



# MALENY STP

## Upgrade Disposal Forest and Tertiary Wetland



*Maleny WWTP- 13.8ha Disposal Forest (early growth) and 3ha Tertiary Wetland (foreground)*

Unitywater is a statutory authority that provides water and sewerage services to the Moreton Bay, Sunshine Coast and Noosa local authority areas in SE QLD, managing an asset base of more than \$3.1 Billion. It is responsible for 17 wastewater treatment plants that service approximately 16% of the population of QLD.

### PROJECT SUMMARY

The Water and Carbon Group were awarded the contract to undertake specialist design work to construct a 13.8ha effluent disposal forest and a 3ha tertiary treatment wetland as part of a wider \$17m upgrade to the Maleny Sewage Treatment Plant. The forest/wetland allowed Unitywater to achieve what is a leading best practice approach to managing the final effluent disposal from the sewage treatment plant. The ecological infrastructure delivered through the upgrade works not only provided a sustainable disposal pathway, but also created an opportunity to restore natural biodiversity into the landscape and create an exemplary community natural asset.

**13.8 ha**

of effluent disposal forest constructed in the project.

**3 ha**

of tertiary treatment wetlands developed.

**30**

local native rainforest tree species used in the project.



*Wooden bridge over tertiary wetland for community access*



*Maleny MBR WWTP which feeds the forest/wetland*



*View onto the disposal Forest (early growth) and tertiary wetland*

**Table: Results from each stage of treatment at Maleny MBR/Wetlands**

Contaminant (mg/L)	Raw Sewage	Effluent Membrane	Effluent Wetlands
cBOD5	331	<3	<3
Ammonia	48.5	<0.05	<0.05
Total Nitrogen	69.9	3.12	0.38
Total Phosphorus	11.2	0.16	0.09
TSS	468	<2.5	5

## BACKGROUND

Maleny is a township of about 3500 people, located in the hinterland of the Sunshine Coast, 100km north of Brisbane. At an elevation of 450m, Maleny is renowned for its scenic views of the surrounding region and its strong community environmental values.

In 2014, Unitywater completed an upgrade of the Maleny STP with a state of the art facility designed to: improve treatment standards, provide recycling water to the community, and deliver environmental sustainable protection to the Obi Obi Creek watercourse.

A parcel of rural land owned by the Sunshine Coast, which had previously been fully cleared through past cattle grazing activities, was offered to Unitywater as a site to establish a sustainable forest/wetland disposal scheme as part of the overall STP upgrade.

## SOLUTION

The Water and Carbon Group was engaged as specialists to design the forest/wetland effluent disposal scheme for the project. The scheme involved designing a sustainable irrigation system to disperse effluent over a 13.8ha area that was planted to become a native rainforest. The effluent supply from the STP 1.4km away, became a water resource that is used to restore the open landscape back to a native rainforest ecosystem, consisting of over 30 different local native rainforest tree species. As these trees mature in coming years, they will develop into flourishing bio diverse habitat for local wildlife, whilst also creating a natural asset the community can enjoy. In addition to the biodiversity forest, a 3ha constructed surface flow wetland was designed into the main drainage path discharging to Obi Obi Creek to provide treatment and naturalisation of runoff during wet weather periods.

## OUTCOMES

The forest disposal solution reduces the total volume discharged to Obi Obi Creek by 60%. After 2 years of establishment, the latest results (2015) from the wetland is Total Nitrogen concentrations <1mg/L, which is far below many of the most modern STP's operating in the country. This project demonstrates the value of designing STP's as integrated treatment and disposal solutions and the role that ecological infrastructure can play with modern STP's.

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