

State of AI for Water: Where Are We Now?

The Queensland Water Directorate (*qldwater*) for

Australian Water School, Queensland University of Technology &
Water Research Australia

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About *qldwater*



The **Queensland Water Directorate** (*qldwater*) is the central advisory and advocacy body, working with our members to provide safe, secure and sustainable urban water to Queensland communities.

- **73 urban water service providers, employing ~ 7,000 people**
- **370 water supply schemes**
- **265 sewerage schemes**
- **2,118,050 drinking water connections**
- **1,943,244 sewerage connections**

Our Members

- 2 of 2 Torres Strait Island Council Service Providers
- 15 of 15 Indigenous Councils
- 52 of 52 Non-Indigenous Councils
- 2 of 2 council-owned statutory authorities in SEQ (Unitywater, Urban Utilities)
- Gladstone Area Water Board, a Government Owned Corporation
- 24 Affiliate Members





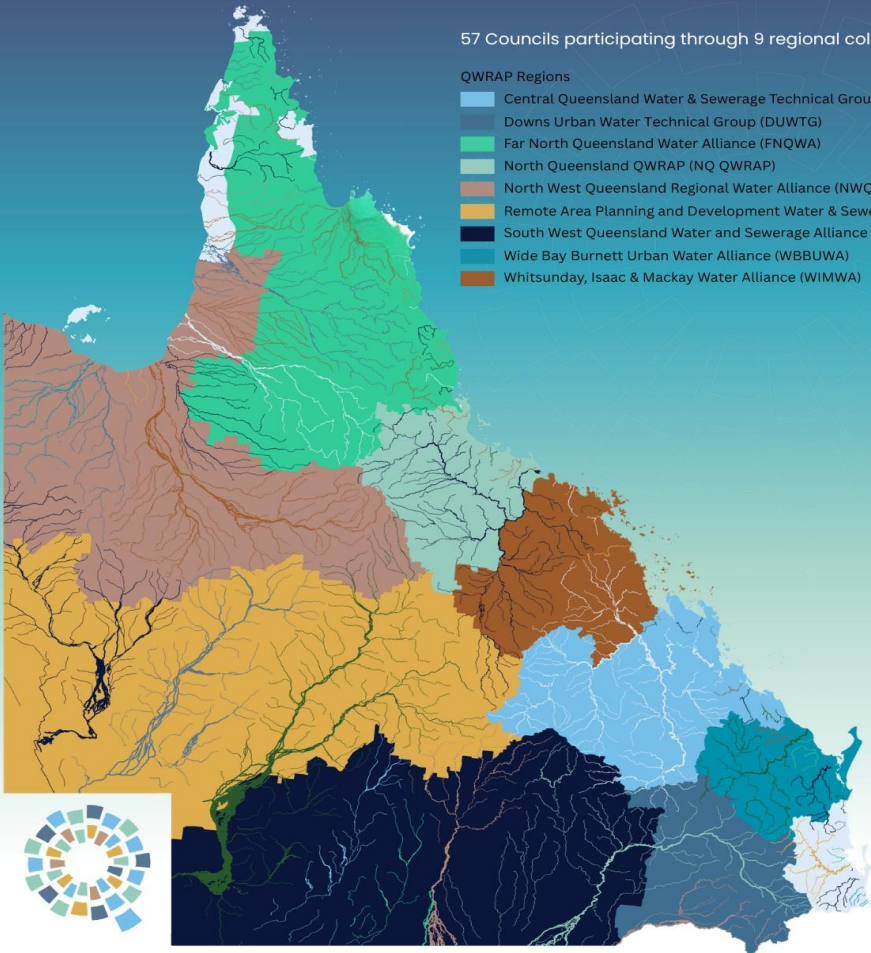
Queensland Water Regional Alliance Program

The Queensland Water Regional Alliance Program (QWRAP) is a Queensland Government funded program delivered collaboratively with LGAQ and Queensland Water Directorate (*qldwater*) to support local government in the sustainable delivery of essential water and sewerage services in regional Queensland.

57 Councils participating through 9 regional collaborations

QWRAP Regions

- Central Queensland Water & Sewerage Technical Group (CQW&STG)
- Downs Urban Water Technical Group (DUWTG)
- Far North Queensland Water Alliance (FNQWA)
- North Queensland QWRAP (NQ QWRAP)
- North West Queensland Regional Water Alliance (NWQRWA)
- Remote Area Planning and Development Water & Sewerage Alliance (RAPADWSA)
- South West Queensland Water and Sewerage Alliance (SWQWSA)
- Wide Bay Burnett Urban Water Alliance (WBBUWA)
- Whitsunday, Isaac & Mackay Water Alliance (WIMWA)



What's QWRAP?



- The Program itself was founded in collaboration; a partnership between **qldwater**, The Local Government Association of Queensland (The LGAQ) and The Queensland Government as the State funding partner now called, the Department of Local Government, Water and Volunteers (DLGWV)
- Regional local governments formed alliances across Queensland to respond to the unique challenges faced because of their remoteness and size
- Through the alliances, councils share knowledge, resources and benefit from working collaboratively
- Alliances include technical groups – water and sewerage engineering or technical staff from the councils – and strategic groups, representing councillors and mayors from the member councils
- **The Queensland Government provides \$2M per annum to this permanently funded program – we acknowledge their ongoing support and commitment to QWRAP**



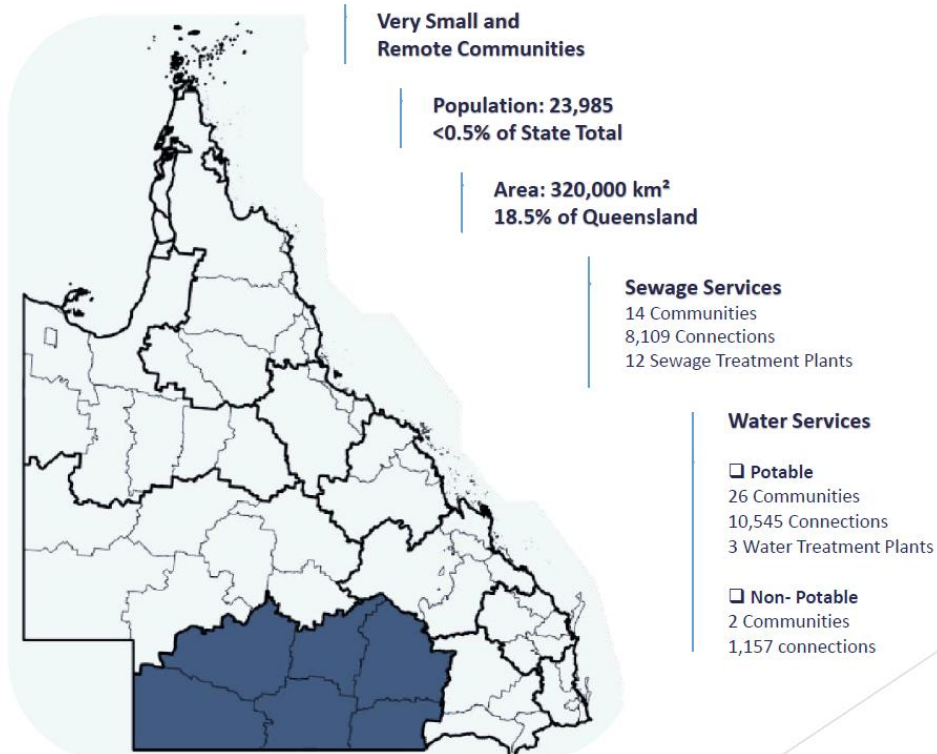
Queensland
Government



What drivers for AI use & adoption might be at play in QLD?



South West Queensland Water & Sewerage Alliance (SWQWSA)



- **Queensland's vast geography makes collaboration essential**
- To illustrate – an alliance like SWQWSA covers a vast area (4.6 x larger than Tasmania and bigger than NZ)
- Subject to all the same regulatory and legislative processes as all other service providers
- Yet it only has a relatively small ratepayer base to draw upon
- Water and wastewater provision competes with other services that Councils provide to their communities – monies are not ring fenced
- **There is always a need to maximise resources and improve efficiency, without compromising protections of public health and the environment**

Project Focus – The Smart Sewer Network (WIMWA)

Proactively manage environmental and public health risks associated with sewer overflows during storm events

Optimise capital investment in wastewater infrastructure by using predictive insights to guide decision-making and direct active programs which manage inflow and infiltration in sewers.

- **Deployment of Smart Sewer Sensors**

Continuous level sensors have been installed in key sewer manholes across the three council areas. These sensors provide real-time data on sewer levels, enabling early detection of inflow and infiltration issues, particularly during wet weather events.

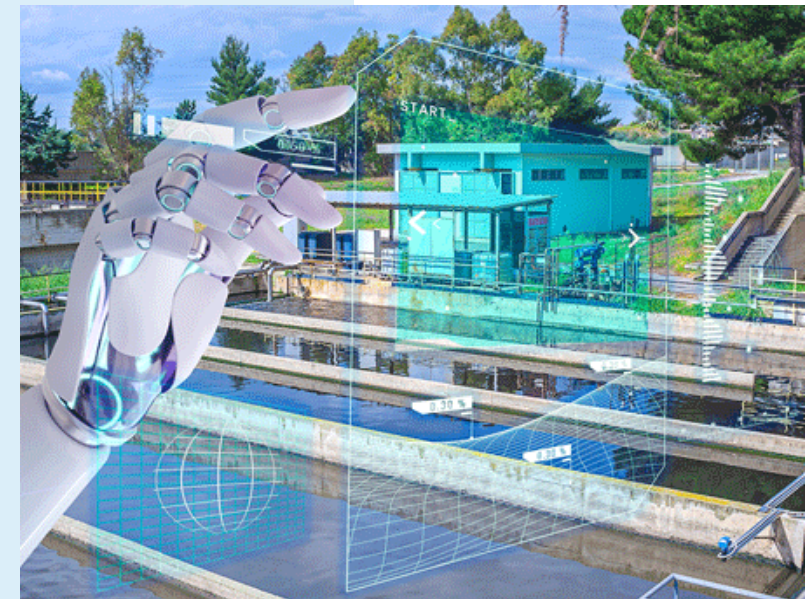
- **AI and Machine Learning**

The project leverages an AI platform, integrating data from the sewer sensors, network monitoring systems, and external sources such as hyperlocal rainfall and groundwater levels. This powerful tool:

Establishes baseline sewer network performance

Detect anomalies and predicts potential overflows

Inform operational planning and guides future capital investment.



Member Focus – building the asset register from the field



A member has been trialing AI based software said to dramatically reduce the time and cost of asset inventory and condition assessments while improving data quality.

- Enables building / compilation of the asset register from the field
- Eliminates the need for individuals to understand the asset conditions they are gathering information and data on – any member of a team can readily gather information to populate the register
- Significantly reduces the time and resources needed to gather data
- Produces condition assessment reports and recommendations for future maintenance



SNAP & GO

Create new digital asset records with photos



AUTOMATIC PLATE & TAG CAPTURE

Transcribed instantly into the right fields



RAPID CONDITION ASSESSMENT

Perform quick Level 2 visual condition assessments, including thermography



EXPORT REPORTS

Standardized outputs at the click of a button

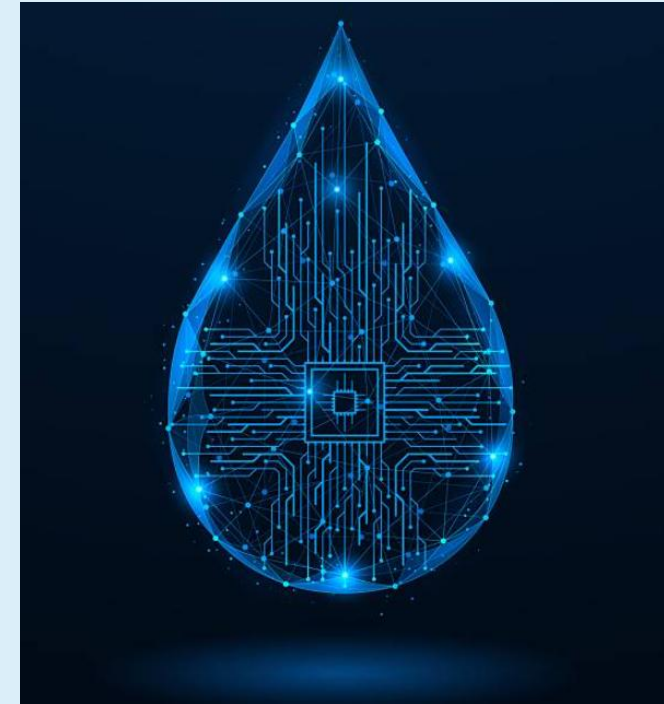
- ✓ Extract plate data
- ✓ Assess condition
- ✓ Run thermography reports
- ✓ Fetch manuals, O&M specs, and spare parts lists

Note: Works even with imperfect photos.

Other possible applications for AI.....



- **Smart Metering**– learnings could give greater insights into water meter fleet management, factoring in local stresses on meter operation
- **Demand Forecasting** – enables better resource planning
- **Development of digital twins** for enhanced training opportunities
- **Further development of remote monitoring and control systems – SCADA**
- **Inventory and supply chain management assistance**
- **Scenario planning for drought**





Thank You

qldwater.com.au/qwrap