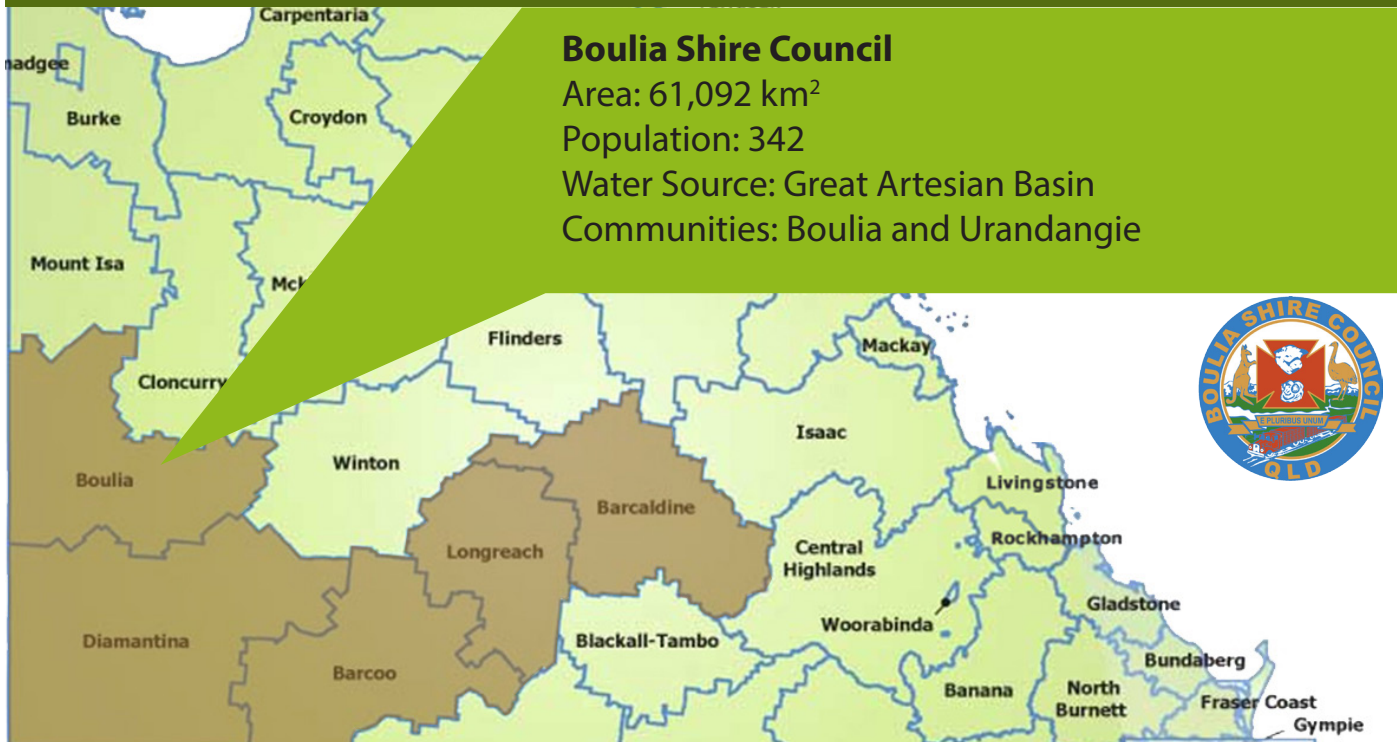


# THE OUTBACK REGIONAL WATER GROUP

## BOULIA SHIRE COUNCIL



### Boulia Shire Council

Area: 61,092 km<sup>2</sup>

Population: 342

Water Source: Great Artesian Basin

Communities: Boulia and Urandangie



### Water Infrastructure:

Connections: 137

Length of Mains: 19 km

Bores: 6



### Sewerage Infrastructure:

Connections: 109

Length of Mains: 7 km

Pump Stations: 2

## INCREASED STANDARDS DRIVING CHANGE

The remote area town of Urandangie, first settled in 1855, is located 30km from the Northern Territory Border, 160km south west of Mt Isa and 220km North West of Boulia as the crow flies.

The town is located 1.2km east of the Georgina River which has no naturally occurring permanent water holes suitable as source water. Council relies on one sub-artesian bore to provide for the Urandangie township and the neighbouring Aboriginal Community of Marmanya.

Boulia Shire Council's Wastewater Treatment Plant (WWTP) is a great example of sustainable, fit-for-purpose outback engineering. It consists of one remote pump station, one manually raked coarse bar screen, one Imhoff tank, four sand drying beds and a maturation detention pond. Due to the extreme heat, all effluent evaporates before it reaches a watercourse.

The detention ponds imitate the natural self-purification processes of lakes and streams. Dissolved oxygen is supplied by surface turbulence (wind) and through photosynthesis by aquatic plants and algae. Heterotrophic and autotrophic bacteria oxidise organic matter to carbon dioxide and ammonia and nitrogenous compounds to nitrate. Calcium ions present in the sewage remove phosphates by irreversible precipitation. In the deeper anaerobic zones of the ponds, de-nitrifying bacteria reduce the nitrate to nitrogen gas.

In addition, suspended solids settle to the bottom where they are anaerobically decomposed and mineralized to inert sediments. Bacteria are reduced by co-settling with the suspended solids, by predation and by disinfection with the natural UV in sunlight.

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Bear in mind that many of these communities do not have a resident electrician and telemetry and/or SCADA specialists are also few and far between.

As a consequence, Outback communities rely on basic systems that are purpose designed and built for the difficult remote sites. These systems have served their communities well over the past 40-50 years. In many areas of the State, regulation and more stringent standards in public and environmental health are putting pressure on small communities who can't always afford to build bigger and better.

Ecologically sustainable development needs to take into account the social and economic elements of the bottom line including whole of life cycle costs, access to skills, expertise, services and other constraints. In communities like Boulia, these pressures are avoided by relying on basic, natural systems and avoiding discharges to the environment.

Such systems will serve small Western Queensland communities well into the future.

## MAKING DO WITH WHAT YOU HAVE

Boulia Shire Council recently investigated and identified the deficiencies in the existing Urandangie town water supply system where functionality had been severely reduced to only the most basic manual operations. Much of the infrastructure was approaching its design life, but lack of maintenance due to the remoteness of the facility was another cause for the assets' poor condition.

The existing system, when originally commissioned in 1996, utilised an existing stock routes bore which had since collapsed and been replaced.

The system required a major upgrade to prevent increasing failures with costly repairs and replacement of failing components.

Council managed to reduce the cost of repairs by using the existing solar panels to power a new 240V Borehole pump and new re-lift pumps to service the town's water requirements. A backup generator was installed to power both the bore and re-lift pumps in times of excessively high demand or during breakdowns. This solution had the lowest ongoing operational cost and could utilise existing infrastructure.

Installing and commissioning new float valves now allows Council to run the pumps automatically, while the replacement of all existing electrical wiring provides peace of mind. The end product is a consolidated and simplified control system that should provide Urandangie with a secure water supply for years to come.

