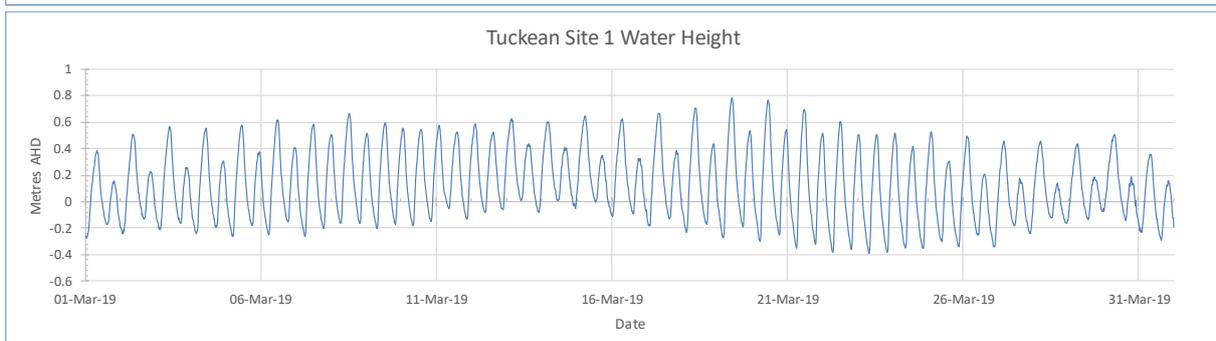
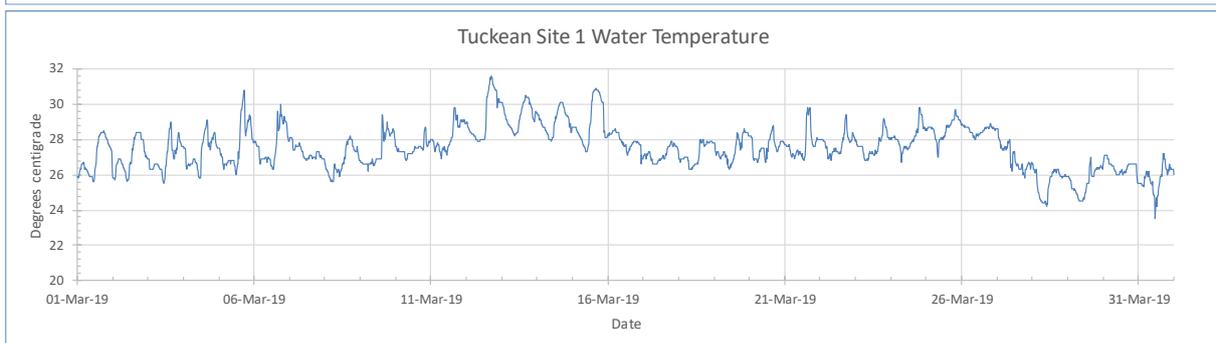
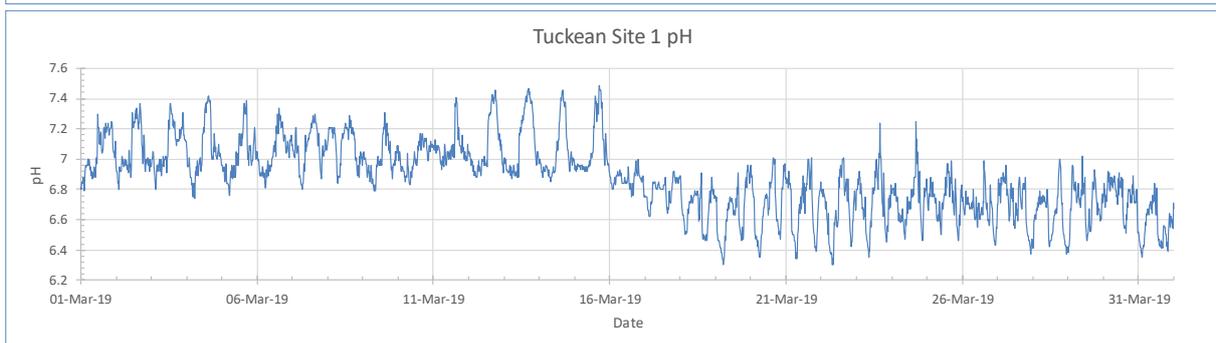
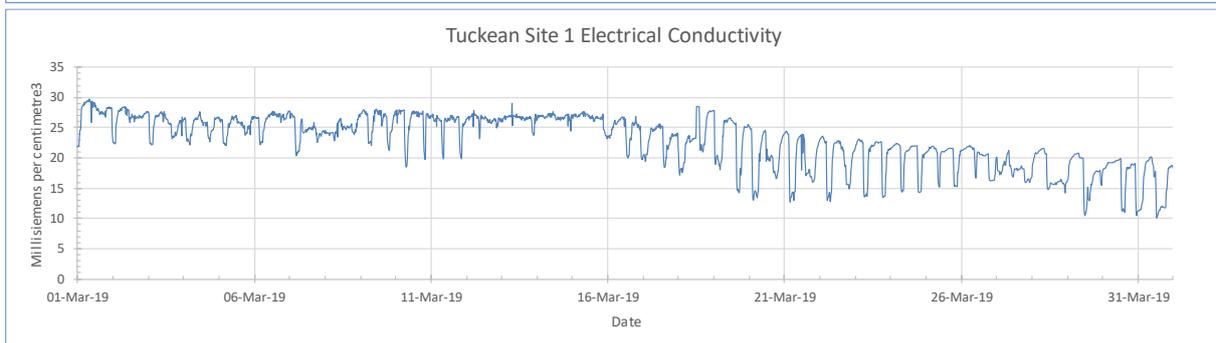
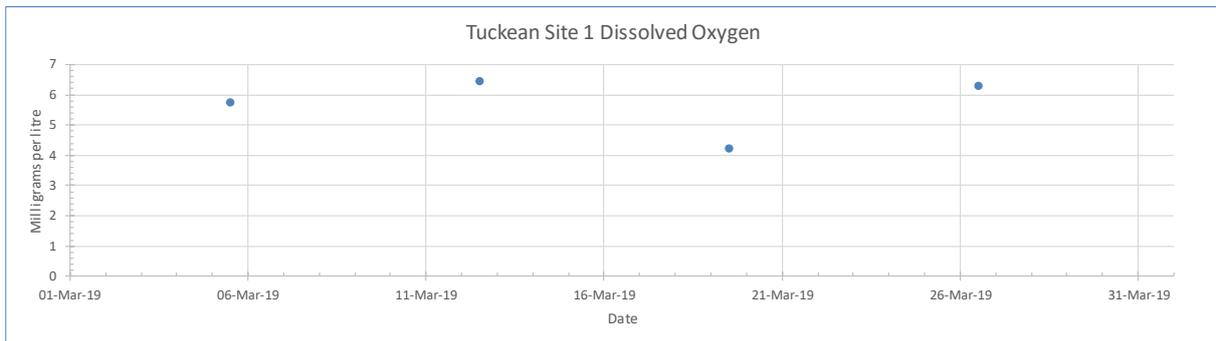
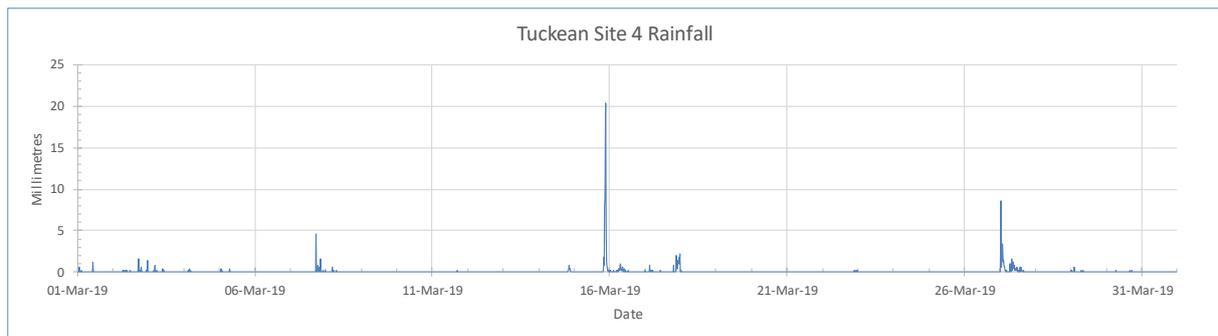


Tuckean Site 1 water quality – March 2019

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





Interpretation

Note: - Dissolved oxygen readings are being substituted by weekly manual measurements. Site 1 was cleaned and calibrated on 18th March.

- Dissolved oxygen (DO)** was recorded in March by weekly manual measurement on the upstream side of the barrage between 4.25 and 6.48 mg/L with an average of 5.7 which has increased compared to the February average of 5.4. 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 March ranged between 10.02 and 29.2 ms/cm³ and averaged 22.8 ms/cm, which is considered saline and has decreased by 4.1 compared to the February saline average of 26.9 due to increased rainfall and reduced tidal exchange. 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** for March ranged from 6.8 to 8.2 and averaged 6.9, which is slightly acid and has decreased by 0.4 when compared to the alkaline February average readings of 7.3. 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 March ranged from 23.5° to 31.2°C giving a range of 7.7°C and averaging 27.5°C which has decreased by 0.3° compared to the February average of 27.8° 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 March between -0.39 m and +0.76 metres giving a range of 1.15 m and averaging +0.13 m which is equal to the February average of +0.13 m, however the logger needs to be surveyed into AHD. The highest tides of the month at 1.85 m occurred on 20th at 8:48 am at Ballina, while the corresponding peak at the logger of 0.77m AHD occurred at 10:15 am on 20th giving a delay of 1hr 27 min. Zero AHD approximates to mean sea level or a 0.925 m tide height therefore 1.85 m tide equals 0.925m AHD however tidal water cannot get in fast enough and without sufficient river flow water cannot back up to this height. Water height can be affected by river level, tides, storm surge and rainfall and to a lesser extent temperature, wind and barometric pressure.

- **Rainfall:** In March the site 4 data logger situated 4 km to the north recorded 166.6 mm over 17 days which compares to 79.0 mm recorded over 19 day in February. Peak 15-minute rainfall of 20.4 mm was recorded between 9:00 pm and 9:15 pm on 15th March during a thunder storm. The March 33-year average for this location is 220.9 mm therefore rainfall is below average. During March the Rocky Mouth Creek data logger located 19 km to the SSW recorded 184.2 mm over 20 days, while the Ballina AWS located 19 km to the NE recorded 139.2 mm over 18 days.