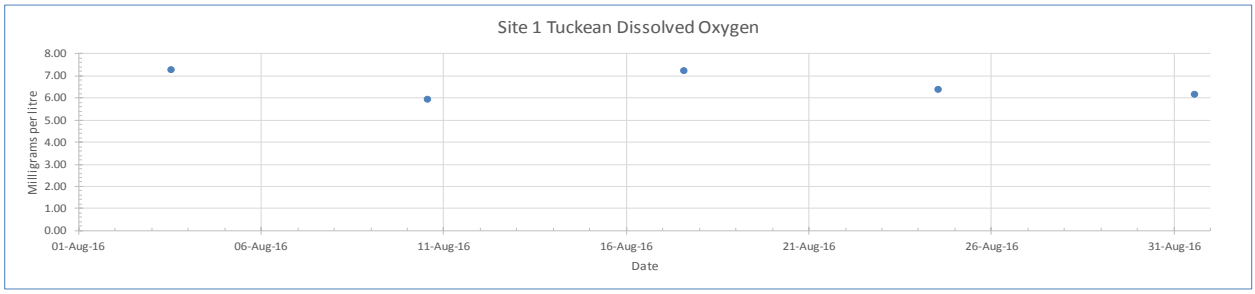
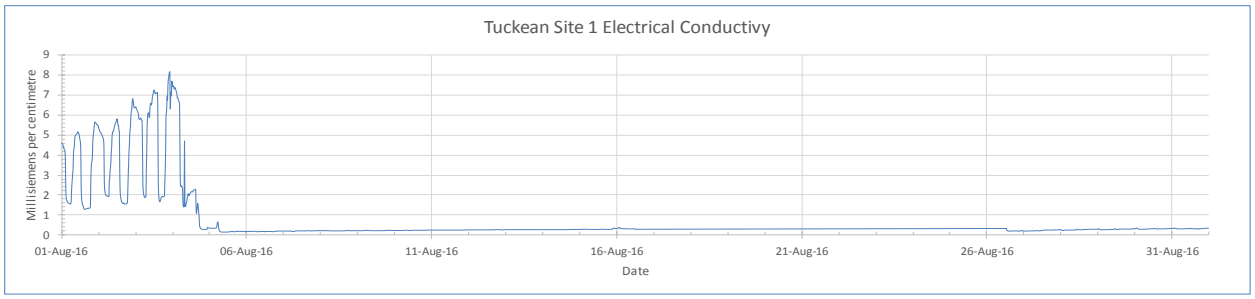
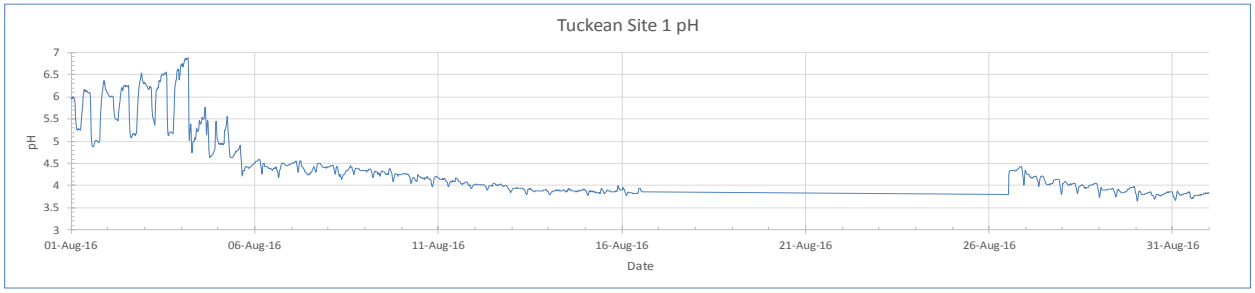
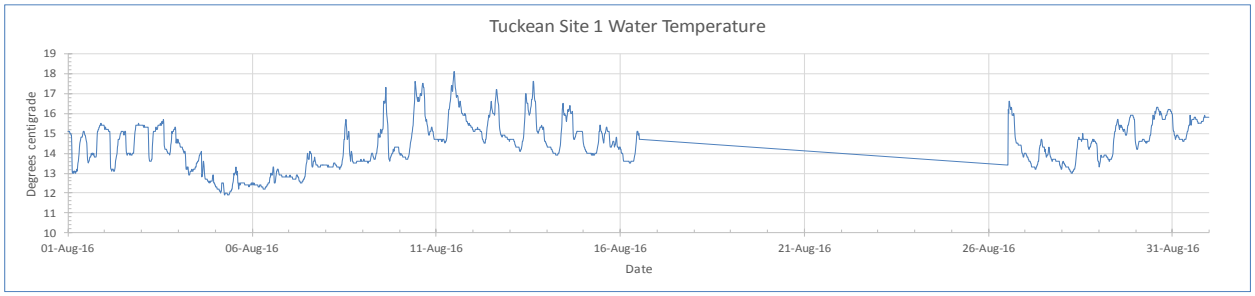
Tuckean site 1 water quality – August 2016

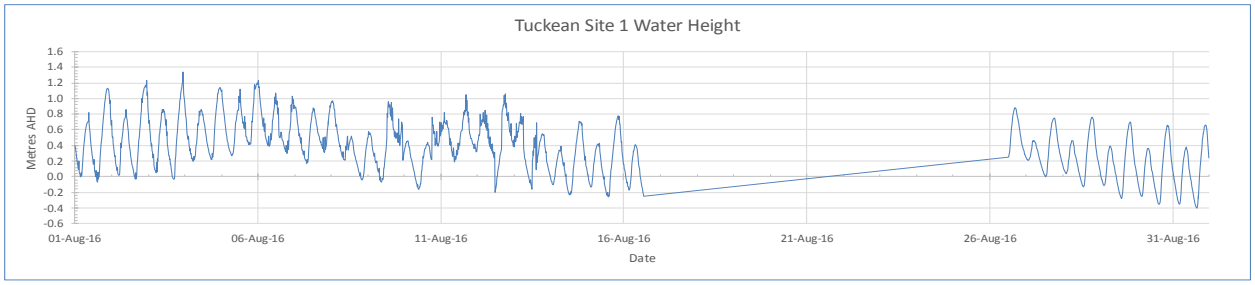
Data logger located at Bagotville in the Broadwater downstream from Bagotville Barrage

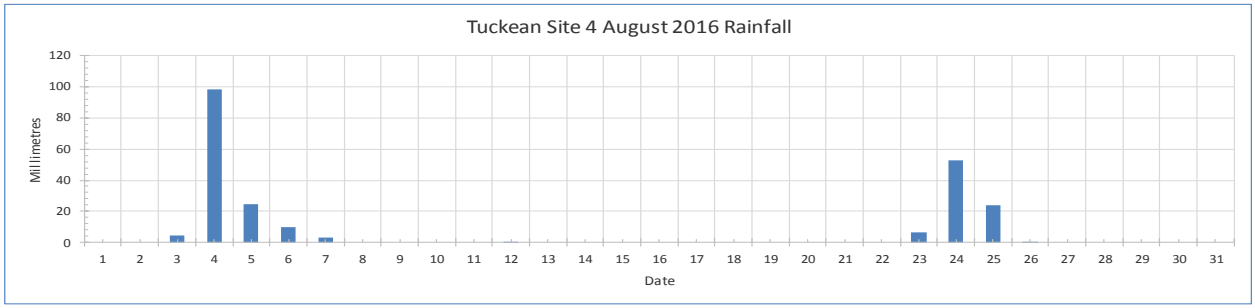












Interpretation

The dissolved oxygen sensor failed for the whole of August and is awaiting replacement. The logger failed between 16th and 26th August.

- **Dissolved oxygen (DO)** in August was recorded by weekly manual measurement on the upstream side of the barrage between 6.0 and 7.3 mg/L, with an average of 6.7, equal to last month's 6.7. Levels below 3 mg/L are considered critical to fish, while between 3 and 6 mg/L is considered marginal and above 6 mg/L is optimal. DO is influenced by temperature, rainfall, tidal movement and chemical and biological oxygen demand.

- **Electrical conductivity (EC)** for August ranged between 0.2 and 8.0 and averaged 0.92 ms/cm, which is considered fresh and compares to the July freshwater average reading of 1.3 ms/cm. The fall in EC on the 4th corresponded to rainfall, while the logger failed between the 16th and 24th. Levels below 1.8 ms/cm are considered freshwater, while from 1.8 to 4.8 is considered brackish and above 4.8 ms/cm saline, with seawater equal to approximately 60 ms/cm. EC is influenced by rainfall, runoff, temperature and tidal movement.

- **pH** in August ranged from 3.7 to 6.9 and averaged 4.4, which is 0.1 units or 1.25 times more acid than last month's 4.5. Low pH readings are due to rainfall, runoff and reduced tidal buffering, while equipment failure between 16th and 24th may also have reduced average levels. River water under normal conditions is generally near neutral (pH 7), while brackish or saline water moving upstream during dry periods may be higher. pH is measured on a logarithmic scale, with each consecutive whole number different by a factor of 10.

- **Water temperature** for August ranged from 12.0º to a spike of 18.0ºC, giving a range of 6.0ºC and averaging 14.4ºC, which has increased by 1.1ºC when compared to the July average of 13.3ºC due to seasonal change. Water temperature is influenced by season, air temperature, solar radiation, cloud cover, day/night, turbidity, tidal movement and rainfall.

- **Water height** for August ranged between -0.40 m and +1.34 m, giving a range of 1.74 m and averaging +0.38 m, which is 0.12 m higher than last month's +0.26 m. The highest tides of the month at 1.84 m occurred on the 2nd at 8:04 pm at the Ballina River entrance, while the corresponding peak at the logger of 1.23 m AHD occurred at 11:00 pm on the 2nd, giving a delay of 2hr 56 min. Water height can be affected by river level, tides and rainfall and to a lesser extent temperature, wind and barometric pressure.

- **Rainfall** was not recorded during August at the site 4 data logger situated 4 km to the north, however a nearby station recorded 224.9 mm over 10 days, which compares to the July reading of 18.4 mm over 6 days. Peak daily rainfall of 98.0 mm was recorded between 9 am on the 3rd and 9 am on the 4th August. During August, the Rocky Mouth Creek data logger located 19 km to the SSW recorded 214 mm over 24 days, while Ballina AWS located 19 km to the NE recorded 140.8 mm over 12 days.