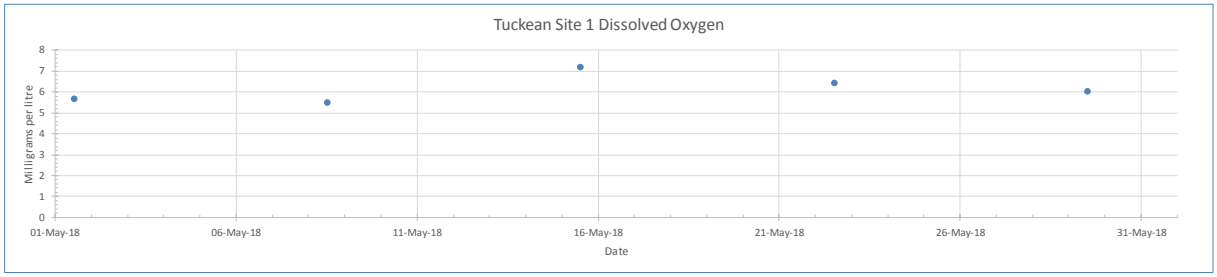
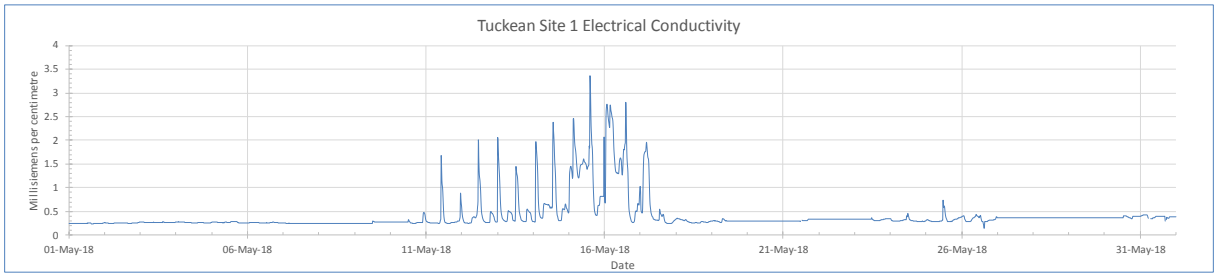
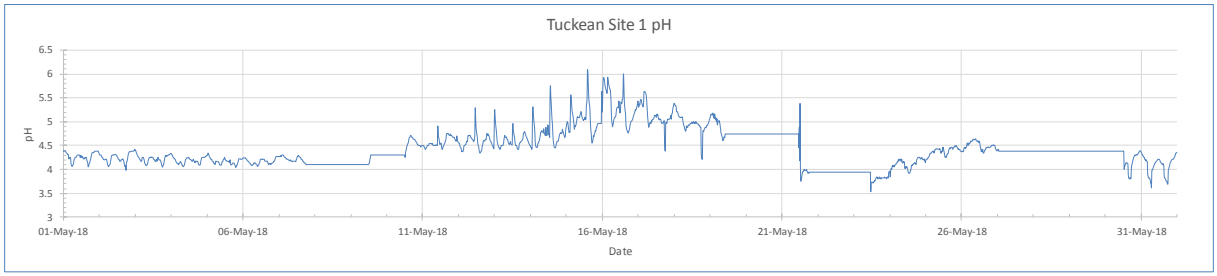
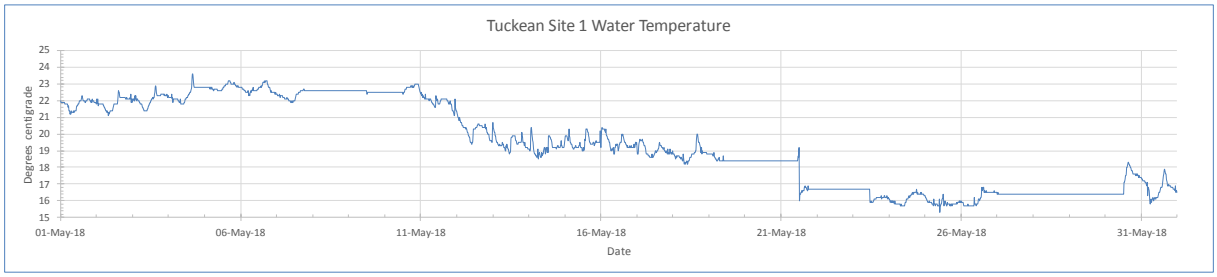
Tuckean Site 1 water quality – May 2018

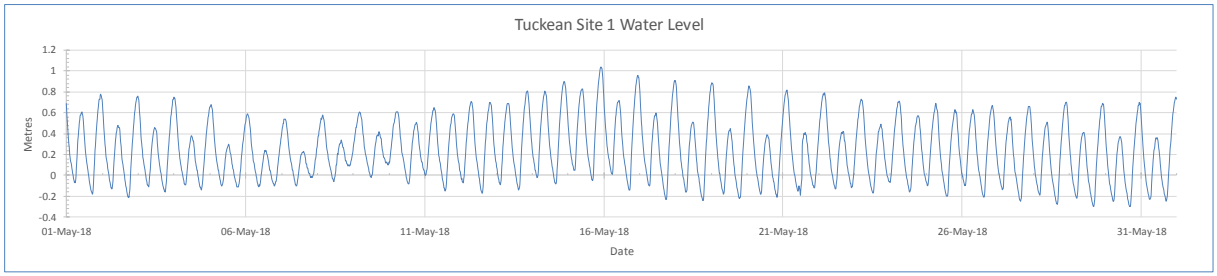
Data logger located at Bagotville in the Broadwater downstream from Bagotville Barrage

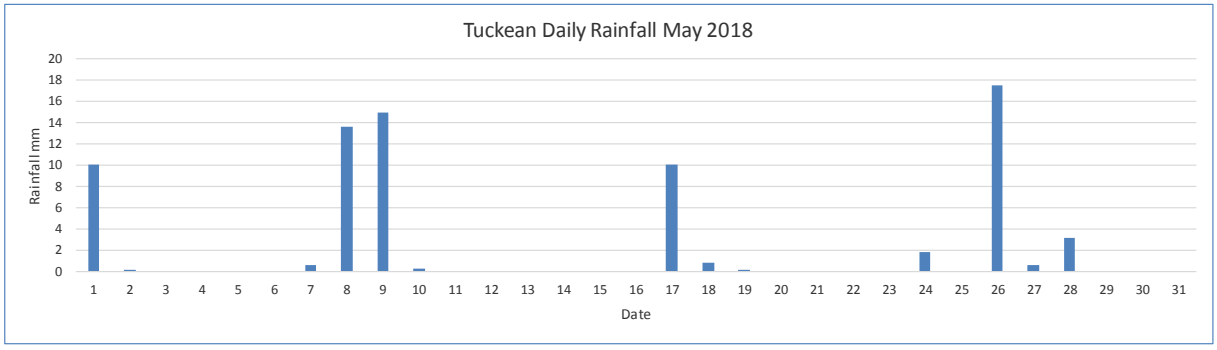












Interpretation

Following repairs, the site 1 logger recommenced recording from 18th April 2018 however power issues kept causing the water quality metre to turn off requiring a reset, this should now be resolved. Sensor and depth housings have been replaced to improve reliability. Dissolved oxygen readings are being substituted by weekly manual measurements.

- **Dissolved oxygen (DO)** in May was recorded by weekly manual measurement on the upstream side of the barrage between 5.6 and 7.3 mg/L with an average of 6.2 which has increased compared to the April average of 5.0 due to lower rainfall. 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 May ranged between 0.25 and 3.36 ms/cm and averaged 0.41 ms/cm, which is considered fresh and has increased compared to the part April average of 0.21. 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 too approximately 60 ms/cm. EC is influenced by rainfall, runoff, temperature and tidal movement.

- **pH** for May ranged from 3.6 to 6.1 and averaged 4.4, which is acid and has fallen when compared to the part April average readings of 4.7. River water under normal conditions is generally near neutral (pH 7), while brackish or saline water moving upstream during dry periods may be higher. Acid water is normally discharged from the Tuckean drains following rain. pH is measured on a logarithmic scale with each consecutive whole number different by a factor of 10.

- **Water temperature** for May ranged from 15.7^{o} to 23.0^{o}C ignoring spikes, giving a range of 7.3^{o}C and averaging 19.4^{o}C which compares to the part April average manual reading of 23.5 however temperature has been recalibrated. Water temperature is influenced by season, air temperature, solar radiation, cloud cover, day/night, turbidity, tidal movement and rainfall.

- **Water height** was recorded for May between -0.30 and +1.0m giving a range of 1.09m and averaging 0.24m compared to the part April reading of 0.29 m, however the depth housing has been replaced and the logger needs to be surveyed into AHD. The highest tides of the month at 1.85 m occurred on 17th at 9:56 pm at the Ballina River entrance, while the corresponding peak at the logger of 0.91m occurred at 11:30pm on 17th giving a delay of 1hr 34min. Water height can be affected by river level, tides and rainfall and to a lesser extent temperature, wind and barometric pressure.

- **Rainfall** at the site 4 data logger situated 4 km to the north failed to record after 11th February 2017 and has recommenced on 29th May 2018, however during May 2018 a nearby station recorded 73.4 mm over 13 days, which compares to the April 2018 reading of 142.4 mm over 19 days. Peak daily rainfall of 17.5 mm was recorded between 9 am on 25th and 9 am on the 26th May. During May the Rocky Mouth Creek data logger located 19 km to the SSW recorded 71.2 mm over 25 days, while the Ballina AWS located 19 km to the NE recorded 64.4 mm over 14 days.