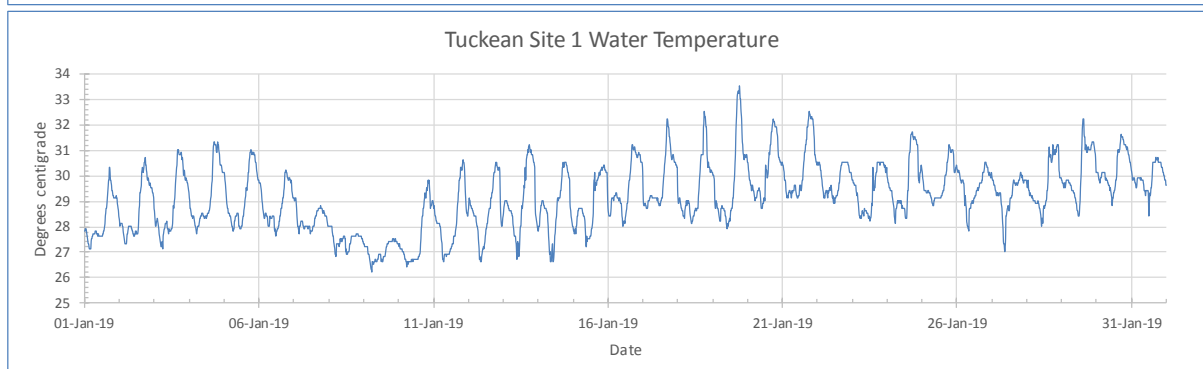
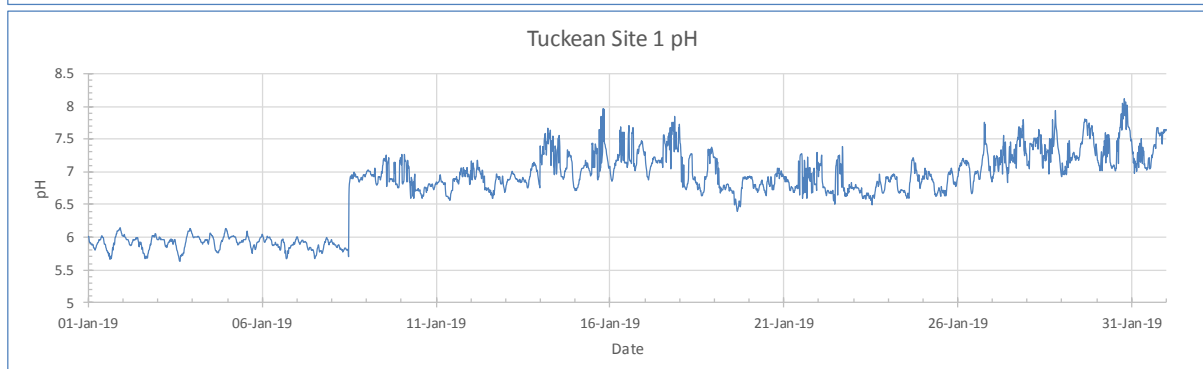
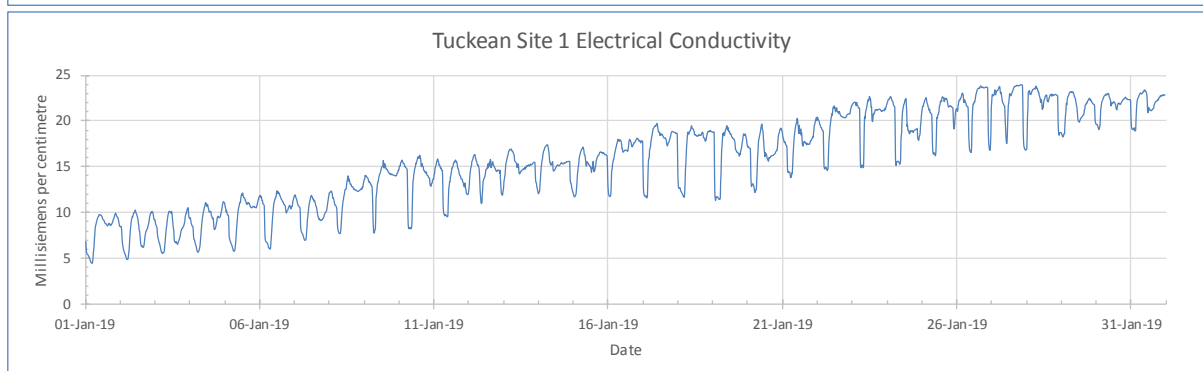
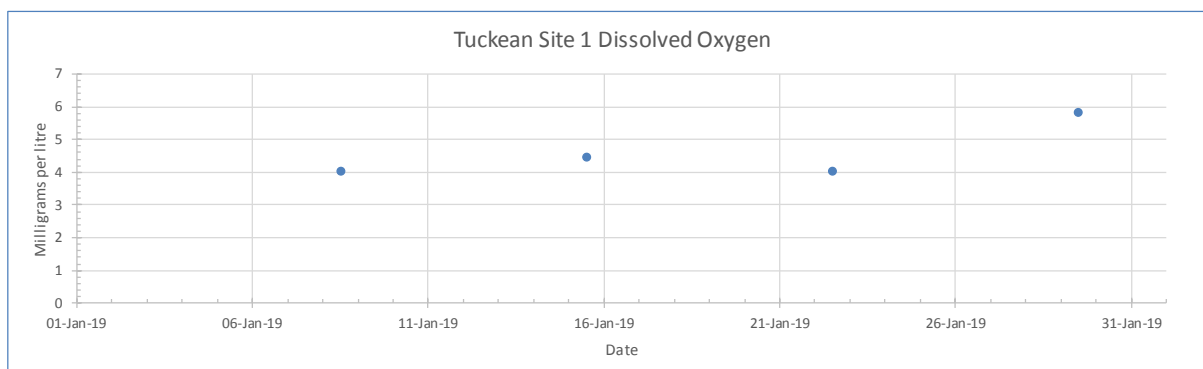
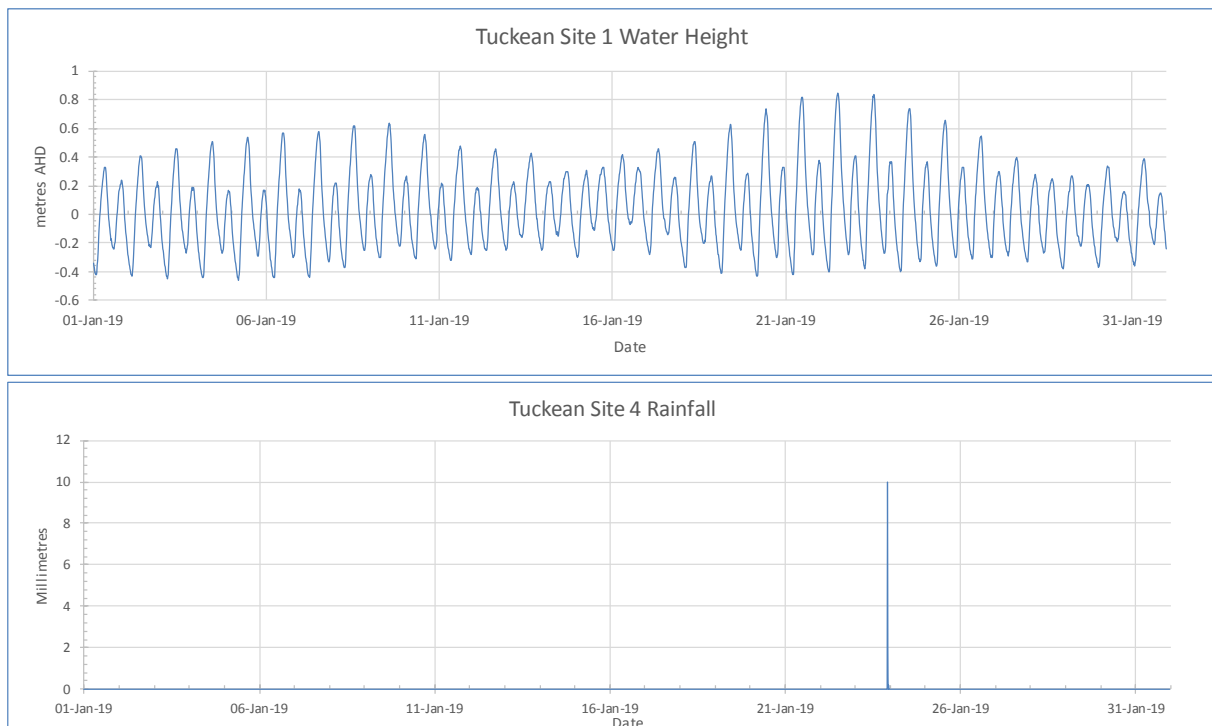


Tuckean Site 1 water quality – January 2019

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 8th Jan which increased pH by 1.1.

- Dissolved oxygen (DO)** was recorded in January by weekly manual measurement on the upstream side of the barrage between 4.1 and 5.9 mg/L with an average of 4.7 which has decreased compared to the December average of 4.8. 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 January ranged between 4.46 and 23.16 ms/cm³ and averaged 15.76 ms/cm, which is considered saline and has increased by 10.6 compared to the December saline average of 5.16 due to low rainfall and increased 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 January ranged from 5.6 to 8.1 and averaged 6.8, which is acid and has increased by 0.7 equivalent to five times decreased acidity when compared to the December average readings of 6.1. 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 January ranged from 26.2° to 33.5°C giving a range of 7.3°C and averaging 29.1°C which has risen by 2.7° compared to the December average of 26.4° due to a warmer than average January. Water temperature is influenced by season, air temperature, solar radiation, cloud cover, day/night, turbidity, tidal movement and rainfall.

- **Water height** was recorded for January between -0.46 m and +0.85 metres giving a range of 1.31 m and averaging +0.04 m which has fallen by 0.02 m when compared to the December average of +0.06 m, however the logger needs to be surveyed into AHD. The highest tides of the month at 1.93 m occurred on 22nd at 10:15 am at Ballina, while the corresponding peak at the logger of 0.85m AHD occurred at 12:00 pm on 22nd giving a delay of 1hr 45 min. Zero AHD approximates to mean sea level or a 0.925 m tide height therefore 1.93 m tide = 1.005m AHD. Water height can be affected by river level, tides and rainfall and to a lesser extent temperature, wind and barometric pressure.
- **Rainfall:** In January the site 4 data logger situated 4 km to the north recorded 12.2 mm over 1 day which compares to 46.2 mm recorded over 12 days in December. Peak 15-minute rainfall of 10.0 mm was recorded between 10:15 pm and 10:30 pm on 22nd January. The January 33-year average for this location is 160.8 mm therefore rainfall is well below average. During January the Rocky Mouth Creek data logger located 19 km to the SSW recorded 1.6 mm over 3 days, while the Ballina AWS located 19 km to the NE recorded 2.4 mm over 5 days.