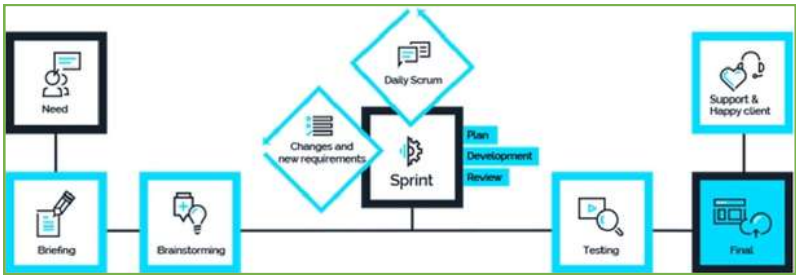
Scrum

According to the key Scrum principles, the combined WaterNSW and Adasa team run the development using agile ceremonies such as daily standup, user story grooming, sprint planning and sprint retrospective, able to break the larger epics into smaller user stories, and able to groom these user stories effectively along with the product owner and make accurate estimates through story points.

Agile transformation

In 2018, WaterNSW had an appetite for adopting Agile and changing how they delivered software projects.

One of the first and the most successful Agile experience until that moment, WaterInsights gave the impetus for change and boosted certainly transform the way software products are made and projects are managed by the corporation, combining velocity and adaptability with stability and efficiency.



Flexible investment

The agile framework also allowed TOTEX to be managed flexibly. Funds were only deployed in each sprint when business value
was agreed. Small sprints meant that it was simple for executives to assess business value.

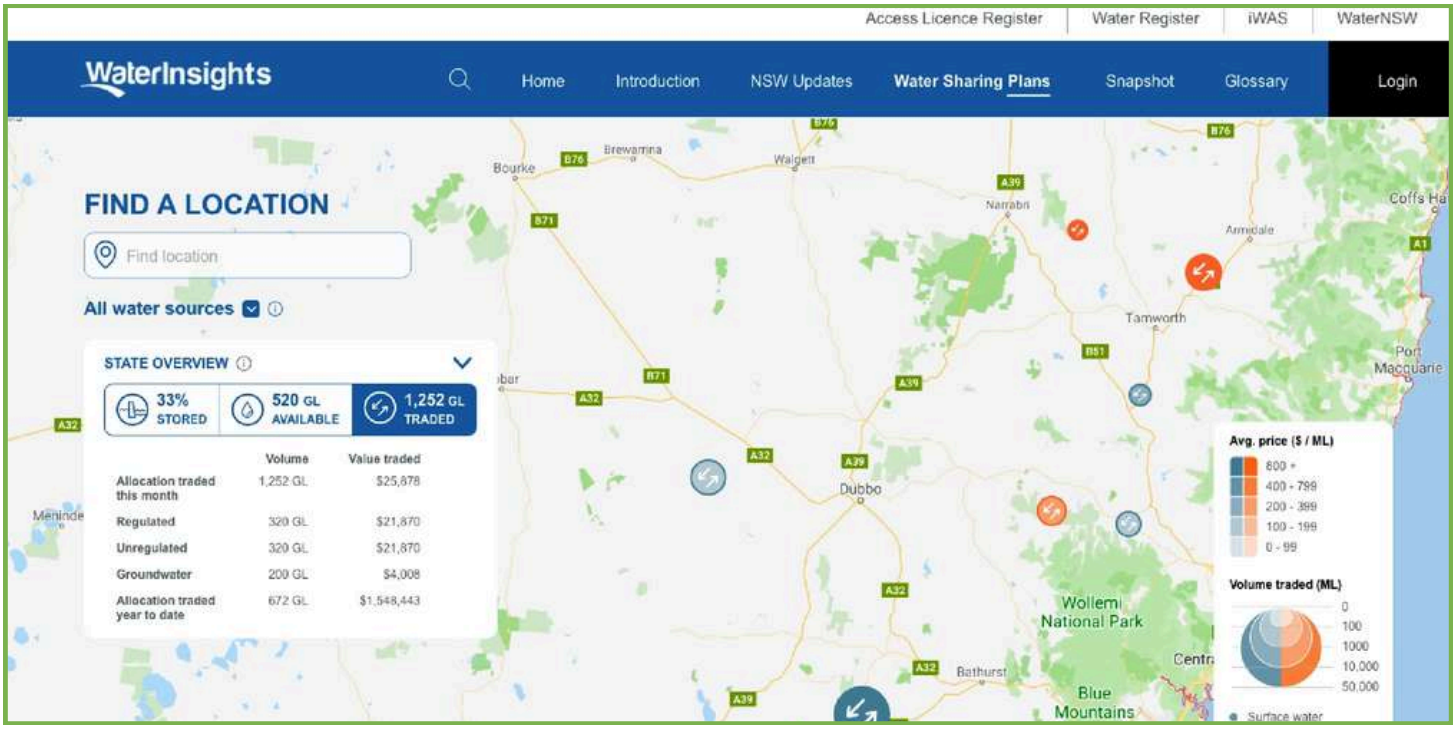
Devops & CDI /CO

An important objective was speeding up the software delivery. We made use of several DevOps tools that allowed the team implement a Continuous Integration and Continuous Delivery strategy that increased speed, quality, early detection of errors, multi environment deployment and high degree of automation.

"It's been great working with Adasa on WaterInsights. A fantastic creative partnership helping the business be truly innovative in the way we share water information and making the industry more transparent."

**Michael Barratt -
Product Owner**

ADASA'S SOLUTION



The homepage shows a high level overview of how much water is in the state's storage, how much water is available to licence holders, and how much water has been traded. This modal allows users to identify patterns and to view aggregations.

WaterInsights provides a one-stop-shop for all the information that a water user requires to makes sense of the complex system that determined the availability of water.

Through intuitive user interfaces and API services, WaterInsights make available information related to dam storage, operations and infrastructure, losses in river delivery, surface water, groundwater, water allocation policy, water accounting rules, licence conditions, prices for selling water rights and weather outlook.

WaterInsights gets all that information in one place so the interactions could be understood, treating water availability holistically, with clever visualisations and interpretative commentary, helps customers to plan for their businesses over both short and long-term horizons with additional beneficial effects for water efficiency and community trust.

A defined information hierarchy ensures that highly sought information critical to short term decision making is prioritised, and especially visible in the responsive mobile version of the website. Data is targeted to a water user location to ensure it is relevant and easily understood. The information is presented in simple dashboards with the ability to click and drill down to further detail.

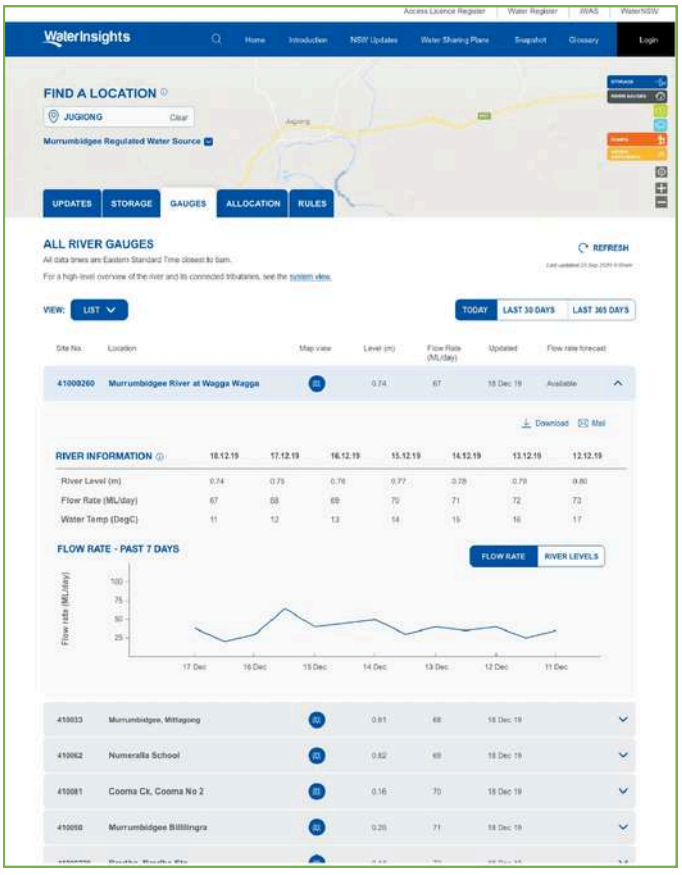
"WaterInsights is a critical step in enhancing transparency in the water sector. This is not only a major asset for farmers seeking certainty around when they can and can't access water, it is an invaluable tool for enhancing the water literacy of anyone seeking a better understanding of the management of our river network."

NSW Minister for Water The Hon Melinda Pavey. The Northern Daily Leader, 29th July 2020.

Information includes notifications and orders that determine water access, a breakdown of the availability to each category of water licence holder and charts of historical flows and volumes to help customers with long range planning.

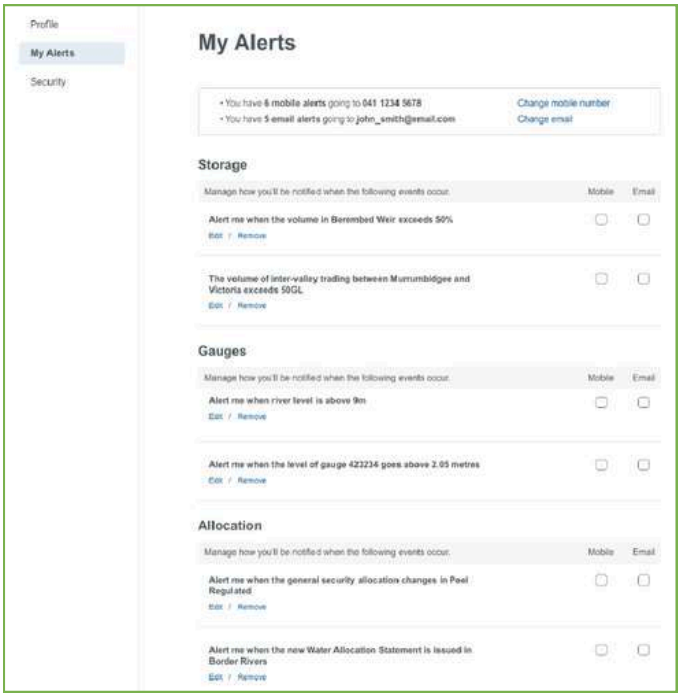
Other initiatives are the interactive on-boarding to guide customers new to the site, a context sensitive glossary linked to any text, a global search facility, and geolocation to precisely where the customer lives.

ADASA'S SOLUTION



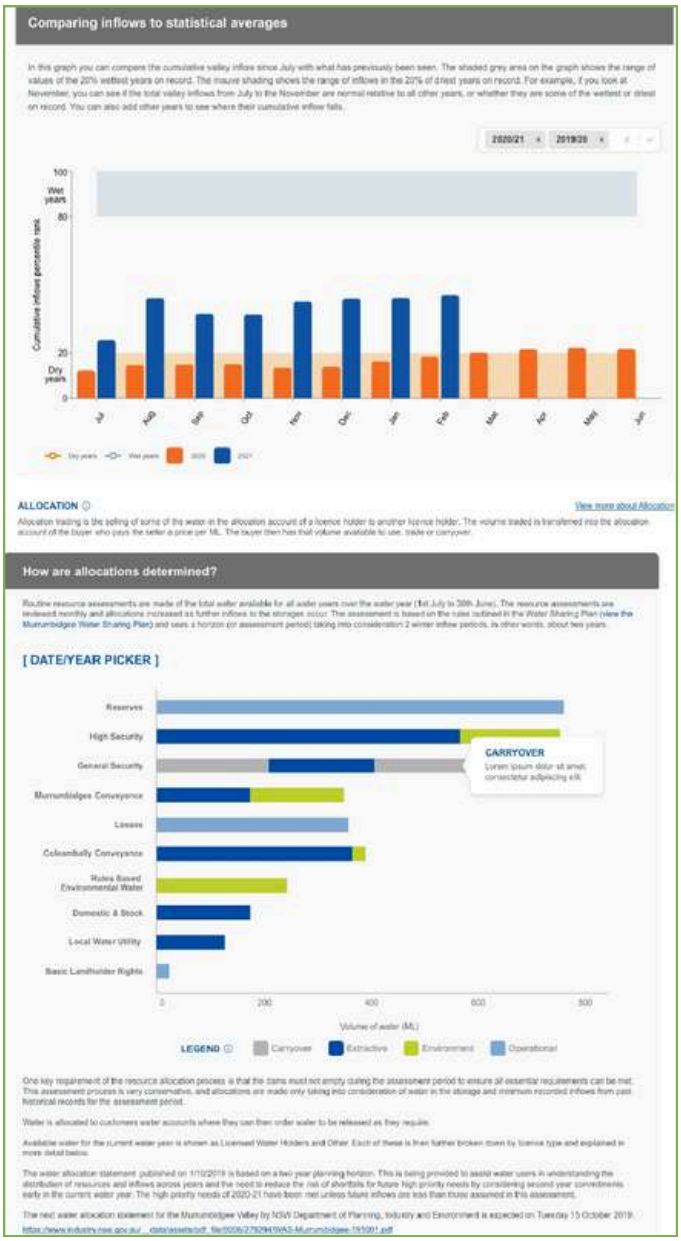
Gauges

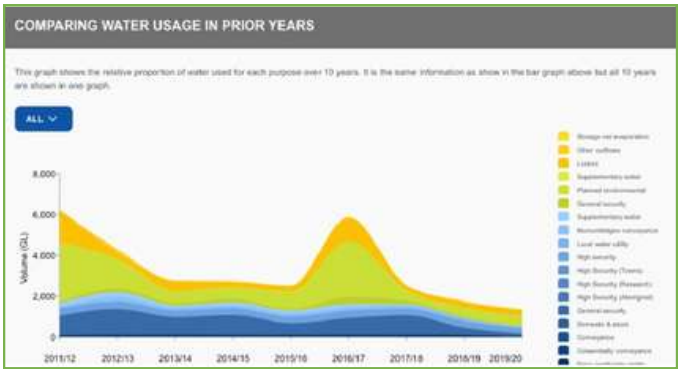
Stream gauges connected by telemetry provide real time measurements and modelled forecasts of streamflow and level and water quality parameters.



Personalisation

Users can setup their profile, notifications and security settings.





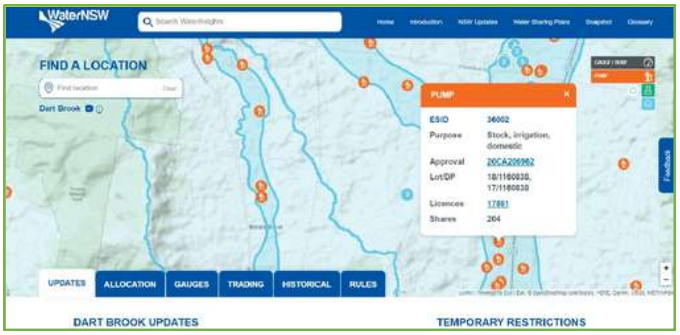
Research page

'Research' contained years of historical data, which required a deep understanding of the user tasks, goals and use cases to map out effective features to extrapolate specific data points within graphs, charts and tables that were important to the user.

ADASA'S SOLUTION

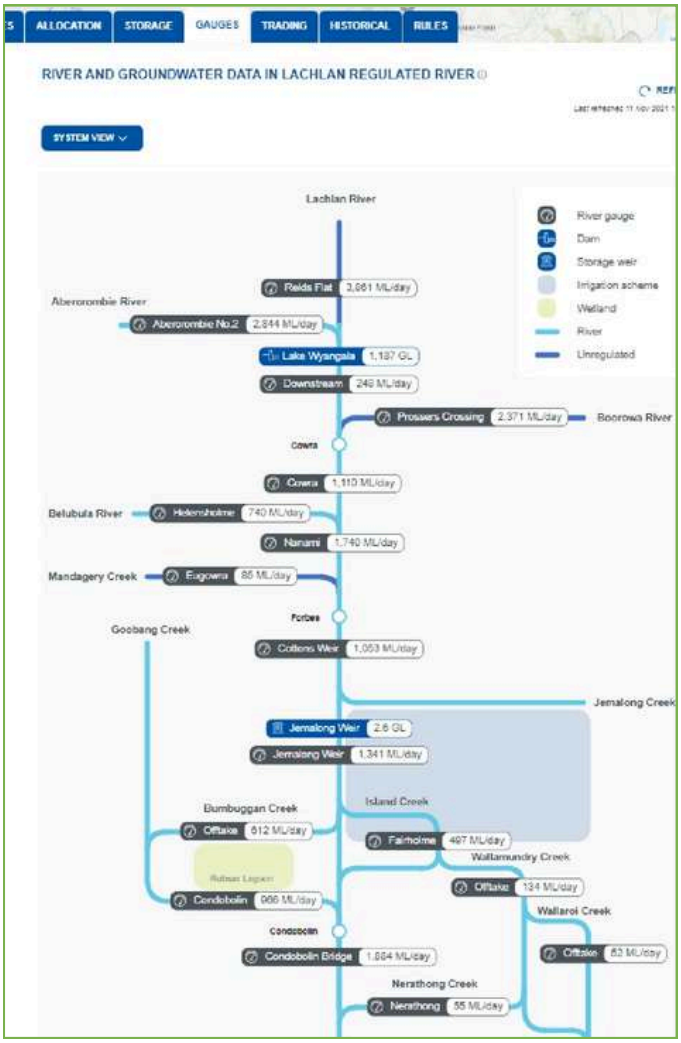
Water trading

Temporary and water entitlements trading information such as average price, number of commercial trades, volume, etc is provided and aggregated by water source.



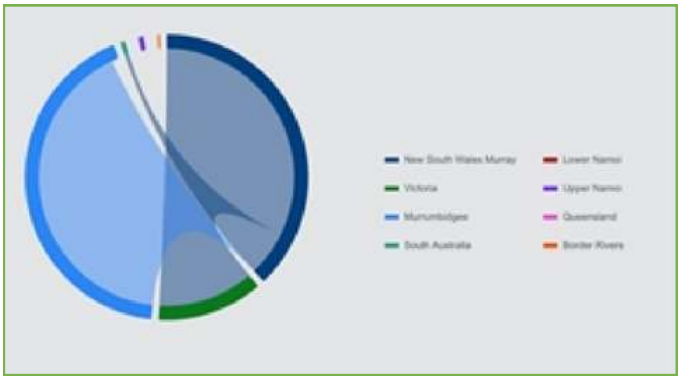
Transparency of entitlements

This view turns visibility on pumps and allow access to customer data in an intuitive and centralised way.



River schematics

Major rivers can be viewed in a way that helps understand the connections and flow rates across an entire catchment in a way that a map cannot.



Inter-valley Trading

The chord graph displays the total volume of allocation trading of the current water year between the selected water source and others.

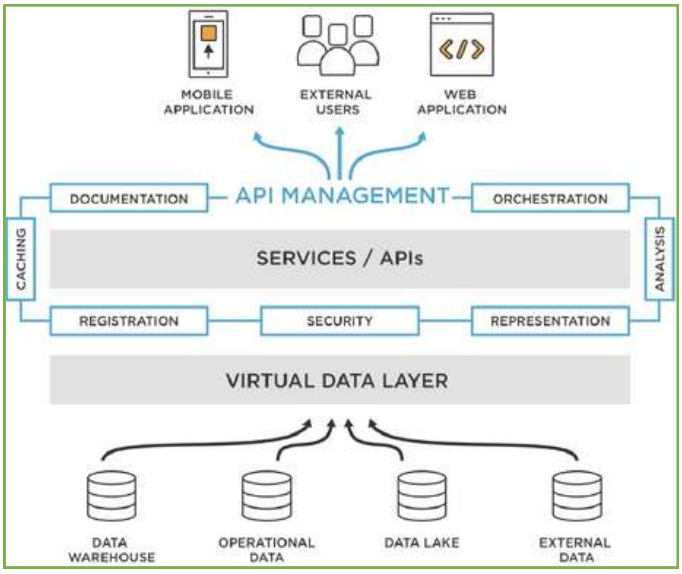
ADASA'S SOLUTION

Architecture overview

This project combined our expertise in the building of "back-end" systems that integrate multiple water and customer datasets from disperse sources with our extensive experience of developing web portals, apps and dashboards.

Datasets are integrated on demand through APIs from their sources-of-truth. WaterInsights orchestrates and correlates disparate data unifying it into a simple and high-level model of water sources (the virtual data layer) and provides access to data through a unified API.

The main User Interface is a web application designed to be responsive for mobile devices built primarily on React JS and Node.js with a few other libraries for mapping and improve look and feel.



Scalable architecture

WaterInsights scales easily as demand increases through the use or microservices, deployed in Docker's containers orchestrated by Azure Kubernetes Services (AKS).

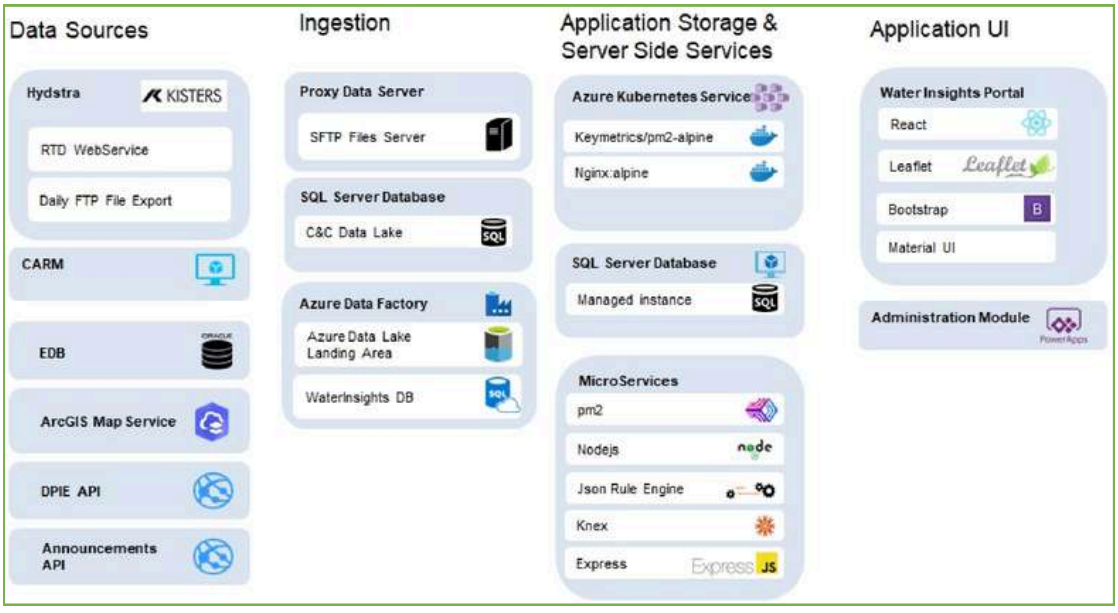
To register these images (Docker's containers) in Kubernetes, we use the Azure Container Registry service (ACR). Through pipelines implemented in DevOps we push these images to ACR.

We use the Azure Application Gateway to load balance the web traffic and in the future API traffic.

Gold
Microsoft Partner

Microsoft

WaterInsights has been delivered using Microsoft Azure cloud services.
Adasa is Microsoft Gold Partner which guarantees excellent service and a proven track record confirmed by Microsoft.



Case Study

RESULT

Today, customers have comprehensive insight into the data and interpretive commentary underpinning WaterNSW resource planning processes and decision making.

Data is targeted to a customers' location to ensure it is relevant and easily understood.

The information is presented in a simple dashboard with the ability to click and drill down to further detail. Information includes daily flows into dams and in rivers & weirs, notifications and orders that determine water access, a breakdown of the availability to each category of water licence holder and charts of historical flows and volumesto help customers with long range planning.

"Adasa's unique offering - specialists in both digital and water - made them the perfect technology partner for us. Their ability to interpret our problems broadly and then propose and build solutions we had not before considered, was critical to the success of a number of large and publicly visible projects at WaterNSW".

Ian Robinson,
Chief Information Officer - WaterNSW

CLIENT

WaterInsights is the one-stop-shop for rural water in NSW. Its genesis was the NSW Government Water Reform Action Plan.

The Reform Plan included acions arising from the MDB Compliance Compact with other States and reform of metering and separation of compliance functions.

WaterInsights role in the Plan was to significantly improve transparency and public accessibility of information about water use, ownership, trading, licence and permit conditions and rules that govern water, and thereby restore trust.

TIMELINE: 2018 - current
PRODUCT: waterinsights.waternsw.com.au
PROJECT TYPE: Custom Business Software

Adasa Sistemas

adasa@adasasistemas.com
SYDNEY - 60 Martin Place Sydney NSW 2000
T +02 9779 1513
BRISBANE - 240 Queen St Brisbane QLD 4000
T +07 3707 1302
MELBOURNE - 454 Collins St Melbourne VIC 3000
T +03 9108 4219

www.adasasystems.com