

Projects

# Cost Benefit Analysis of Water and Wastewater Infrastructure Funding Arrangements – A Case Study Approach



## LOCATION

BRISBANE

## CLIENT

Department of Regional Development,  
Manufacturing and Water

COST BENEFIT ANALYSIS

## Background

The funding model for water and wastewater infrastructure in Queensland's rural and regional communities has traditionally relied on individual council funding, supplemented by project-specific grants from the state government. This approach presents challenges, as funding may be allocated based on the quality of applications rather than the actual needs of communities. Additionally, the decentralised nature of these grants often leads to short-term, ad-hoc solutions rather than long-term investment in infrastructure and services, ultimately increasing overall costs.

Recognising these issues, the Department of Regional Development, Manufacturing and Water sought to explore the potential impact of a state-led funding program. This program would prioritise investment in regional and remote local government water and wastewater schemes facing high risks in water quality, security, and service continuity. By shifting the focus from reactive to proactive funding, the program would aim to deliver cost savings and improved service reliability over the long term.

## Our role

NineSquared was engaged to assess the potential costs and benefits of a proposed state-led funding program aimed at improving water and wastewater infrastructure in regional and remote areas. As the program was in the early planning stages, there was uncertainty around how funding would ultimately be allocated and what specific benefits it would deliver. To illustrate the potential value of proactive investment, a case study approach was adopted to examine how similar challenges have been addressed in the past and the costs that could have been avoided with targeted, long-term solutions.

The analysis focused on identifying relevant case studies where recent infrastructure costs could likely have been avoided through prioritised, long-term investment. Two case studies were selected:

- **Community A:** Despite receiving a grant to upgrade its water treatment plant, a regional council continued to experience operational challenges. Issues such as poor filtration due to degraded filter media and difficulties maintaining adequate disinfection led to frequent boil water advisories over a period of 18 months.
- **Community B:** Heavy rainfall triggered landslides that filled a council's water intakes with mud and debris. This caused a disruption in the town's water supply for 24 to 48 hours—the second such outage that month.

Utilising a cost-benefit analysis framework, we identified several key benefits of a state-led funding approach with respect to the case studies identified, including:

- Avoided infrastructure costs
- Avoided cost of boiling water
- Avoided cost of illness from water-borne diseases
- Avoided cost of water restrictions
- Avoided cost of water supply disruptions

These benefits were contrasted with the expected cost of infrastructure, services and personnel under the proposed funding program.

To ensure an accurate assessment, a counterfactual scenario for each case study was developed as a baseline for comparison, evaluating when and how water supply and security issues might be addressed under existing funding arrangements. This approach provided a basis for measuring the additional benefits that a state-led funding model could achieve beyond the status quo. A structured methodology was applied to quantify projected benefits and costs, conduct sensitivity testing, and generate Net Present Value (NPV) and Benefit-Cost Ratio (BCR) results.

The findings from the analysis were consolidated into a Case Study Report, providing a robust evidence base to inform discussions around potential funding options. By demonstrating how a proactive, state-led, prioritised funding approach could lead to more efficient and cost-effective investment, the analysis supported the development of a budget submission for consideration.

## FOR FURTHER INFORMATION

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