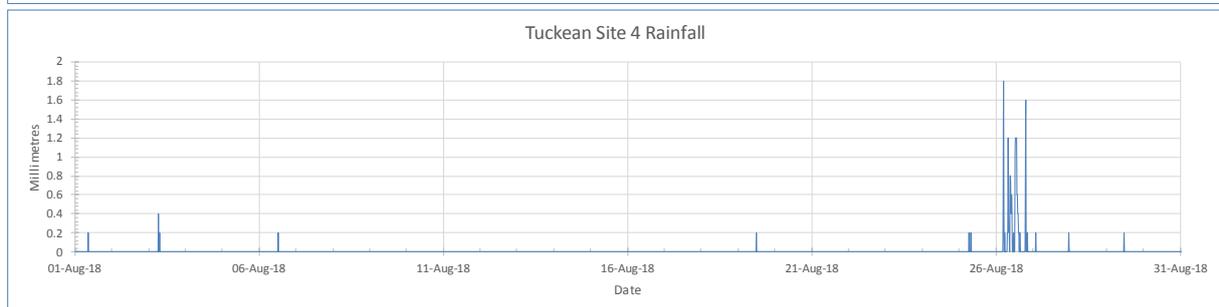
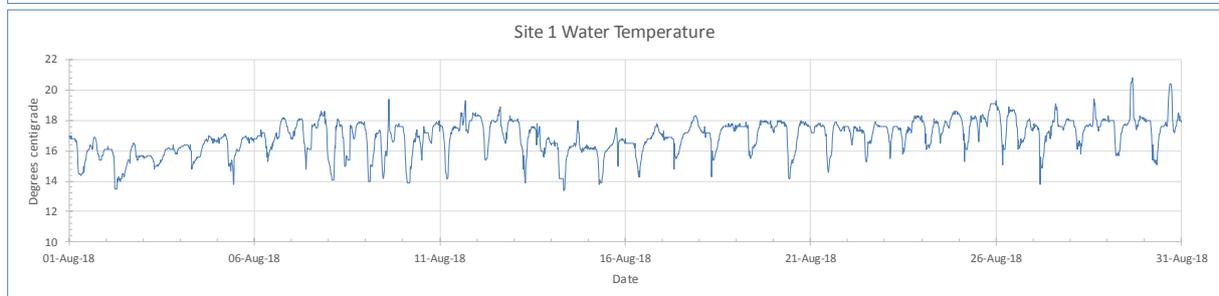
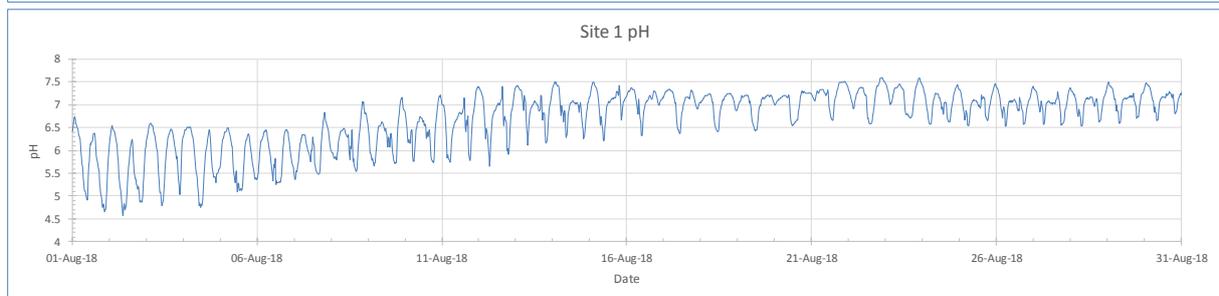
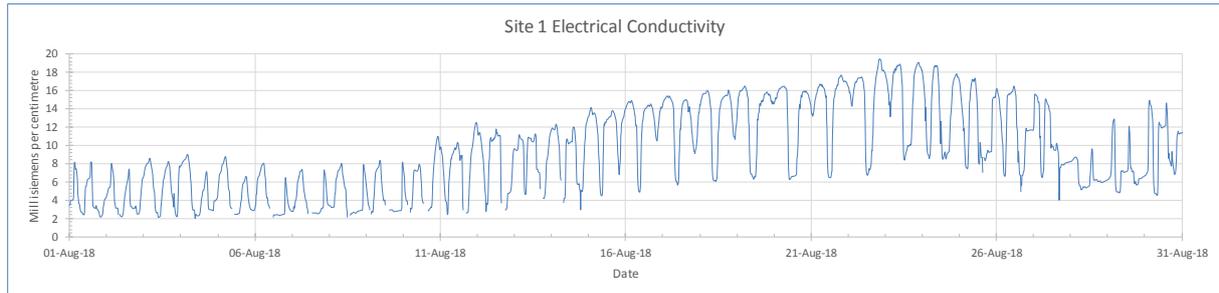
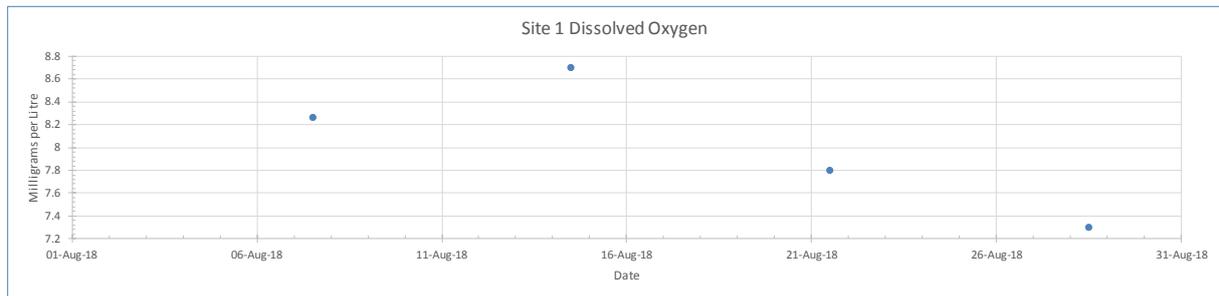


Tuckean Site 1 water quality – August 2018

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



Interpretation

Note: - The sensor float housing has been tied to prevent it being hung up but will need to be extended to deeper water as it is still can be exposed at very low tide. Dissolved oxygen readings are being substituted by weekly manual measurements.

- **Dissolved oxygen (DO)** in August was recorded by weekly manual measurement on the upstream side of the barrage between 7.3 and 8.7 mg/L with an average of 8.0 which has increased compared to the July average of 7.4 due to low 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 August ranged between 2.2 and 19.3 ms/cm and averaged 9.5 ms/cm, which is considered saline and has increased compared to the July saline average of 7.4 due to lower rainfall and increasing 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 August ranged from 4.6 to 7.5 and averaged 6.7, which is acid and has risen by 2.3 or 200 times less acid when compared to the July average readings of 4.4. pH rose throughout the month due to reduced rainfall. 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 August ranged from 13.4° to a spike of 20.5°C, giving a range of 7.1°C and averaging 17.0°C which has risen by 1.8 compared to the July average of 15.2° 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 August between -0.43 m and +0.82 metres giving a range of 1.25 m and averaging 0.12 m compared to the July average of 0.14 m, however the logger needs to be surveyed into AHD. The highest tides of the month at 1.93 m occurred on 11th at 8:18 pm at Evans Head, while the corresponding peak at the logger of 0.85m occurred at 10:15 pm on 11th giving a delay of 1hr 57min. 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 recorded 26.8 mm over 9 days which compares to 47.7 mm recorded over 9 days in July. Peak rainfall of 1.8 mm was recorded between 4:30 am and 4:45 am on 26th August. During August the Rocky Mouth Creek data logger located 19 km to the SSW recorded 29.0 mm over 12 days, while the Ballina AWS located 19 km to the NE recorded 40.0 mm over 5 days.