

## **Tweed District Water Supply – Headworks Components - Brief History**

Following is a brief history of the major milestones in the development of the Water Supply Headworks in Tweed Shire.

The original Mount Warning Scheme approximately mid 1920's comprised of a dam at Mount Warning and a 150mm pipeline along old Lismore and Byangum Roads to a 1.1 ML reservoir at ML Hospital Hill which serviced Murwillumbah. This scheme was replaced by the Boat Harbour Scheme in approximately 1936. It comprised of a pumping station extracting water from the Rous River at Boat Harbour and a new pipeline along North Arm Road to Byangum Road. A booster pump station was also constructed at the corner of Rous and Waterloo Streets to pump to the existing Hospital Hill Reservoir.

From 1959 to 1961 the Tweed District Scheme was developed and for the first time this scheme would begin to service the down stream communities of the Shire. It initially comprised of a the Bray Park Weir having a usable volume of 640 ML and a catchment area of 565 km<sup>2</sup>, Water Pump Station 1, (17 ML/day capacity), extracting water from the weir pool and pumping via a 750mm pipeline to the Water Treatment Plant site at Bray Park, where it was chlorinated and pumped by Water Pump station 2, (17 ML/day capacity) to the Hospital Hill Reservoirs, which now included an additional 9 ML Reservoir. The safe annual yield of this system was originally estimated to be approximately to be 9000 ML but was revised downwards in 1972 to 5600 ML.

The original stage of the Bray Park Treatment Plant was completed in 1963 having a 20 ML/day capacity.

In 1972 a first report investigating the Augmentation of the Tweed District Water Supply was prepared.

In 1975 a second more detailed report for the Augmentation of the Tweed District Water Supply was prepared.

Water pump stations 1 and 2 were upgraded in 1977 to an increased capacity of 22 ML/day and 31 ML/day respectively.

In 1979 the Carrie Hall Dam site and type of dam construction was confirmed.

Clarrie Hall Dam was completed and operational in 1983 having a usable capacity of 15,000 ML and a catchment area of 60 km<sup>2</sup>. The combined catchment, river, dam and weir system provided an estimated safe annual yield of 27,500 ML.

The Bray Park Water Treatment Plant and Water Pump Station 1 were upgraded in 1983 to 60 ML/day and 65 ML/day respectively.

In the Mid 80's Council commenced the purchase of land for a Dam site at Byrrell Creek which would be similar in size to Clarrie Hall. Approximately 80 % of the land is under Council Tenure.

A new 1.6ML clear water storage was provided at the water treatment plant in 1985.

Water Pump Station 2 was upgraded in 1987 to 75 ML/day.

Two New sludge lagoons were added to the water treatment plant in 1989.

A new Water Pump Station 1A was constructed in 1991 having an initial capacity of 80 ML/day. The existing Pump Station 1 was taken off line until further capacity is required, where it will operate in parallel to Pump Station 1A with an ultimate combined capacity of 165 ML/day.

Also a new 1.4 km, 1033mm diameter pipeline was constructed parallel to the exiting 750mm line from Water Pump Station 1A to the Water Treatment Plant in 1991.

The Water Treatment Plant's chemical dosing systems were upgraded to liquid dosing systems in 1987 which included Aluminium Sulphate (flocculation and coagulation), Polymer (filter aid), Powdered Activated carbon (algae, taste and odour removal), sodium hydroxide (ph adjustment) and Liquid sodium hypochlorite (disinfection).

Two additional sludge lagoons were added to the water treatment plant in 1998.

A report was prepared on the revised safe annual yield of the system based on concerns of the impact of future environmental flow requirements. This study estimated a significantly reduced safe annual yield of 16,700 ML. The major reasons for this reduction included, daily flow modelling (now possible with increased computer capabilities compared to mid 1970's), an additional 25 years of accurate rainfall and river flow data, and the estimated impact of providing for environmental flows down stream of Bray Park Weir.

Water Pump Station 1A was fitted with Variable Speed Drives in 2003.

A new 5 ML clear water reservoir was constructed for the Water Treatment plant in 2004.

Water Pump station 2 was replaced in 2006 with Water Pump Station 2A having an initial capacity of 80 ML/day including Variable Speed Drives and being upgradeable to an ultimate capacity of 160 ML/day.

Also in 2006 a further study on the safe annual yield of the system was commissioned as the 2002/2003 drought turned out to be equivalent too, if not worse than the 1902/03 drought being the worst on record (since 1887), for the Tweed River. This Study therefore further reduced the safe annual yield of the combined system to 13,750 ML.

The Bray Park Water Treatment Plant is currently being replaced with a new membrane type plant having an initial capacity of 100 ML/day and upgradeable to 150 ML/day, which is expected to be fully commissioned by early 2010.

Current annual extraction from the Tweed River is approximately 9,500 to 10,000 ML.