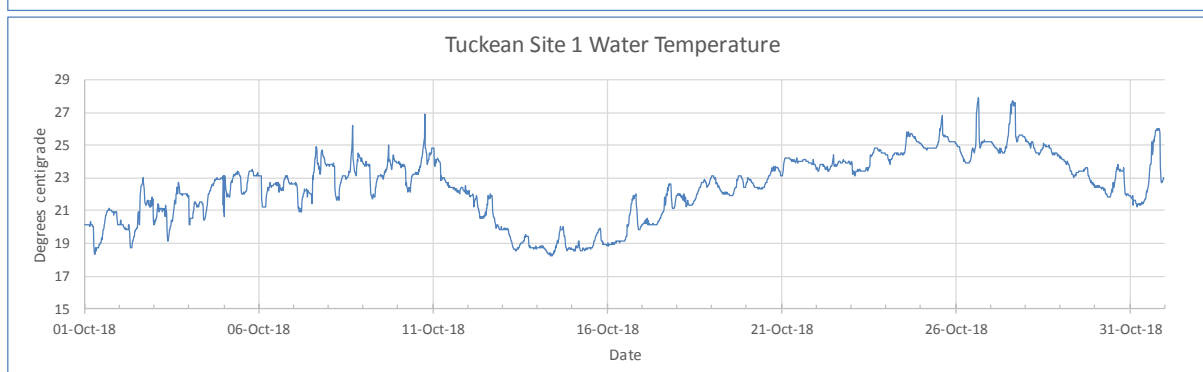
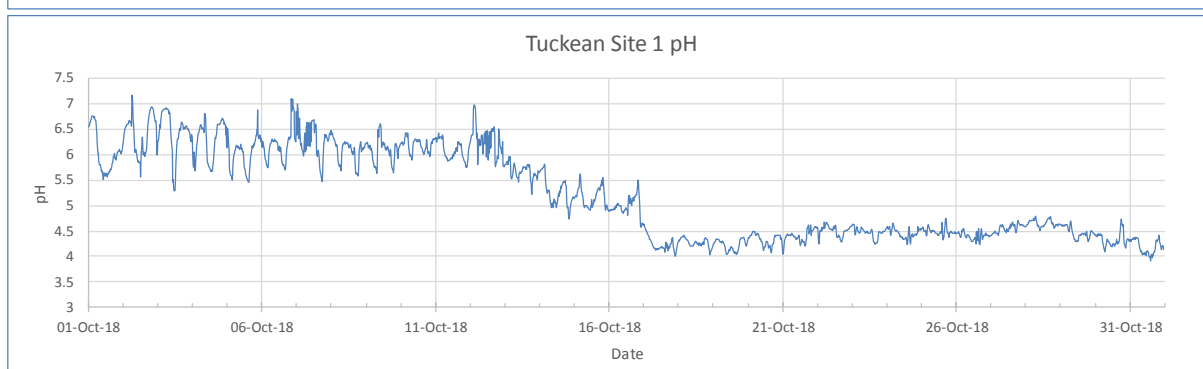
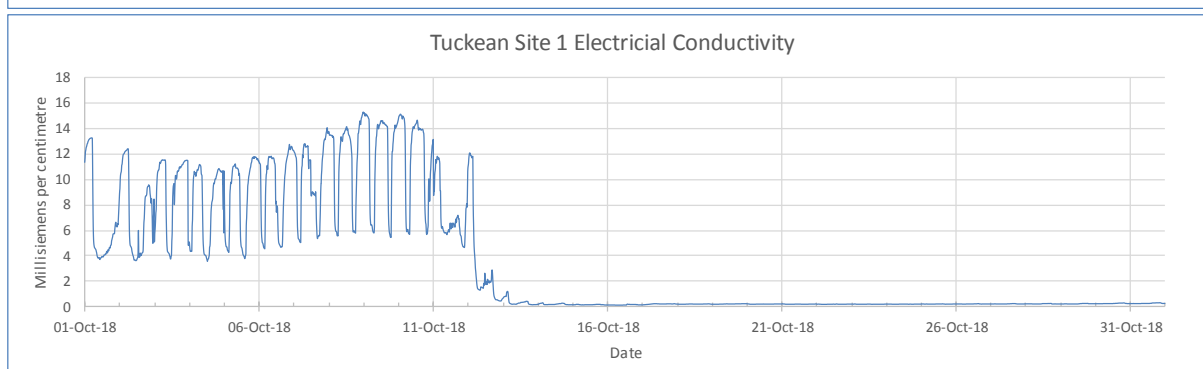
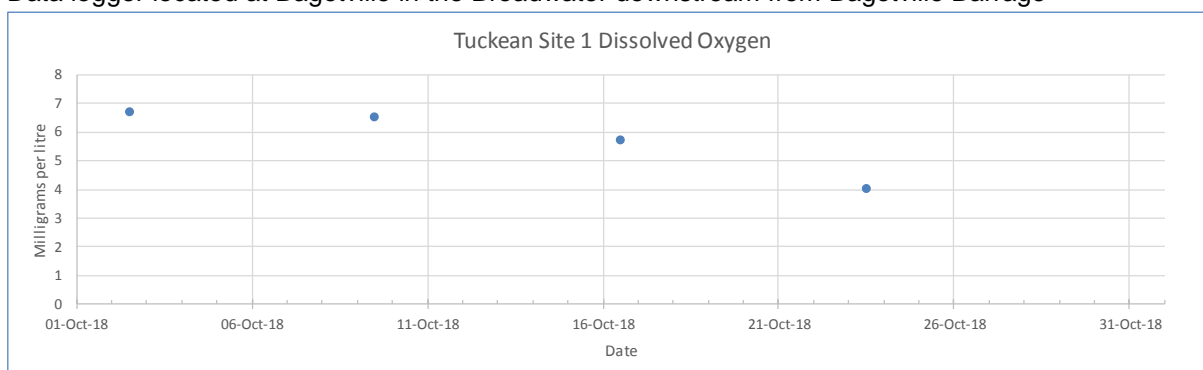
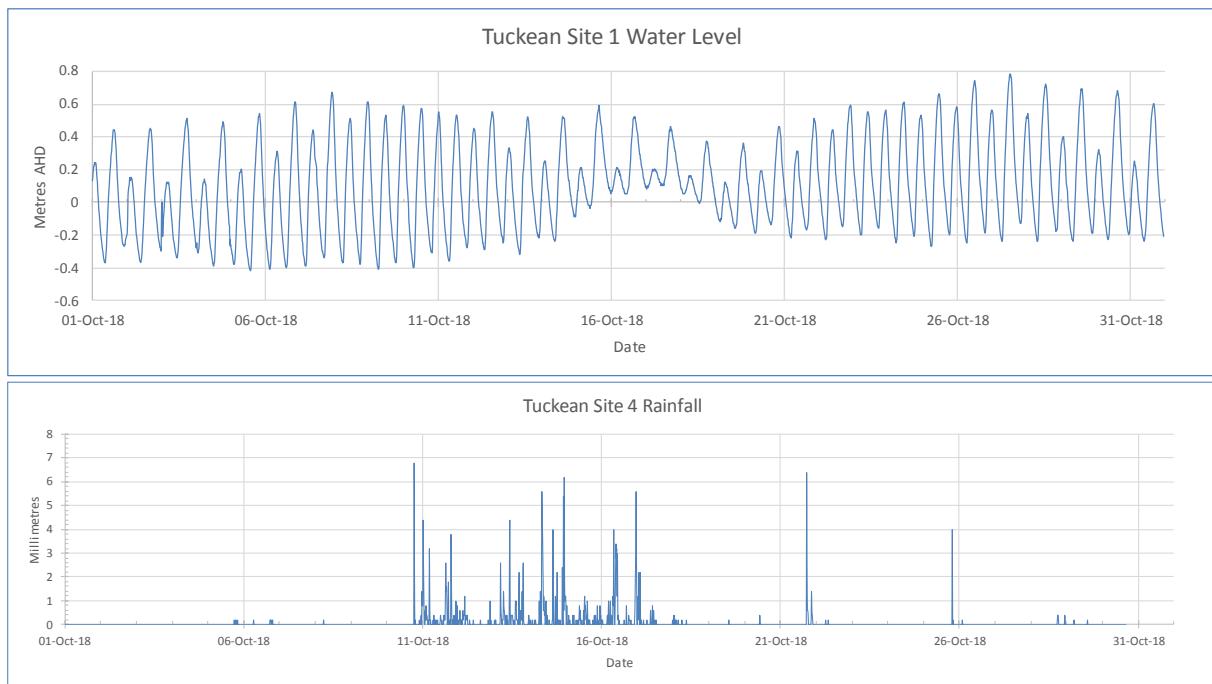


## Tuckean Site 1 water quality – October 2018

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





## Interpretation

Note: - Dissolved oxygen readings are being substituted by weekly manual measurements.

- Dissolved oxygen (DO)** in October was recorded by weekly manual measurement on the upstream side of the barrage between 4.0 and 6.7 mg/L with an average of 5.7 which has decreased compared to the September average of 7.2 due to above average rainfall and runoff. 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 October ranged between 0.2 and 14.9 ms/cm and averaged 3.6 ms/cm, which is considered brackish and has decreased compared to the September saline average of 5.4 due to above average rainfall and decreased saline influence. 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 October ranged from 3.9 to 7.1 and averaged 5.2, which is acid and has decreased by 1.1 equivalent to 12.6 times increased acidity when compared to the September average readings of 6.3. pH fell throughout the month due to increased rainfall and acid water runoff from drains. 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 October ranged from 18.2° to 27.6°C giving a range of 9.4°C and averaging 22.5°C which has risen by 2.8° compared to the September average of 19.7° 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** was recorded for October between -0.44 m and +0.74 metres giving a range of 1.18 m and averaging +0.11 m compared to the September average of +0.04 m, however the logger needs to be surveyed into AHD. The highest tides of the month at 1.71 m occurred on 27<sup>th</sup> at 10:45 am and 28<sup>th</sup> at 11:30 am at Evans Head, while the corresponding peak at the logger of 0.78m occurred at 12:15 pm on 27<sup>th</sup> and 0.72m on 28<sup>th</sup> at 1:00pm giving a delay of 1hr 30 min. Water height can be affected by river level, tides and rainfall and to a lesser extent temperature, wind and barometric pressure.
- **Rainfall** recorded at the site 4 data logger situated 4 km to the north was 243.8 mm over 20 days which compares to 105.5 mm recorded over 15 days in September. Peak rainfall of 6.8 mm was recorded between 6:00 pm and 6:15 pm on 10<sup>th</sup> October. During October the Rocky Mouth Creek data logger located 19 km to the SSW recorded 239 mm over 20 days, while the Ballina AWS located 19 km to the NE recorded 218.4 mm over 15 days.