



Queensland
Water Regional Alliance Program

QWRAP ANNUAL PROGRESS REPORT 2022



Councils currently participating in QWRAP:



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The Queensland Regional Water Alliances Program (QWRAP)

QWRAP is an industry-led initiative to investigate regional collaboration on water and sewerage (W&S) services in regional Queensland. QWRAP is a collaboration between the Local Government Association of Queensland (LGAQ), the Queensland Water Directorate (*qldwater*) and the Queensland Government with 56 councils engaged across several regions. During 2021/22 there were nine participating regions:

- Far North Queensland Regional Organisation of Councils (FNQROC)
- Remote Area Planning and Development Water & Sewage Alliance (RAPADWSA)
- Wide Bay Burnett Urban Water Alliance (WBBUWA)
- Downs Urban Water Technical Group (DUWTG)
- Whitsundays, Isaac and Mackay Water Alliance (WIMWA)
- North Queensland (NQ)
- Southwest Queensland Water and Sewerage Alliance (SWQWSA)
- North-West Queensland Regional Organisation of Councils (NWQROC)
- Central Queensland Regional Organisation of Councils (CQROC)

QWRAP has been funded by the Department of Regional Development Manufacturing and Water (RDMW, formerly Natural Resources, Mines and Energy) since 2011 with significant leverage of cash and in-kind contributions from other partners. QWRAP works to drive regional partnerships and initiatives to enhance service providers ability to deliver sustainable services. The aim is to ensure safe, secure and sustainable water and sewerage services for the more than 300 water schemes outside of South East Queensland, which include 25 councils that own and manage some of the smallest water schemes in Australia.

New regional additions to QWRAP include NQ, SWQWSA, NWQROC and CQROC this now brings nine regions currently collaborating on W&S services throughout Queensland. The regions participate either as a Water Alliance (RAPADWSA, WIMWA, WBBUWA, SWQWSA), technical group (FNQROC and DUWTG) or with funded trial projects (NQROC and NWQROC). This expands coverage of QWRAP to all of Queensland council areas outside of the Cape York First Nations councils and South East Queensland.

In December 2021, it was [announced](#) that QWRAP was to be permanently funded by the Queensland Government, emphasising the benefits collaborative water and sewerage management has brought to regional Queensland and the potential of the program.

Since its inception, QWRAP has provided a formal opportunity for councils to consider and test collaboration and alternative regional arrangement for managing essential W&S services. Regions involved in the program have matured in the degree of collaboration over the course of QWRAP and further development is encouraged through competitive funding for projects that build future collaboration. QWRAP has evolved over time and now includes joint projects across multiple alliances, information sharing, and common planning and strategic activities within regions.

Why regionalisation?

QWRAP encourages regionalisation of W&S services because this approach has been proven repeatedly to be a sustainable model to support all communities through addressing service priorities and building collective capacity and capability. Multiple national reviews have urged regionalisation of Queensland utilities to strengthen economies of scale, improve strategic planning and investment and encourage competition by comparison. In February 2021, the National Productivity Commission recommended development of new “agreed principles for governance of regional and remote water services where councils retain ownership of utilities”.

Although regional councils often cooperate on common issues, W&S service collaboration at a regional scale was rare prior to QWRAP commencing in 2011. Thanks to QWRAP, nine regions including over 240 communities are now working on joint regional projects. Regional maturity has grown with the support of State investment in QWRAP that has leveraged significant further contributions, encouraging collaboration even when it entails developing additional regional trust and time-consuming cooperation.



Figure 1 QWRAP Regions

Regional Progress

QWRAP is a voluntary program with two requirements for participation – that groups of councils must consider alternative institutional models, and seek collaboration opportunities that promote ongoing regionalisation. Acknowledging the necessity of a staged approach, the QWRAP ‘Maturity Model’ outlines typical stages in the development of regional models and directs funding to projects that demonstrate progression through the stages. QWRAP has shown that collaboration at all stages of regional maturity successfully yields financial and other community benefits, but maximum savings and eventual sustainability require high levels of maturity that deal with the greatest cost-drivers for W & S services. Such projects also require the greatest levels of regional trust, strategic planning and risk management.

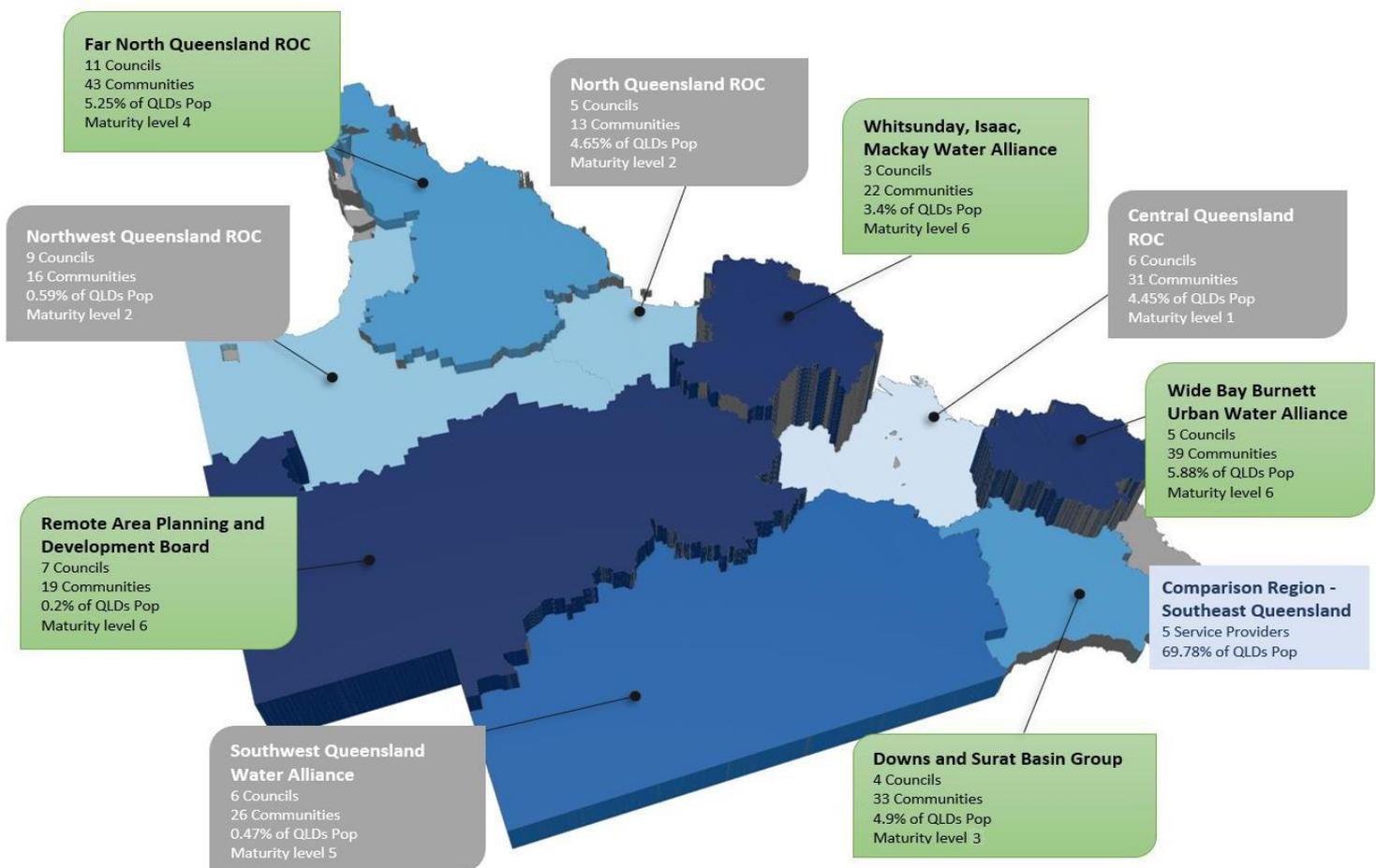


Figure 2 Queensland Regions

Regional Water and Sewerage Collaboration Maturity in Queensland

QWRAP funding averaged \$300,000 p.a. between 2011 and 2016 establishing three pilot regions. Funding doubled in 2016-2018 adding two regions and initiating 'emerging regions' with initial technical collaboration. In 2018, funding increased to \$800,000 p.a. promoting mature projects and expansion to more regions. North Queensland and South-West Queensland were invited to become the sixth and seventh QWRAP regions in 2021 and CQ and NWQ becoming eight and ninth regions in 2022.

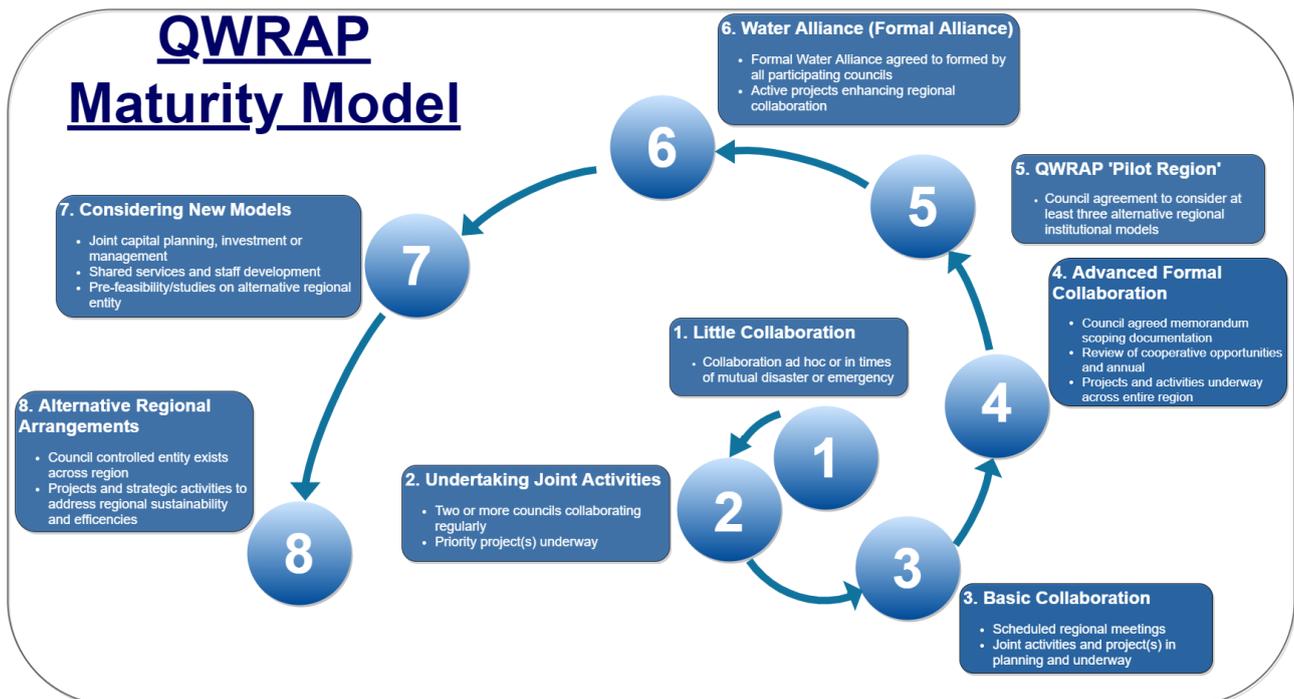


Figure 3 QWRAP Maturity Model

Increased maturity results in larger projects, shared resources and investment and development of expertise. Skills development builds capacity and is common to many regions along with projects building operational efficiencies and standardisation. High-maturity regions explore joint infrastructure planning to support regional growth for years to come. These benefits would not be possible in most regions without QWRAP.

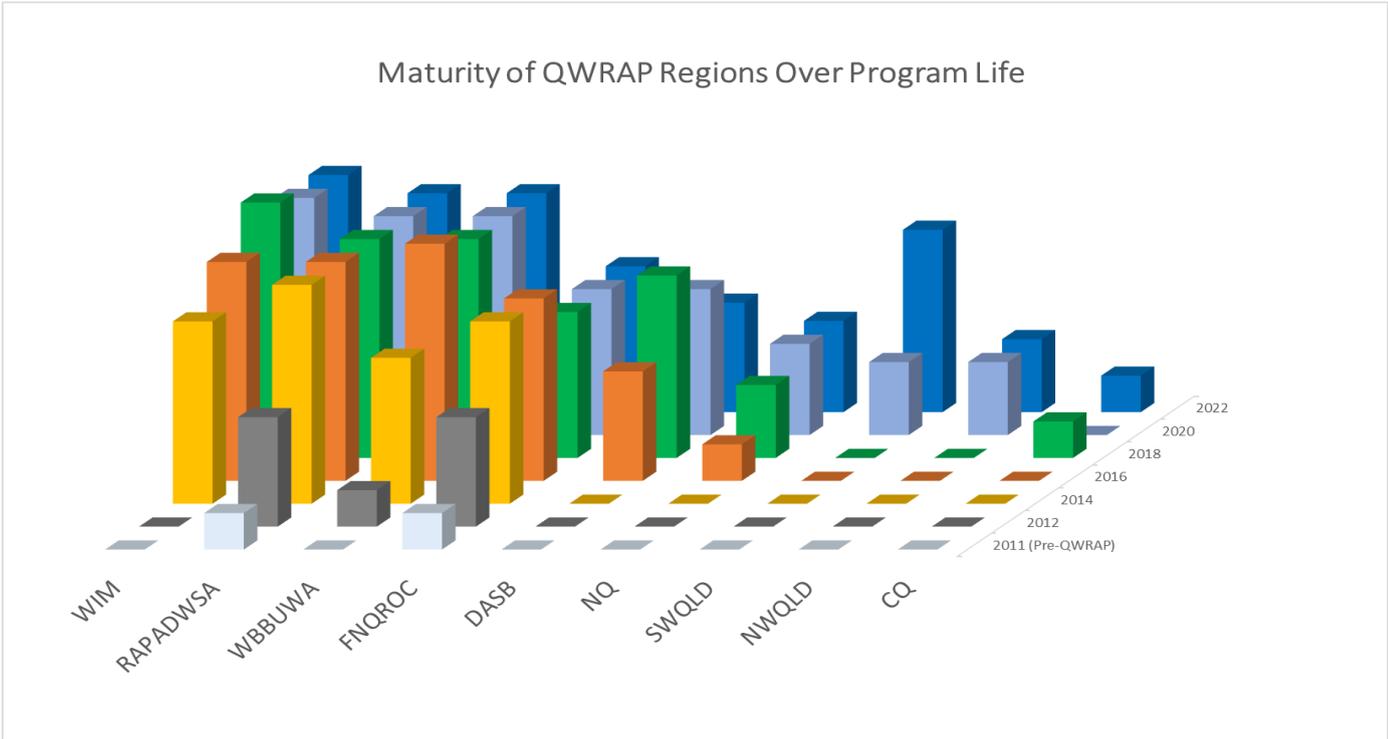


Figure 4 Maturity of QWRAP Regions Over Program Life



Figure 5 2020 Australian Water Association (AWA) award for Water Industry Worker (WIW), QWRAP initiative from WIMWA.

QWRAP Leads to Strategic Outcomes

All funded QWRAP regions undertake projects, but before a region can access significant funds, councils have been required to review and consider at least three alternative institutional models for regionalisation. While joint projects establish the benefits of cooperation, the review of models stimulates discussion at political and technical levels about pathways for voluntary change. These discussions would not occur without QWRAP and the seed funding and support to overcome initial barriers to collaboration. Increasing voluntary collaboration maturity is inherently slow because it requires sustained cooperation, effort, political support and trust across multiple councils. Incentivisation through modest QWRAP funding is a proven method for accelerating progress through the maturity model and achieving strategic objectives at a regional scale.

All QWRAP projects to date have yielded financial benefits. Immediate benefits arise from economies of scale and savings from joint procurement and the strategic planning and contract oversight that comes with a regional approach. Many projects are technical or operational in nature seeking to improve the safety, security and sustainability of services supplied to communities. Some of these projects may have occurred without QWRAP but would be unlikely to extend beyond individual councils. Many projects would not have been possible without collaboration; either because of the additional scope generated or the greater focus on essential services generated by QWRAP.

A handful of projects have also driven strategic sustainability outcomes and led to enhanced future collaboration within a region or across multiple regions. These projects have increased in the current funding round with the increasing maturity of some regions, strong regional champions, and the additional focus that has been placed on strategic planning and benefits capture. The activities of QWRAP regions result in benefits for communities and essential services and contribute to broader strategic objectives at local, regional and state scales. However, they can also contribute to achieving other state-wide outcomes. Key examples include:

- extending successful, tested initiatives across multiple regions,
- developing systems and approaches that are adopted by other Queensland councils,
- driving momentum and interest in improvement and collaboration,
- bringing together experts from different fields including academia to deliver practical and technology-focused solutions to complex problems
- prioritising innovation to address complex challenges common to regional Queensland, and
- promoting research to better understand new and emerging challenges.

QWRAP also provides benefits to other Regulators and agencies by streamlining communication and encouraging competition by comparison within and among regions. QWRAP communication channels and rapid deployment of information, expertise and trusted advice have proven beneficial for policy and regulatory change, environmental stewardship and protection of the Great Barrier Reef. Established collaboration on emergent issues through the previous years of QWRAP also resulted in effective joint responses to drought, flooding and COVID-19. These examples demonstrate how the QWRAP framework, acting both within and across regions, helps de-risk challenges faced by the urban W & S sector, supporting productivity and progress towards strategic goals in the face of constant change.

Year-in-review

The following tables summarises the QWRAP regions work and lists initiatives underway or commenced during the year 2021-22. Projects with **QWRAP funding are shaded blue**.

Far North Queensland Regional Organisation of Councils (FNQROC)			
Initiative	Benefits (monetary, tangible and intangible)	Period	Status in 2021-22
Regional Sewer Relining and Sewer and Manhole Condition Assessments – Program Coordinator (Q5-63)	<ul style="list-style-type: none"> Expands upon previous sewer relining works and combines individual programs of councils by appointing a Program Coordinator to oversee the effective delivery of the works Substantial financial and economic savings through joint procurement as well as reduced management and mobilisation costs Participating councils achieve economies of scale in pricing whilst reducing the risk of individual councils competing against one another for limited resources. More accurate payment processes and reduced costs (savings of 15% to the region) Improved quality of services provided because of single project manager, agreed process and greater market coverage 	2021-22	Commenced
Remote Area Planning and Development Board Water and Sewerage Alliance (RAPADWSA)			
Initiative	Benefits (monetary, tangible and intangible)	Period	Status in 2021-22
Sewage Treatment Plant Regulatory Requirements Investigation – review and performance optimisation (Q5-48)	<ul style="list-style-type: none"> Explore treatment technologies applicable to small remote sewerage schemes Platform for discussions with Environmental Regulator to streamline Environmental Approvals (EAs) and ensure schemes provide appropriate environmental outcomes Identify any future improvement needs for STPs to improve environmental stewardship and meet expectations of the community and regulators Enhanced self-sufficiency in parts of the region and local capacity identified elsewhere Improved Regional benchmarking and performance reporting Working towards Phase C – Sewerage Treatment Plant upgrade implementation 	2019-22	Phase A complete, currently in Phase B and working towards Phase C
Drinking Water Quality Management Plan (DWQMP) Audit (Q5-67)	<ul style="list-style-type: none"> Improved regulatory compliance Healthier, safer and more resilient communities Improvement of DWQMP response and planning to ensure water quality and regulatory compliance Improved regional conditional data to inform replacement programs Audits have been completed via a consultant for the member Councils and in alignment with regulatory requirements 	2022	Complete

Review of regional assets – Infrastructure Cliff project (development phase)	<ul style="list-style-type: none"> • First of its kind regional approach to assessment management • Identification of likelihood (condition) and consequence (criticality) of RAPAD water and sewerage assets • Resolution of gaps and inconsistencies in existing asset registers • Identification of past failure mechanisms to project useful lives more accurately than age-based assessment • Knowledge transfer to asset management outside of council's utilities management including roads, footpaths, gardens, stormwater drainage and fleet • Risks reduced through project activities • OPEX and CAPEX cost savings through joint procurement and improved asset management • Each Council has full capacity to achieve ongoing benefits 	2019-22	Underway
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Wide Bay Burnett Urban Water Alliance (WBBUWA)

Initiative	Benefits (monetary, tangible and intangible)	Period	Status in 2021-22
Ongoing regional sewer relining rounds following on from successful QWRAP Stage I program including manhole maintenance	<ul style="list-style-type: none"> • Largest joint sewer-relining contract in Queensland • A new MoU has been negotiated • Ongoing cooperation of councils capitalising on initial QWRAP project • Material savings and improved service delivery through central oversight • Template for sewer relining programs in other QWRAP regions • Reduced long-term costs of pipe failure & repair 	2017-23	Ongoing regional cooperation
Water Quality Testing for Treatment Optimisation (Q5-68)	<ul style="list-style-type: none"> • Water quality improvement is an integral element of all councils DWQMPs and improvement programs. • These chemical trials are being undertaken by SBRC but build on work undertaken elsewhere in the region. • Research is near completion after delays due to the unpredictable and extreme wet season. • Results will be finalised in the next FY and then the training component will be developed. 	2021-22	Nearing completion
WISE Stage 1 (WBBUA Industry Skills Enhancement) (Q5-73)	<ul style="list-style-type: none"> • Councils contributed \$20k to this stage 1 work and training was completed by South Burnett, Bundaberg and Cherbourg (note Cherbourg received support through LGAQ so did not apply for QWRAP funding). • The review of training unit needs has been scoped and will be delivered by WIOA in the new year. • The regional conference held in July 2022 included a session attracting students from Qld universities, supported by qldwater. • WISE Stage 1 funding supports the establishment of relationships with universities and the development of an ongoing program with students including complimentary entry to qldwater's annual forum. 	2021-22	Ongoing

Asset Criticality Review	<ul style="list-style-type: none"> Assessing criticality of network and treatment assets. Criticality assessments represent a twin need, along with condition assessments, to determine asset risk, and prioritise maintenance, repair and renewal. QWRAP research is testing the applicability of the tool to small regional councils and communicating the importance of criticality assessment. 	2022-23	Ongoing
Review of WBB Design and Construction Code (D&C code) (Q5-72)	<ul style="list-style-type: none"> This is a 5 year update to a well-established and highly successful early QWRAP project. It will provide a leading case study for the several other regions considering this sort of code. 	2021-23	Ongoing
Full Cost Recovery Pathways	<ul style="list-style-type: none"> This project will align with national guidelines and recommendations of the Productivity Commission. Recommended follow-on from earlier WBBROC review. The project commenced with a review of recommendations from previous reviews undertaken by QTC and David Spearitt. QTC reviewed the reports and presented to the Alliance Group in May 2022. Further scoping is needed. 	2021-22	Scoping stage
SCADA alignment and integration	<ul style="list-style-type: none"> Investigate joint service/procurement arrangements, information sharing. Seeking ongoing regional agreement for alignment of SCADA needs (initiated as an early QWRAP project) the councils each reviewed their own SCADA systems to update a survey document for the region. Each council will rotationally provide updates on their systems at future meetings before discussing the further possibilities of alignment. 	2021-23	Ongoing
Towards Regional Service Standards	<ul style="list-style-type: none"> This initiative commenced with a review of Demand Management messaging and restriction settings. Analysis of each council's current restriction levels yielded little common ground and opportunities for alignment were agreed to best lie in Permanent Water Conservation measures. It was found that some of the councils were currently or had recently changed these settings and it was agreed that it was not timely to revisit them at present. This project will be revitalised in the future. 	2021-22	To be revitalised in the future

Whitsunday, Isaac & Mackay Water Alliance (WIMWA)

Initiative	Benefits (monetary, tangible and intangible)	Period	Status in 2021-22
Collaborative CQU Research Project – Assessing Presence of Contaminants of Emerging Concern (CECs) associated with WWTP discharges (Q5-69)	<ul style="list-style-type: none"> Uniformity and alignment in operational management, detection/potential treatment of these CEC problems Potential future operational cost identified for the region Research enabling better understanding of wellbeing, health, safety and security aspects of CECs. This will be transferable across the regions Environmental benefits include better understanding of CECs, and how to assess their presence and impact on the environment. 	2021-22	Underway

<p>WIW Learning and Development (L&D) Coordinator extension – continued facilitation of WIW Training Program (Q5-62)</p>	<ul style="list-style-type: none"> • Uniformity and alignment of asset management approaches for future cost reduction • Associated cost saving (OPEX, CAPEX or procurement) with sole supplier arrangement (Training Provider) across the region • Contractual streamlining and strengthening (e.g. specifications) • Training completed with 51 staff completing certificates across regional Queensland • WIMWA, FNQWA, WBBUWA, Toowoomba, Southern Downs, Western Downs and qldwater involvement 	<p>2021-22</p>	<p>Near completion</p>
<p>WIM Nitrogen Field Sensor (Q5-51)</p>	<ul style="list-style-type: none"> • Joint research including WIM Alliance councils and the local University (CQU) • Focused on nitrogen, the most harmful pollutant for the GBR and the primary metric for urban discharge regulation • Innovative technology for automatic and instantaneous detection and measurement, which • has not been reliably achieved elsewhere, using a biochemical ‘dip-stick’ approach • A progressive industry collaboration, combining council technical knowledge with cutting • edge university research on real-time measurement of ambient nitrogen 	<p>2020-22</p>	<p>Near completion</p>
<p>Collaborative Research Project CQU Solar Energy Optimisation Bowen WTP</p>	<ul style="list-style-type: none"> • Uniformity and alignment for future cost reduction across the region • Asset Management and optimisation of capital investment across region where solar arrays installations can be optimally replicated • Staff skills and knowledge are aligned and transferable across region • Customer service or affordability improvements where WIM Alliance councils have consistent service standards and approaches (Codes, restrictions, CSSs) about solar installations 	<p>2020-22</p>	<p>Near completion</p>
<p>Regional Waste Management Collaboration (Sub-working group project)</p>	<ul style="list-style-type: none"> • Collate regional plans, regional waste solutions and training opportunities • Improved cost savings through sharing planning resources and training opportunities • Uniformity and alignment of waste management approaches for future cost reductions • Improved contractual streamlining and strengthening through shared arrangements 	<p>2021-22</p>	<p>Ongoing</p>
<p>SCADA collaboration towards a common future Stage 1</p>	<ul style="list-style-type: none"> • Sub-working group project incorporating the previous initiatives “Opportunities to further align regional SCADA systems” and “Regional Control Room Philosophy collaboration” • Including WIM Councils for Stage 1 and WBBUWA Councils for Stage 2 • Uniformity and alignment for future cost reduction across the region • Associated cost saving (OPEX, CAPEX or procurement) with sole supplier arrangement and with a regional market across the region 	<p>2021-22</p>	<p>Ongoing</p>

<p>Unified regulatory responses e.g. SWEAP matters (Sub-working group project)</p>	<ul style="list-style-type: none"> • Uniformity and alignment for future cost reduction across the region by ensuring joint responses to regulators are affordable • Enhanced regional planning and improved regulatory compliance by ensuring joint responses provide good outcomes for the regional community • Customer service or affordability improvements by ensuring joint responses to regulators are affordable for the region • Shared knowledge and skill are transferable across region through formal collaboration 	<p>2021-22</p>	<p>Ongoing</p>
<p>Aligned annualised salary packages for operation staff (Sub-working group project)</p>	<ul style="list-style-type: none"> • Background HR activities across WIM councils and looking to incorporate HR reps on project team to promote cohesiveness • Uniformity and alignment for future cost reduction across the region • Associated cost saving (OPEX, CAPEX or procurement) with standardising payroll for operational staff and creating the “right” on-call environment 	<p>2020-22</p>	<p>Ongoing</p>
<p>Review of modelling software used across the region (Sub-working group project)</p>	<ul style="list-style-type: none"> • Evaluation of opportunities for exploiting a regional modelling supply solution or internal servicing model options to allow uniformity and alignment of asset modelling approaches across the region for future cost reduction • Associated cost saving (OPEX, CAPEX or procurement) with the introduction of modelling approaches to asset operations 	<p>2021-22</p>	<p>Ongoing</p>
<p>Asset Criticality Framework and Assessment (Sub-working group project)</p>	<ul style="list-style-type: none"> • This collaborative project is in partnership with WBBUWA and qldwater • Uniformity and alignment of asset criticality approaches across the region for future cost reduction • Associated cost saving (OPEX, CAPEX or procurement) with a focus on operations and maintenance of critical assets • Customer service or affordability improvements for annual maintenance programs which cover critical assets • Asset Management and optimisation of capital investment with improved asset condition assessments • Improved regional resilience and reliability through developing a criticality framework relationship around natural disasters • Environmental benefits where critical asset are identified and any defects prioritised for action 	<p>2019-22</p>	<p>Ongoing</p>
<p>Evaluation of emerging technologies incorporating the initiative “Artificial Intelligence” and “Best Practice technology transfer opportunities”</p>	<ul style="list-style-type: none"> • Uniformity and alignment of asset management approaches for future cost reduction • Associated cost saving (OPEX, CAPEX or procurement) with the introduction of AI technology approaches to asset condition assessment • Joint savings in staff time with a collaboration panel previewing and assessing the practicality and viability of new product/service offerings • Customer service or affordability improvements where servicing can be provided quicker through more efficient technology • Staff skills updated with effective high-tech approaches to asset condition assessment • Asset Management and optimisation of capital investment with improved asset condition assessments • Environmental benefits where asset critical conditions can be identified quicker and prioritised for response/repair 	<p>2020-22</p>	<p>Ongoing</p>

Regional Smart Metering Trial Evaluation (Sub-working group project)	<ul style="list-style-type: none"> • Uniformity and alignment of asset management approaches for future cost reduction with regional trials rather than individual council trials • Associated cost saving (OPEX, CAPEX or procurement) with regional focus and approach • Associated cost saving (OPEX, CAPEX or procurement) with trials being conducted on a regional basis assessment • Customer service or affordability improvements where the region benefits from a common approach and outcome to smart meters • Staff skills updated regionally with common approach to meter replacement programs • Customer expense in the cost of leak rebates could be minimised • Asset Management and optimisation of capital investment with a regional approach to supply and installation of meters • Environmental benefits where potable water leakage could be identified quicker and prioritised for repair 	2021-22	Ongoing
Workforce Planning and Resource Sharing Arrangements e.g. NATA accredited Laboratories Services)	<ul style="list-style-type: none"> • NATA accredited lab located at Proserpine • Midge Point township servicing by WRC continuing • Uniformity and alignment for future cost reduction • associated cost saving (OPEX, CAPEX or procurement) with sharing arrangements across council boundaries • Customer service or affordability improvements where servicing can be provided quicker by WIM Alliance councils with on call arrangements • Improved safety or security with staff travelling less after-hours • Council reputation improved with better service delivery in fringe areas • Improved regulatory compliance with faster response • Enhanced regional planning with asset sharing across boundaries • Environmental benefits with faster response to critical sewerage incidents 	2018-22	Ongoing

Downs Urban Water Technical Group (DUWTG)

Initiative	Benefits (monetary, tangible and intangible)	Period	Status in 2021-22
Water Supply Security Template Trial (Q5-57)	<ul style="list-style-type: none"> • Comprehensive assessment of risks and solutions for a small community supply (Killarney). • Leveraging local knowledge to improved local water security in Southern Downs RC. • Opportunity to trial the Department's draft Water Supply Security Template for small communities (e.g. provision of recommendations to develop usability). • Demonstration project for other SDRC, DASB and Queensland small communities. 	2020-21	Complete

Cyber security audit & risk assessment (Q5-60)	<ul style="list-style-type: none"> Review to assess and improve regional security against cyber-attacks Identification and prioritisation of risks and optimal solutions. Development of measures to meet and exceed regulatory requirements for cybersecurity. Regional approach to streamline and align responses to emerging threats. Joint approach to for financial procurement savings and streamline/improve contract management. 	2021-22	Complete
Regional Operator Forum and Field Day	<ul style="list-style-type: none"> Follow-on from prior successful forums (DASB 2020 and WIM) The forum was hosted by Toowoomba forum attracted over 30 staff from across DASB councils Network formation and shared knowledge from case study presentations Improve future one-one-one conversations and build resilience among the region's operational staff. 	2021	Complete
Alignment of DWQMP Audits	<ul style="list-style-type: none"> Single contract for auditing DWQMPs across the region Improved safety and compliance with DWQMPs Joint procurement savings on specialist consulting services augmented by regional coordinator contract oversight Opportunity for collaboration on common improvement processes and requirements 	2020-21	Complete

South West Qld Water and Sewerage Alliance (SWQWSA)

Initiative	Benefits (monetary, tangible and intangible)	Period	Status in 2021-22
Institutional review of alternative regional models (from Regional Coordinator funding)	<ul style="list-style-type: none"> Mandatory review comparing three alternative institutional models for collaboration on water and sewerage management. Streamlined approach leveraging the recent review of the DASB group (two councils of which transferred to the SWQROC) Survey process undertaken by regional coordinator taking advantage of DASB experience. 	2020-22	Complete
Alignment of Drinking Water Quality Management Plans Audit and Review anniversary dates	<ul style="list-style-type: none"> Benefits of collaboration to SWQWSA member councils' communities and Queensland Government and other stakeholders by identifying and progressing immediate collaboration opportunities Communicated the successes, emphasising the cumulative benefits over and above the sum of individual project benefits and the alignment of collaboration with each council's responsibilities towards its community Anticipate future savings due to coordinated regional audit program and optimised auditor travel 	2021-22	Underway
Staffing and Training (from Regional Coordinator funding)	<ul style="list-style-type: none"> Regional capacity and capability improved by the establishment of a regional graduate water and sewerage engineer program Undertaking coordinated water and sewerage operator training by adopting a regional training hub model 12 candidates for Certificate III in Water Industry Operations training and assessment were identified Leveraging off similar projects in other regions and building on work undertaken by the Queensland Water Skills Partnership 	2021-22	Near Completion

Regional Water and Sewerage Infrastructure Strategy (Q5-65)	<ul style="list-style-type: none"> • Inform and address the current and future infrastructure needs of all its member Councils in an integrated and achievable manner • High-level assessment of the SWQWSA Councils' current strategic water and sewerage asset management and infrastructure planning to identify gaps, needs and risks • Leverage of QWRAP funding to apply for joint Building Our Regions (BoR) planning project application and future State Government funding. • Project application will provide funding of up to \$1.5 million 	2021-22	Complete
City of Gold Coast Partnership (Q5-66)	<ul style="list-style-type: none"> • Mutual knowledge and experience sharing between City of Gold Coast, Bulloo Shire Council and Quilpie Shire Council • Provision of technical advice, mentoring, staff exchange opportunities and framework for continued support and capability and capacity building • Professional and personal development opportunity for officers enabling peer networks and communication channels that are essential for sustainable utility services 	2021-22	Near Completion

North West Qld Regional Organisation of Councils (NWQROC)

Initiative	Benefits (monetary, tangible and intangible)	Period	Status in 2021-22
SCADA assessment and reviews (Q5-61)	<ul style="list-style-type: none"> • Audit and analysis of SCADA systems of four participating councils in the NW region. • Comparison and benchmarking among the councils along with assessment of needs based on modern service provision and industry knowledge. • Identification of improvement needs and options for joint delivery of common issues. • First collaborative project on water and sewerage management among the NW councils. 	2020-21	Complete

North Qld Regional Organisation of Councils (NQROC)

Initiative	Benefits (monetary, tangible and intangible)	Period	Status in 2021-22
Research Partnership on Treatment Options for biosolids in north Queensland (Q5-59)	<ul style="list-style-type: none"> • Partnership among five councils and James Cook University. • First ever, regional characterisation of biosolids to identify specific issues and needs for biosolids in tropical Queensland. • Identification and quantification of contaminants of emerging concern and potential treatment options. • Investigation of alternative treatment technologies to meet stringent Qld biosolids requirements • In future years the project will assess feasibility of short-listed treatment options for the biosolids from North Qld councils. 	2020-22	Ongoing
Regional Water industry Worker program (Q5-62)	<ul style="list-style-type: none"> • Skills development for reticulation employees • Third extension of this successful project which includes Townsville, Burdekin and numerous regional councils 	2019-23	Ongoing

Operator Certification (Q5-64)	<ul style="list-style-type: none"> • Delivery of accredited training for water and wastewater treatment operators to enable standardised approaches and content across all councils • Regional training cohorts and face-to-face training provide a reduction in training costs and operators from neighbouring councils the opportunity to experience alternative treatment and work processes • Joint delivery and standardisation training methods strengthens regional resilience by improving the transferability of skills and knowledge of operators across various treatment plants within and outside of the NQ region 	2020-22	Ongoing
Smoke Testing Training	<ul style="list-style-type: none"> • Skills development 	2021-22	Complete

Annual Highlights

Detailed project reports are available for all funded work undertaken in QWRAP regions in addition to regional annual reports with acquittals. The activities undertaken in the past year are summarised in the above table and selected case studies are provided below.

QWRAP achievements

A key highlight of the 2021-22 year for QWRAP was the announcement that it had been renewed as a permanent program by the Queensland Government, with a permanent funding allocation. This is a testament to the success of QWRAP in driving regional collaboration and innovation in the urban water sector. Over the 10 years that QWRAP has operated, it has fostered palpable change in the interaction between regional councils and the way that they approach the challenges of providing W&S services in Queensland.

External impacts to regional collaboration

The ongoing COVID-19 pandemic had significant impacts across all regions. While initial impacts were mainly associated with disruptions to regional and interstate travel and council budgetary limitations, as the pandemic has progressed, broader impacts have become apparent including:

- higher costs for project delivery due to global supply chain disruptions, anecdotally up to 30%
- extended timeframes for project delivery due to long lead times for parts and materials
- transport disruptions, including reduced access to regional air travel.

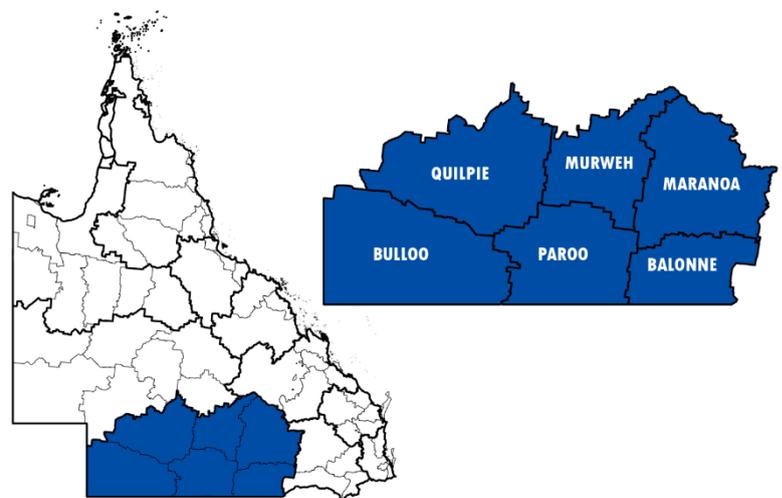
In addition, the war in the Ukraine has had a substantial further impact on the global supply chain and fuel prices.

These combined factors have led to continued project delays and have contributed to an apparent hesitancy to initiate new projects for all regions.

South West Queensland Water and Sewerage Alliance (SWQWSA)

The South West Queensland Regional Organisation of Councils (SWQROC) established the South West Queensland Water and Sewerage Alliance (SWQWSA) in 2021 and is comprised of Bulloo, Murweh, Paroo and Quilpie Shire Councils as well as Balonne Shire and Maranoa Regional Council which were formerly part of the DASB group.

Mr Alan Kleinschmidt was appointed as the inaugural regional coordinator for the region upon his vacating the regional coordinator position for the DASB group. The appointment of an experienced regional coordinator has accelerated the strategic collaboration



SWQWSA region services 27 often small and remote communities covering an area of 320,000 km² with a population of 23,985.

within the group and has facilitated initial projects that demonstrate a relatively high degree of maturity.

The SWQWSA are currently operating at a maturity level of 5, with certain projects, such as the Regional Water and Sewerage Infrastructure Strategy (Q5-65) indicative of a higher degree of maturity. This is exceptional considering that the alliance was newly formed in 2021.

Highlighted Initiative: Review of Regional Water Governance Arrangements

Description: In March 2021, the SWQWSA resolved to progress a regional water governance review as a high priority. The Alliance proceeded with a high-level review and assessment of the Downs and Surat Basin (DASB) Regional Water Governance Review Report and of the applicability of the information, assessment outcomes and findings of the review. A questionnaire was developed for completion by the members of the WSTG. The questionnaire extracted relevant findings, conclusions and recommendations from the DASB Review.

Strategic Alignment: Two SWQWSA members, Balonne Shire Council and Maranoa Regional Council were members of DASB Water Group at the time of undertaking the review, and there is significant commonality between the two QWRAP Regions in terms of the sizes of councils, small and/or remote communities served, and issues around resourcing and financial stability.

Outcomes: During the assessment and review it was found that the recommendations of the DASB review had a very high level of applicability to SWQWSA. Furthermore, it found that the adoption of a formal water alliance governance model would be the most advantageous outcome for the SWQWSA.

Benefits: Overall, regional agreement that adoption of a formal water alliance to allow future collaboration and joint procurement.

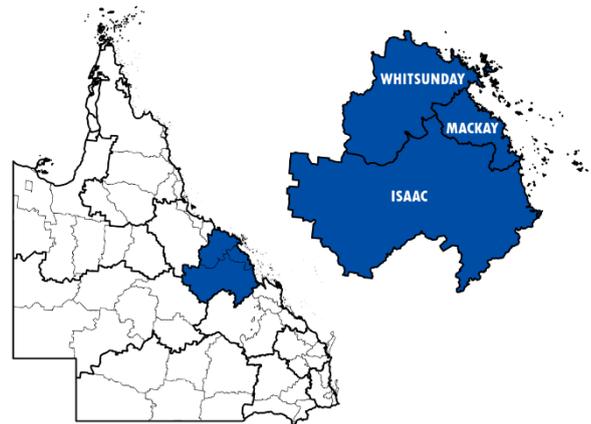
Maturity: This project is indicative of a relatively high degree of maturity at level 5.



Figure 6 Cunnamulla Sewerage Treatment Plant site visit during a SWQWSA QWRAP meeting

Whitsunday, Isaac, and Mackay Water Alliance (WIMWA)

The region is overseen by a steering group chaired by Mr Troy Pettiford (Whitsunday RC). The group reports to the Greater Whitsunday Region Council of Mayors which recently identified QWRAP as one of their priority activities to help deliver benefits to the region and its communities, and to enhance organisational capacity of their Councils. The regional coordinator (Mr Barry Holcroft) has continued in the role. The projects undertaken in the region in previous years have included initiatives impacting strongly on ongoing capital, operational investment and training by participating councils. These projects demonstrate a high level of maturity because of the degree of collaboration and trust entailed, the potential for further future regionalisation and the financial savings generated. All projects have been aligned to the high-level objectives in the Alliance Terms of Reference which were developed with reference to the council's Strategic Plans. Projects in the region have been promoted through presentations at industry forums and conferences and through council social media. The WIM Alliance has been operating for over 6 years with a high level of regional collaboration and excellent communication and networking across the Whitsunday region. WIM is currently at 6 maturity level, with some projects representing level 7.



WIM Water Alliance includes Whitsunday, Isaac and Mackay Councils servicing over 173,000 people in 22 communities.

Objectives of the WIM Water Alliance

- Build the businesses collective capabilities through development of stronger networks, greater 'cross border' cooperation and alignment of systems and processes.
- Demonstrate leadership in development of the water industry within regional Queensland.
- Develop an agreed position on common issues in consultation with stakeholders (e.g. the state, regulators, the business owners, key customers).
- Strive for further opportunities for reform of the businesses to improve the efficiency of the W&S businesses across the region.



Figure 7 Waste water treatment Plant

Highlighted Initiative: Extension of the Regional Water Industry Worker Program

Description: The Water Industry Worker (WIW) training scheme commenced in 2019 and due to its evident success, an extension of a dedicated learning and development (L&D) coordinator was required to continue to deliver the project. The WIW training program has focused on the formal recognition of skills and training of employees, with a strong emphasis on “on-the-job” learning. Participants currently undertake either a Certificate II or III in Water Operations from the National Water Training Package. The WIW training program expands on the agreed training packages by facilitating consistent units of competencies offered across all councils and is jointly delivered in regional locations (hubs) by the same Registered Training Organisation (RTO).

Strategic Alignment: The importance of this project has been widely acknowledged and has resulted in the program being awarded the Australian Water Association Organisational Excellence Award in 2020. More recently, an independent review of the program was conducted. Feedback of the program was extremely positive, recognising the benefits of face-to-face training, and collaboration amongst peers and counterparts. A key recommendation from the review is that the program is supported with ongoing funding and expanded to research further opportunities for councils.

Outcomes: The role of the L&D Coordinator WIW was success-critical to the WIW training program. The L&D Coordinator facilitated the identification and readiness of staff (including matching funding options), through support, enabling field staff to embark on a pathway to a consistent standard of formalised training that is accredited and nationally recognised. The Coordinator also ensured the tasks required to enable the smooth transfer of the program between regions and individual councils was managed, facilitating cross regional and cross QWRAP Alliance collaboration for strengthening skills within these regions. Overall, this project is a great example of the operating model that QWRAP promotes and aims to achieve for all regions.

Benefits: Approximately 77 trainees from a wide geographic area participated and completed either Certificate II and/or Certificate III via face-to-face training. This training has created career pathways and job certainty for water industry workers (field and network staff) who can otherwise be under-recognised.

Maturity: The extension of the WIW program is an example of the WIM Alliance collegial behaviour and network across the region. The extension of the project into neighbouring Alliances and beyond demonstrates a level of maturity at level 7.



Figure 8 Regional Training Hub site visit

Remote Area Planning and Development Water and Sewerage Alliance (RAPADWSA)

The Remote Area Planning and Development Water and Sewerage Alliance (RAPADWSA) has had several significant governance changes over the past two years. Currently, the Chair of the Technical Group is Charles Dyer (Winton), the Chair of the Strategic Group is Cr Sally O’Neil (Mayor of Barcoo) and Jason Ricks (GBA Consulting Engineers) is the Regional Coordinator. The group continues to undertake collaborative projects and joint activities. The group is assessed to remain at level 6 in the maturity model with some projects representative of collaboration at level 7.

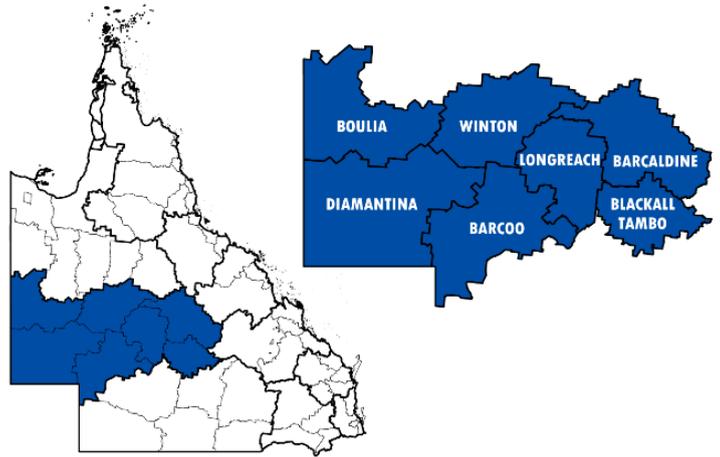


Figure 2 The Regional Area Planning and Development Water and Sewerage Alliance (RAPADWSA) includes seven councils servicing 10,200 people in 20 communities.

The group held a Strategic Workshop in March 2022 facilitated by the Universal Improvement Company (UIC). The workshop re-identified the importance of the Alliance and their vision and mission. This workshop provided direction and guidance for the region’s projects.

Critical strategies of the RAPAD Water and Sewerage Alliance

- Collaboration Strategy
- Operational Harmonisation Strategy
- Education and Training Strategy
- Water Security
- Asset Management & Infrastructure
- Community Engagement
- Advocacy
- Project Prioritisation
- Funding and Finance
- Environmental Stewardship
- Technology and the future



Figure 9 Winton Sewage Treatment Plant

Highlighted initiative: Sewage Treatment Plant Regulatory Requirements Investigation

Description: The purpose of the Sewage Treatment Plant Regulatory Requirements Investigation is to review the current sewage treatment systems and procedures for each member Council in relation to compliance requirements. As part of the review, the current Environmental Approvals (EAs) were assessed and EAs requiring streamlining will be identified in coordination with the Department of Environment and Science (DES). Field investigation of each Council's sewer system operations and testing procedures were conducted, and the collected data was analysed against regulatory requirements. The investigation may propose upgrades to bring each scheme into compliance with the current regulatory requirements. An assessment of all upgrades and recommendations for how to proceed will be provided to each Council. All RAPADWSA Councils participated in this project.

Three phases of the investigation include:

Phase A: EA streamlining, field testing of current operations, testing data vs. current operations vs. EA conditions and regulator negotiations (completed)

Phase B: Sewage Treatment plant upgrade options assessment (current phase)

Phase C: Sewage Treatment Plant upgrade implementation

Strategic Alignment: The Councils that make up the RAPADWSA identified the sewage treatment plant regulatory requirements investigation in their 2018 Strategic Implementation Action Plan. It was proposed to build upon collaborative opportunities by providing strategic planning to address regional priorities for achieving regulatory compliance and efficient and effective business management. The joint Sewage Treatment Plant Regulatory Requirements Investigation allows Councils to work collaboratively and progress throughout the region.

Outcomes: This project has facilitated the platform for discussions with the Environmental Regulator to streamline EA's and ensure schemes provide appropriate environmental outcomes. Councils knowledge and understanding of their STP's and testing requirements to comply with the appropriate EA's are enhanced.

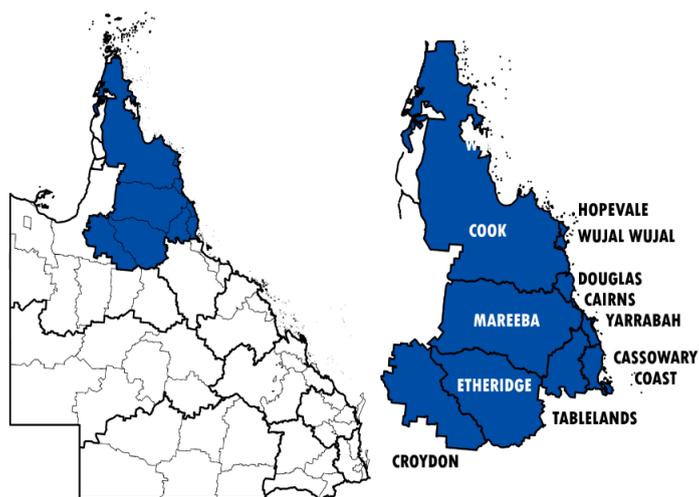
Benefits: Delivering this collaborative project through the RAPADWSA has:

- Enabled cost savings through joint procurement.
- Ensured that Councils EA's are suitable for testing regimes and infrastructure.
- Identified any gaps in testing regimes.
- Identified upgrades required for STPs.
- Enhanced self-sufficiency in parts of the region and local capacity identified elsewhere.
- Improved regional benchmarking and performance reporting.

Maturity: This project represents a very high level of regional maturity, level 7. This is a reflection of the strategic importance of this project for the region should it progress to the alignment of infrastructure upgrades for STPs across the region.

Far North Queensland Regional Organisation of Councils (FNQROC)

In 2019 Far North Queensland Regional Organisation of Councils (FNQROC) elected to change their participation in QWRAP in line with the priorities of the FNQROC Board and forego funding for a regional coordinator but continue to work on technical W&S projects as they arise. The FNQROC Board continues to be informed of opportunities and issues and maintain an ongoing relationship with QWRAP and retain access to funding with all projects assessed based on their specific contribution to regional maturity. This reflects an overall level 4 collaboration maturity. This year, QWRAP funding enabled the appointment of a Program Coordinator for the Sewer Relining works undertaken in this region.



The FNQROC region includes 11 councils, servicing 50 communities, including some of the smallest council areas in regional Queensland. The region has a population of 260,000.

Highlighted Initiative: Regional Sewer Relining and Sewer and Manhole Condition Assessments – Program Coordinator

Description: In 2020/21 FNQROC delivered its first regional sewer relining and sewer and manhole condition assessment arrangement. Four member councils participated in the sewer relining package and two councils participated in the sewer and manhole condition assessment package. The collective procurement arrangements established by FNQROC enables participating councils to achieve economies of scale in pricing and eliminates the risk of individual councils competing against one another for limited resources. A Program Coordinator was engaged to fulfil the role of Superintendent and to oversee the effective delivery of the works.

Strategic Alignment: This project delivered economies of scale benefits by combining the individual programs of councils into a single regional arrangement. In turn this reduced the administrative burden on all parties, both council officers and suppliers.

Outcomes: One central person facilitating meetings and overall project management enabled a continual improvement of practice, including on-site project delivery. The Program Coordinator was responsible for viewing all CCTV footage saving time and resources and it was identified that AI technology could be used to potentially remove the need for manual viewing of CCTV in the future.

Benefits: The development of regional consistent procurement and contract documentation and the appointment of the Program Coordinator enabled more efficient contract administration and less duplication of effort for councils and suppliers. Overall, more accurate payment processes, reduced cost per metre and the 2020/21 arrangement resulted in a 15% cost saving overall.

Maturity: The FNQROC region incorporates a diversity of Councils. This project required strong collaboration and support among four of those councils, demonstrating a level 4 degree of collaboration maturity.

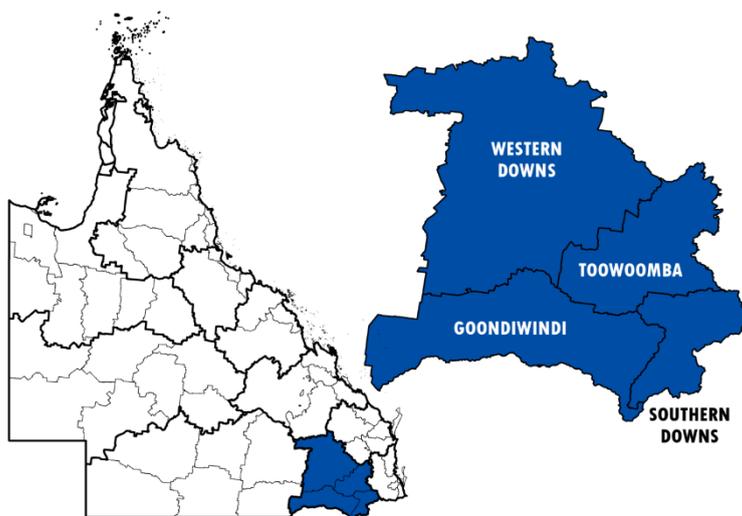
Downs Urban Water Technical Group (DUWTG)

In April 2021 the Downs and Surat Basin (DASB) Technical Group saw the departure of two members Balonne and Maranoa, to join the newly formed South West Queensland Water Alliance. However, interest has been expressed in continuing collaboration at a technical level. The DASB Technical Group held its final meeting on 5 November 2021, at which time the regional coordinator stepped down with all joint projects having been completed.

The group continues to meet under the name Downs Urban Water Technical Group (DUWTG). Without the support of a regional coordinator, the group is finding it challenging to develop joint projects.

It is expected that there will be opportunities for regional collaboration within the newly formed Southern Queensland Inland and New South Wales Border Regional Water Alliance (SQINB-RWA), which comprises the participating DUWTG councils with the addition of Lockyer Valley Regional Council and Tenterfield Shire Council (NSW). This regional water alliance has focus on non-urban water especially water security.

With the formal ending of the DASB Technical Group, the new DUWTG reverts to a lower level of maturity at level 3, while seeking opportunities for collaboration within the SQINB-RWA.



The Downs Urban Water Technical Group (DUWTG) region has reduced to four members (Goodiwindi, Southern Downs, Toowoomba and Western Downs Councils) and continue to meet on technical issues. The four members service 250,000.



Figure 10 Toowoomba Water Treatment Plant visit

Highlighted Initiative: Cyber security audit & risk assessment

Description: The challenges faced by the DUWTG Water Group Councils in identifying, understanding, assessing and mitigating cyber security risks are shared by many Queensland councils, especially small and or remote councils operating geographically disperse water and sewerage systems. These councils frequently lack the scale or resources to warrant specialist positions, find it difficult to attract and retain staff, and often have operational staff with low computer and technology literacy levels. Project outcomes are equally applicable to many councils and sharing the resulting risk assessment tools and methodologies will provide them with valuable assistance in meeting their DWQMP review responsibilities and protecting the cyber security of their water and sewerage assets and systems.

Strategic Alignment: The project builds on the success of previous joint negotiations with the drinking water regulator to achieve commonality of DWQMP anniversary dates. It has been endorsed by the regulator as an effective approach to addressing DWQMP cyber security risk management provisions and supports regional approaches to water security, environmental management and strategic asset management. The project provides a mechanism for identifying, assessing and mitigating cyber security risks which can be utilised by councils across Queensland. The use of a common risk assessment methodology facilitates regional sharing of learnings and cyber security risk management experiences and strategies.

Outcomes: Provide councils with the ability to address identified cyber security risks and minimise potential future liabilities resulting from cyber security breaches. Councils gain in-house capability to identify, assess and manage cyber security related risks. The project enhances the ability to respond to emerging cyber security risks and to design and implement SCADA upgrades, enhancements and system expansions that are based on a sound understanding and realistic and informed assessment of the Council's particular risks, current and future. There is the potential for regional joint procurement of identified hardware and software upgrades, and to jointly develop regional cyber security protocols.

Benefits: There are a number of tangible benefits realised as cost savings across the following key areas:

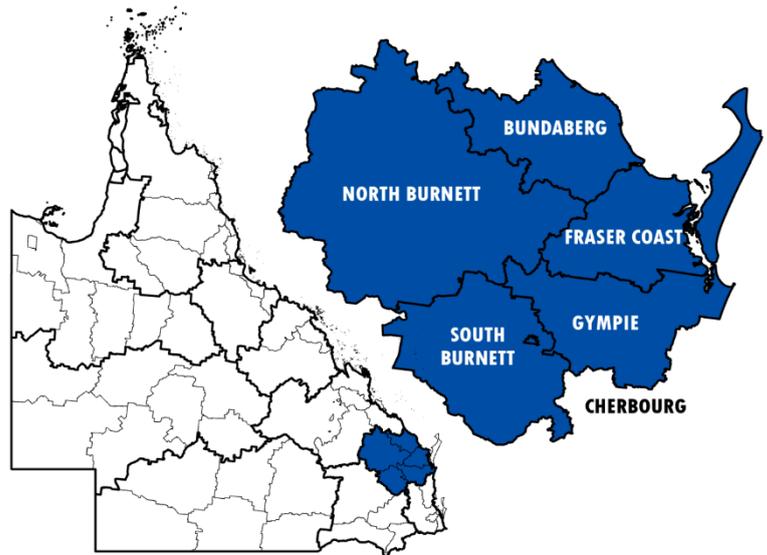
- Procurement cost savings from introducing greater economies of scale and minimising travel and accommodation costs for the smaller and/or more remote DASB Councils, estimated as 10% of the consultancy cost.
- Prioritised short-term cyber security effort and expenditure to obtain maximum "bang for buck".
- Prioritised capital investment on SCADA, telemetry and infrastructure to address identified cyber security risks.

In addition the project delivery offers the potential for regional joint procurement of identified hardware and software upgrades and to jointly develop regional cyber security protocols.

Maturity: This project highlights the best aspects of regional collaboration: benefits financial and strategic that may be obtained even for a region that is currently operating at level 3.

Wide Bay Burnett Urban Water Alliance (WBBUWA)

The group has been operating as the Wide Bay Burnett Urban Water Alliance (WBBUWA) since 2019, with direct reporting to each council though regular updates to the CEOs. The Alliance has continued to move forward with collaborative projects under the direction of the Chair Narelle D'Amico (Bundaberg Regional Council). The region has been operating for some time at a level 6 regional maturity and participants continue to plan high level joint projects across the region aligned with a Strategic Planning process the group began in 2019. Furthermore, the Alliance has actively sought joint training initiatives with councils to the north as an extension of the WIMWA Water Industry Worker Training program.



The Wide Bay and Burnett Water Alliance (WBBUWA) comprises of six councils with over 292,000 people living in over 35 communities in an area covering 49,000 km².

Highlighted Initiative: Water Quality testing for treatment optimisation

Description: Persistent dry conditions followed by heavy rainfall, in addition to increasing catchment salinity resulting in seasonal changes to water source quality and treatment requirements throughout Queensland. It was identified that water quality testing was required to balance the need for maintaining safe chlorine residuals across regional supply networks while minimising the generation of THMs in the face of variable water quality. This project will provide basic examples of how test and treatment processes can be optimised over a period of changing water quality.

Strategic Alignment: This project builds upon previous work by Fraser Coast and Bundaberg Regional Council and builds regional capacity by developing new knowledge specific for other councils. The subject of drinking water quality is clearly aligned with the Strategic Plans and Local Strategies for each of the councils and also key regulatory requirements (RDMW and Queensland Health).

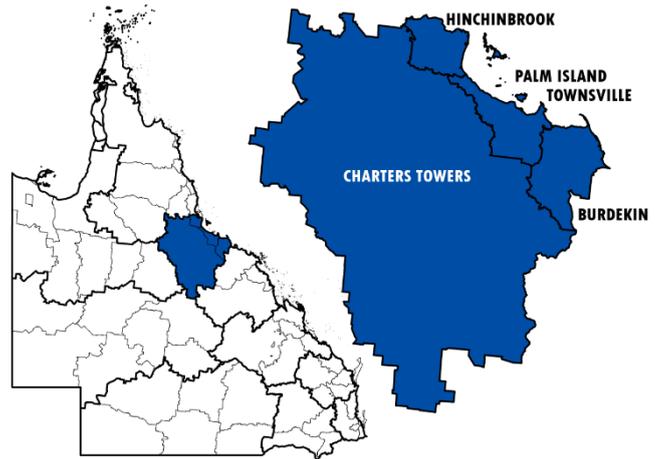
Outcomes: Responding to climate and regional drivers in an informed and measured manner is essential for self-sufficiency. The research element of this project allows identification of essential differences in source water quality in regional towns. Having this undertaken locally is a good demonstration of regional growth and self-sufficiency.

Benefits: Benefits will be directly applicable to South Burnett Regional Council in terms of improved safety of supply and potentially reduced costs in water treatment. The regional knowledge developed through the work will be useful for the surrounding councils which are facing similar water quality issues. Further, the learnings from the work will be placed in context and delivered as a training video (potentially as part of the Fundamentals series) to make the learnings accessible to all Queensland councils.

Maturity: This project has involved a high level of research by South Burnett Regional Council in collaboration with WBBUWA members placing it into level 6 category of regional maturity.

North Queensland Regional Organisation of Councils (NQROC)

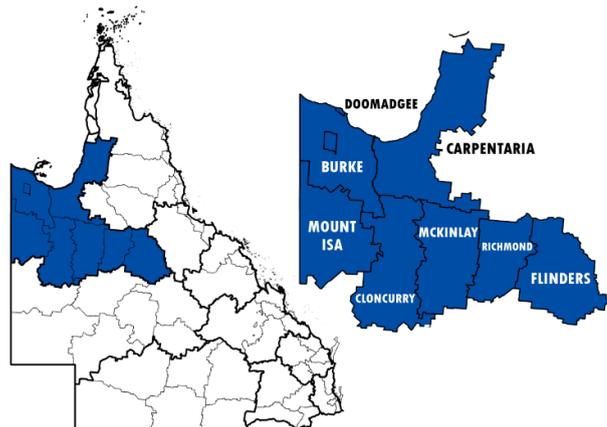
This group includes Hinchinbrook, Charters Towers, Palm Island, Townsville and Burdekin and has a technical group that has been meeting since 2019 to share information and resources with some small bilateral projects and was formally endorsed in 2021. The NQ Chairs are Peter Clark and Mark Harvey from Charters Towers Regional Council and the Regional Coordinator is Stephen Martin from Palm Island Aboriginal Shire Council. Some of the councils participate WIW training program driven by the WIM and WBBB Alliances.



All participating councils within this group are currently working towards an institutional review and further strengthening collaboration through several beneficial projects including; DWQMP Reviews and Audits, shared operations control centre/afterhours call centre to monitor alarms for smaller councils, including SCADA standardisation.

North West Queensland Regional Organisation of Councils (NWQROC)

The NWQROC includes Doomadgee, Burke, Carpentaria, Mt Isa, Cloncurry, McKinlay, Richmond and Flinders councils and has had ongoing discussion about collaboration on water and sewerage issues. Four of the councils (Burke, Carpentaria, McKinlay, and Cloncurry) are undertaking joint discussions to provide a proof of concept for the remaining councils in the region.



NWQROC: Pilot SCADA investigation and alignment

Four Northwest Queensland ROC (NWQROC) councils have received QWRAP funding to undertake a pilot project to review current SCADA systems, capabilities and gaps. Each of the councils are at different stages with SCADA systems and may have legacy hardware and software that cannot be readily changed. The object of the investigation is to explore commonalities and opportunities for alignment across infrastructure, processes and human resources, and ultimately the potential for joint procurement, shared spares and human resources and strategic development.

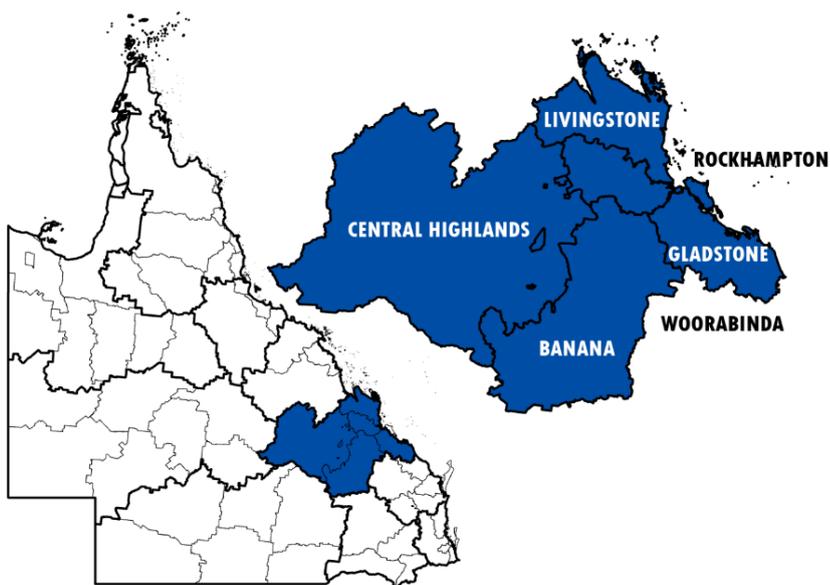
SCADA installation/support and operating capability continues to be a challenge for small and remote councils. Developing a better understanding of each council's system will increase the potential for regional collaboration and self-sufficiency by building regional capacity and capability. This review can identify areas for improvement or upgrades (including for cybersecurity), opportunities for cooperation but also yield recommendations for enabling a more consistent approach to SCADA with a view to promoting this approach across the broader region.

Efficient and effective remote control and monitoring of water and sewage treatment plants and their respective networks is a key contributor to maintaining high quality, reliable and compliant water and sewerage services. Well-designed and fit for purpose SCADA systems assist in addressing these priorities by implementing and maintaining efficient and effective remote control and monitoring while ensuring reliability and safety in face of threats (including cybersecurity threats).

This project will build regional collaboration among the three participating councils and demonstrate benefits for other councils in the region where there has been little collaboration on water and sewerage issues to date.

Central Queensland Regional Organisation of Councils (CQROC)

The Central Queensland ROC (CQROC) Technical Group includes representatives from Central Highlands, Woorabinda, Rockhampton, Livingstone, Banana and Gladstone councils and has been meeting since 2019 to share information and compare council management. The CQROC invited presentations and information on QWRAP participation in June 2021 and have applied for Regional Coordinator funding this year. The region services a population of 226,000.

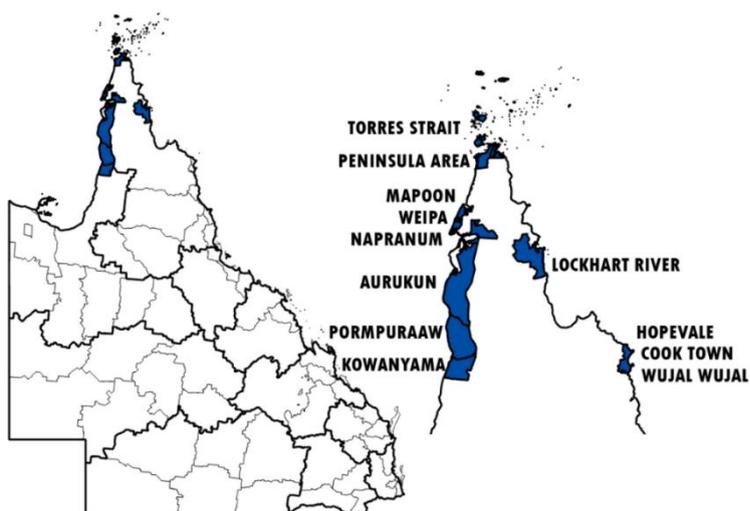


Other Regions: Increasing Collaboration

During 2022, QWRAP has reached a milestone target of 9 regions collaborating either formally or informally on water and sewerage services. The remaining exceptions are the councils and distribution retail entities of South East Queensland, which have little need for regional collaborative initiatives, and indigenous councils, which have a unique set of challenges in delivering water and sewerage services to their communities.

Torres Cape Indigenous Council Alliance (TCICA)

The Queensland Water Directorate continues to build engagement with emerging regions and have been invited to give a briefing to the Torres Cape Indigenous Council Alliance (TCICA) about QWRAP. TCICA includes 13 local governing authorities from across the Torres Strait, Cape York and Gulf region of Far North Queensland and has a population of 29,530 residents. Members include Aurukun Shire Council, Cook Shire Council, Hope Vale Aboriginal Shire Council, Kowanyama Aboriginal Shire Council, Lockhart River Aboriginal Shire Council, Mapoon Aboriginal Shire Council, Mornington Shire Council, Northern Peninsula Area Regional Council, Napranum Aboriginal Shire Council, Pompuraaw Aboriginal Shire Council, Torres Shires Council, Weipa Town Authority and Wujal Wujal Aboriginal Shire Council.



QWRAP Research

QWRAP provides funding to encourage regionalisation of water and sewerage services in Queensland. While this is the focus of QWRAP funding, it is also about building capacity of small and remote councils in non-QWRAP regions to address common and often complex service-related issues. The research project highlighted in this report demonstrates an innovative technical and logistical approach to exploring solutions for water quality and quantity issues facing many remote Queensland communities.

Package Water Treatment Plant Trial in Charleville

In 2019, *qldwater* was approached by Water Source Australia (WSA), an Australian based manufacturer looking to trial a Package Water Treatment Plant under tough Australian conditions.

The plant uses a traditional process of pre-treatment, ultrafiltration, mixed media and carbon filtration followed by UV disinfection. The novel approach to the technology by WSA is the use of an Internet of Things (IoT) solution to replace traditional Supervisory Control and Data Acquisition (SCADA) service. The unit can be monitored, controlled and optimised remotely using the IoT, eliminating the need for on-site technical expertise and therefore providing a potential low capital cost solution for small and remote communities. The plant used in the trial has been designed for a potable water production of 11,000 L per day, while still being sufficiently compact to fit in a unit the size of a typical wardrobe.

The trial was designed as a pressure test for the technology and to gather data on the benefits and constraints of package treatment plants for outback towns. Working with *qldwater*, WSA sought and secured a site with aggressive bore water quality, which is a common issue for the region and many outback councils. The site chosen was the township of Charleville, in Murweh Shire which would test the plant's capacity to withstand harsh atmospheric conditions (> 40° C) and elevated raw water temperatures (45° C). These conditions are reflective of many remote locations that could potentially use this type of technology.

After protracted delays caused by COVID-19 the trial finally commenced in February 2022, concluding in July 2022. As part of the QWRAP research program, an experienced water treatment engineer was commissioned to undertake a review of the trial to assess its performance and suitability as a solution for water quality and quantity issues facing many remote Queensland communities.

The review of the trial, conducted by Harvey Project Solutions concluded the following:

- The plant can consistently produce good quality drinking water.
- The use of the IoT for online monitoring and operation is a very successful alternative to the traditional SCADA systems.
- The local operators were able to assist during the trial performing maintenance functions under the remote guidance of the WSA staff.
- The system could provide an option for remote locations such as rural based resorts and facilities such as caravan parks, roadhouses, educational campuses etc.
- Multiple units linked together (i.e. modular system) could be an economic alternative to supply small communities.

The technology offers a partial solution to the growing sector problem of skills shortages in remote

locations. Water operators in small and remote locations often could acquire the necessary skills to operate stand-alone WTPs but are unable to realise that potential. Remote councils have smaller workforces and smaller operating budgets requiring operators to carry out many other council operations.

The approach of using the IoT for the monitoring and operation of remotely located plants as well as the progression to a “plug and play” philosophy for plant maintenance is an innovative technical and logistical solution for water quality and quantity issues facing many remote Queensland communities.



Figure 11 Pre-filtration/particulate filtration housing (photo credit: Trevor Harvey).



Figure 12 Inner particulate filtration unit displaying dirt and slime (photo credit: Trevor Harvey).

Future Direction

In December 2021, it was [announced](#) that the QWRAP was to be permanently funded by the Queensland Government, with an increased funding allocation. QWRAP continues to operate in a business-as-usual mode through 2022-23.

A part of the funding renewal, the Department of Regional Development Manufacturing and Water commissioned a review of QWRAP to assess its effectiveness in delivering a return on investment for the State and providing the desired benefits to the participating regional councils. The review was also to identify future options and opportunities for the next phase of QWRAP. The review was conducted by Cardno PL (now Stantec), by two experienced water professionals leading the project: Darryl Ross and Aneurin Hughes.

The review concluded that QWRAP had provided a return on investment to the State, and that it has provided many additional benefits especially an increased awareness of water and sewerage challenges within the participating QWRAP councils; and improvements to technical capability and capacity of participating QWRAP councils. The review offered a set of 12 recommendations that are provided in the box below.

Recommendations for the review

- 1. Queensland Government continues to provide funding support to QWRAP.*
- 2. Maintain and strengthen QWRAP Program Management and Support.*
- 3. Develop a Vision and Statement of Objectives for QWRAP.*
- 4. Develop a fit for purpose Service Sustainability Framework for QWRAP through consultation with the regional groups.*
- 5. Encourage and support all QWRAP regions to undertake a Service Sustainability Gap Analysis.*
- 6. Encourage and support all QWRAP regions to develop 4-year work plans and longer-term infrastructure strategies based on outcomes and priorities identified through service sustainability gap analyses.*
- 7. Explore opportunities to link State and Federal Government capital investment funding to the outcomes of QWRAP regional work plans and longer-term infrastructure plans.*
- 8. A future review of level of funding support to QWRAP be undertaken based on outcomes of regional service sustainability gap analyses and identified operational sustainability needs.*
- 9. Modify the current maturity-based funding model to make funding support for coordinators available to all regional groups irrespective of maturity level.*
- 10. Review the administrative processes required of the regional coordinators with a view to streamlining to ensure that the regions are achieving the best use of the available resource.*
- 11. Consider potential risk mitigation strategies for supporting the coordinator role in regions where turnover of staff will have significant impact on the momentum of the program.*
- 12. Investigate opportunities for further engagement of SEQ water service providers with the regional groups outside SEQ.*

The three partners in QWRAP; RDMW, LGAQ and **qldwater** have taken the opportunity to reassess QWRAP's objectives in light of these recommendations. The partners are in the process of conducting workshops to reshape QWRAP for the future. This reshaping allows for a renewed focus and leveraging on vision and targets between now and 2026.