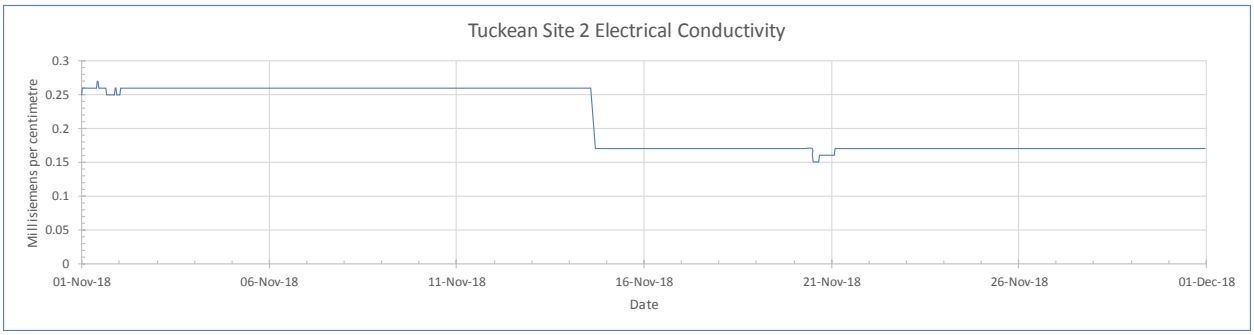
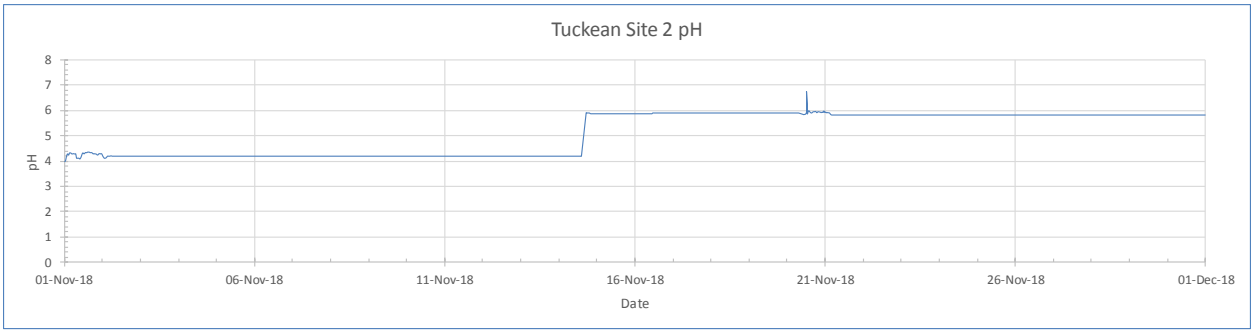
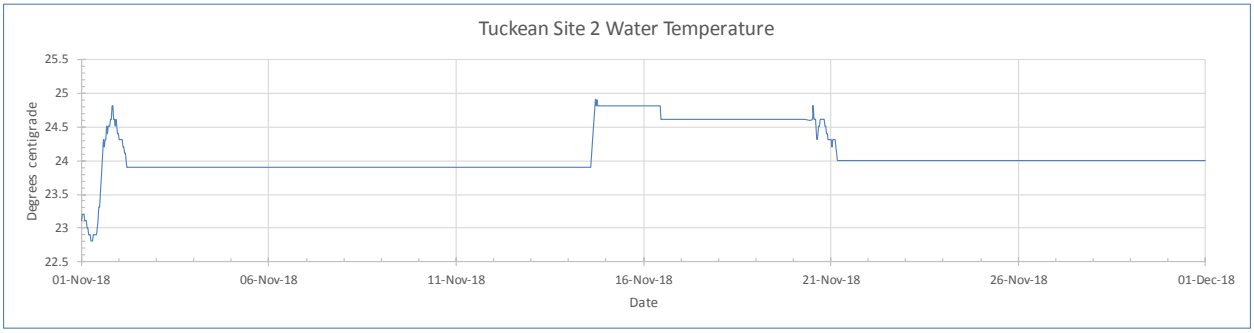
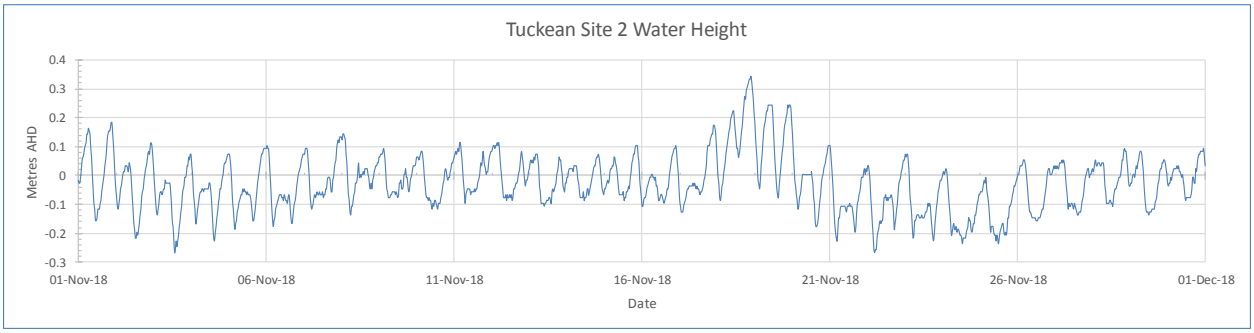
Tuckean site 2 water quality – November 2018

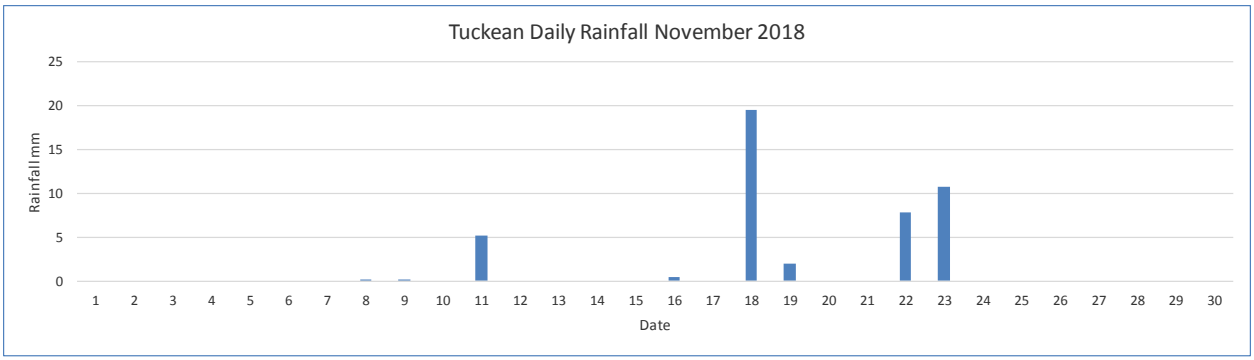
Data logger located upstream of Bagotville Barrage, Tuckean Swamp, NSW

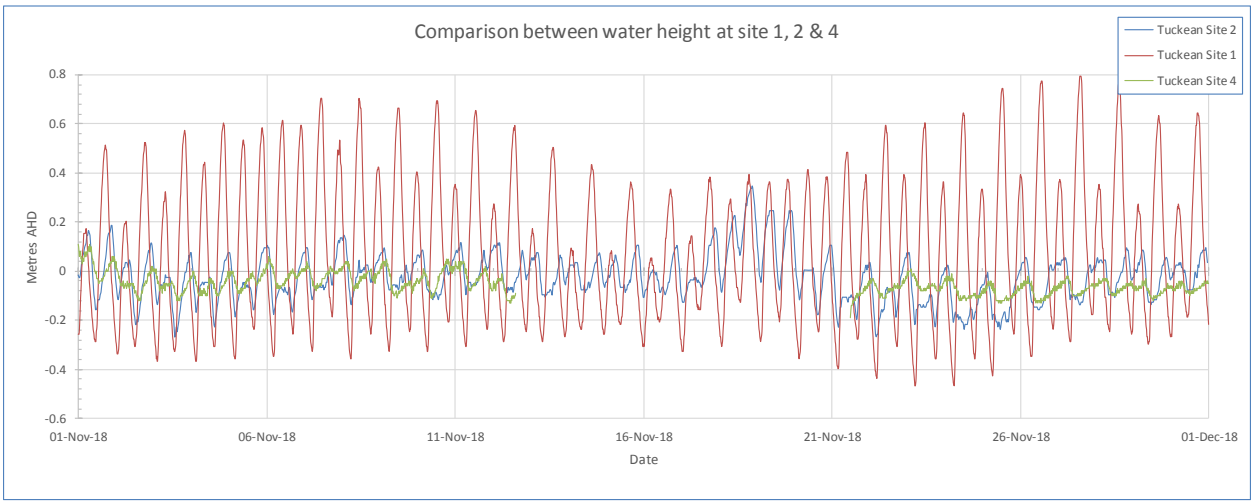












Interpretation

The water quality meter has turned off four times during the month shortly after being reset, the meter was removed and bench tested and all equipment has tested OK, however there still appears to be an intermittent fault. As a result, temperature and EC data was only available for 3 days, however depth data is unaffected.

- **Electrical conductivity (EC)** was recorded for 3 days in November between 0.15 and 2.7 ms/cm averaging 0.21 which compares to the October average of 1.2 ms/cm. EC is directly related to salinity and is the inverse of electrical resistance in ohms. Water is considered fresh if below 1.8 ms/cm, brackish from 1.8 – 4.8 and saline above 4.8 with seawater approximately 60 ms/cm.

- **pH** was only recorded for three day in November between 4.0 and 5.9 with an average of 5.1 compared to the October average of 5.4. On the pH scale neutral is at pH 7 and for every consecutive whole number below 7 acidity increases by ten times on a logarithmic scale. pH in an acid sulfate soil environment is affected by surface and groundwater level, drainage, rainfall, runoff and tidal exchange.

- **Water temperature** was recorded for 3 days in November between 22.8 and 24.8 deg C averaging 22.1 which compares to the October average of 22.1^{o}C. Water temperature normally peaks in the late afternoon as air temperature and solar radiation decreases. Temperature variations can be caused by a combination of factors including solar radiation, air temperature, tidal exchange, day /night, riparian shade, turbidity and rainfall.

- **Water level** recorded in November ranged between -0.27 and +0.35 giving a range of 0.62 m and averaging -0.02 m which has fallen by 0.13 m compared to the October average of +0.11 m. The November site 2 average is 0.1 m below the site 1 average of + 0.08 m and 0.03 m above the site 4 average of -0.05m. Maximum daily tidal variation at site 2 was 0.37m compared to 1.25 m at site 1 due to restricted water entry at the barrage sluice gates. This compares to the maximum daily tidal variation at site 4 which is 6.6 km upstream of 0.12 m due to restrictions in the drains. Levels are yet to be surveyed in to Australian Height Datum (AHD). Water height at site 2 fluctuates with tides, degree of sluice gate opening, river height, rainfall in the catchment and to a lesser extent temperature, wind and barometric pressure.

- **Rainfall:** In November the site 4 data logger situated 4 km to the north did not record for the entire month however a nearby station recorded 45.8 mm over 8 days which compares to 243.8 mm recorded over 20 days in October. Peak rainfall of 19.6 mm was recorded between 9:00 am on 17th and 9:00 am on 18th November. During November the Rocky Mouth Creek data logger located 19 km to the SSW recorded 96.0 mm over 14 days, while the Ballina AWS located 19 km to the NE recorded 106 mm over 6 days.