



Case study 6

Using nutrient offsets to improve the Logan River

Queensland Urban Utilities

This case study showcases

water businesses delivering more than just water and sewerage provision

Problem

The Beaudesert Sewage Treatment Plant needed an upgrade to manage additional nitrogen discharges that occur during and after wet weather events when irrigators reduce their recycled water demands. At the same time, high rates of natural channel erosion in the Logan River was leading to a significant mass of sediment and nutrients entering the river.

Solution

Queensland Urban Utilities (QUU) used a nutrient offsets mechanism to improve Logan River in lieu of a nutrient removal upgrade of the Beaudesert STP. QUU re-engineered a 500 metre bank of the Logan River to prevent more than 11kT of sediment, 5T total nitrogen and 8T of total phosphorous from entering the waterway every year due to natural channel erosion. Controlling sediment and nutrient loads through a green infrastructure solution enabled Queensland Urban Utilities to cost effectively manage compliance with the STP's nutrient discharge limits, particularly in wetter than average years.

This approach was a pilot project for the Queensland Department of Environment and Heritage Protection (DEHP) *voluntary*

market based mechanism for nutrient management, which offers an alternative investment option under the *Environmental Protection Act 1994*. A waterway emission nutrient offset of five tonnes per year of total nitrogen was added to the environmental licence. QUU reduces future environmental licence compliance risk associated with climate change and allows time for adaptive planning to cost effectively service the projected population growth for Beaudesert.

Business case

The provision of a voluntary offset mechanism has allowed QUU to undertake riverbank restoration works at Logan River to reduce sediment and nutrient loads, thereby enabling QUU to comply with nutrient discharge limits at Beaudesert STP and avoiding a costly upgrade. The \$800,000 water quality project was more cost effective than an \$8 million alternative to upgrade the Beaudesert Sewage Treatment Plant for partial biological nutrient removal (BNR). The green infrastructure solution also has significantly lower (~90%) annual operational costs (\$540k/yr BNR Vs \$40k/year offset), saving \$5 million over the life of the 10 year offset.

Key drivers

Planning flexibility – the offset provided QUU sufficient time to understand local

population growth forecasts and integrate sewerage loads from a nearby planned 'State significant' inter-state freight-train intermodal terminal into master planning for a new regional STP in the Beaudesert area.

Environmental leadership – nutrient offsets had been talked about for many years in South East Queensland. It was time for a pilot project to show how it could be done and to get the scientific community to challenge the assumptions and continually improve the voluntary mechanism policy in Queensland.

Financial sustainability – the offset was significantly better value for money for customers.

Benefit/outcome

Environmental sustainability – many intangible environmental benefits such as much lower GHG emissions, improved biodiversity (wildlife corridor) and stream cooling.

Community benefit – riparian land holders were losing around one metre of land per year on average due to river bank erosion. This project has reduced this to near zero.

Drinking water security – the offset location resides within a drinking water catchment where a significant supply risk is high turbidity events from channel erosion. This project is the first step to help address this problem.