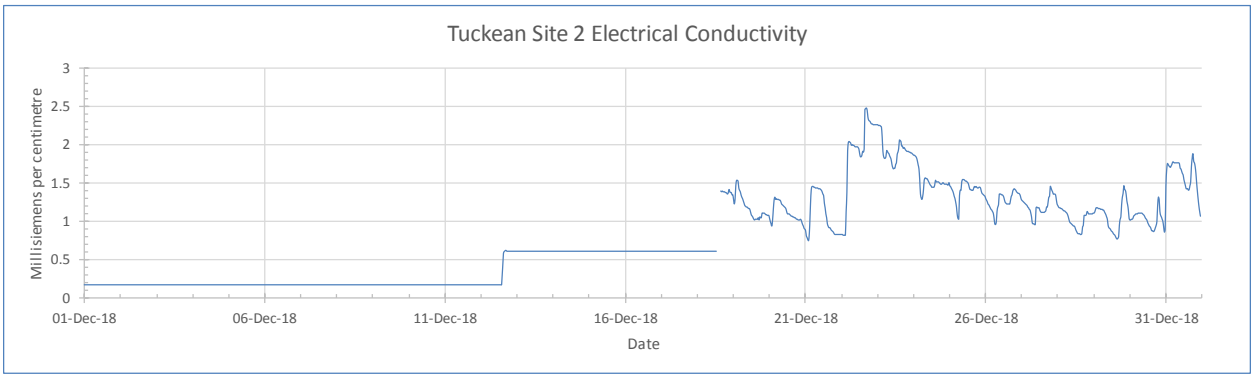
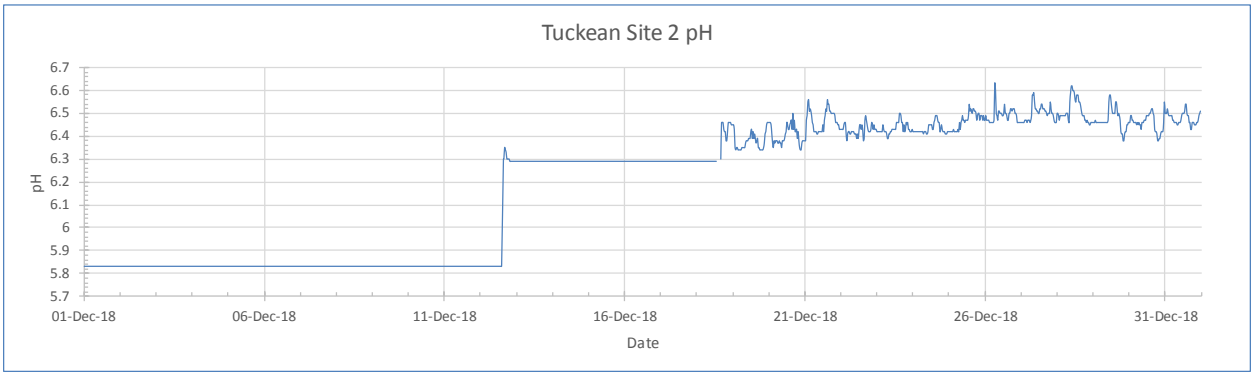
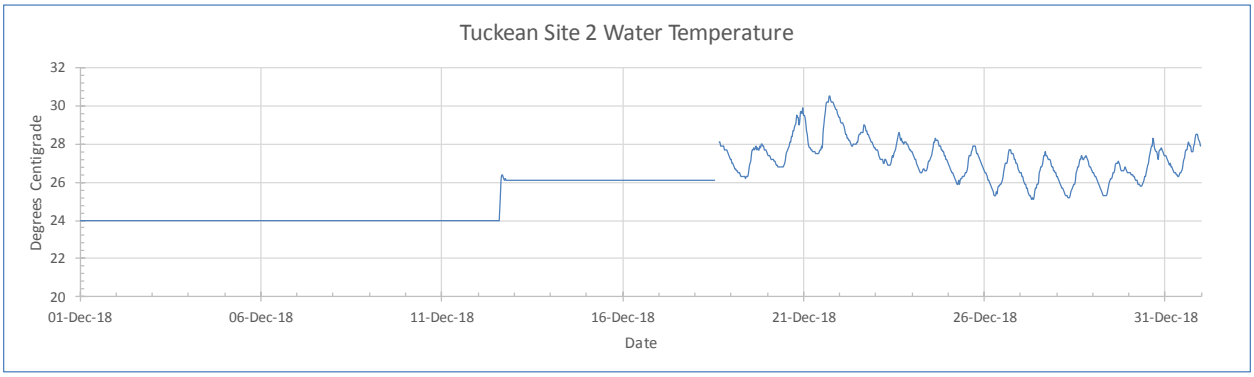
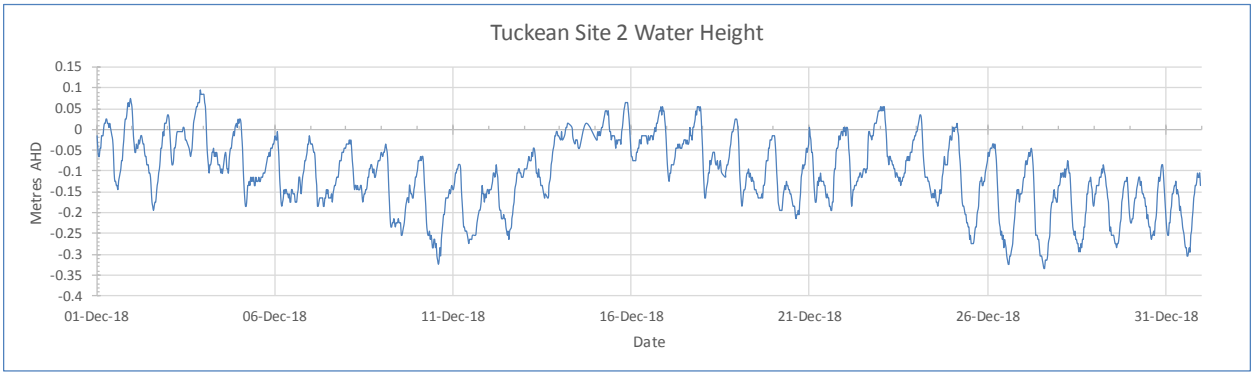
Tuckean site 2 water quality – December 2018

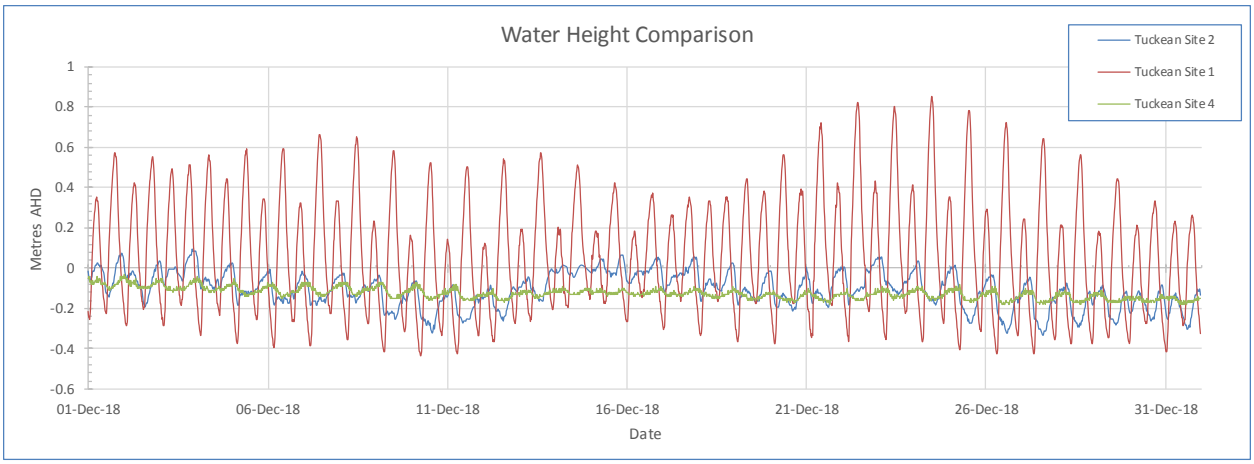
Data logger located upstream of Bagotville Barrage, Tuckean Swamp, NSW

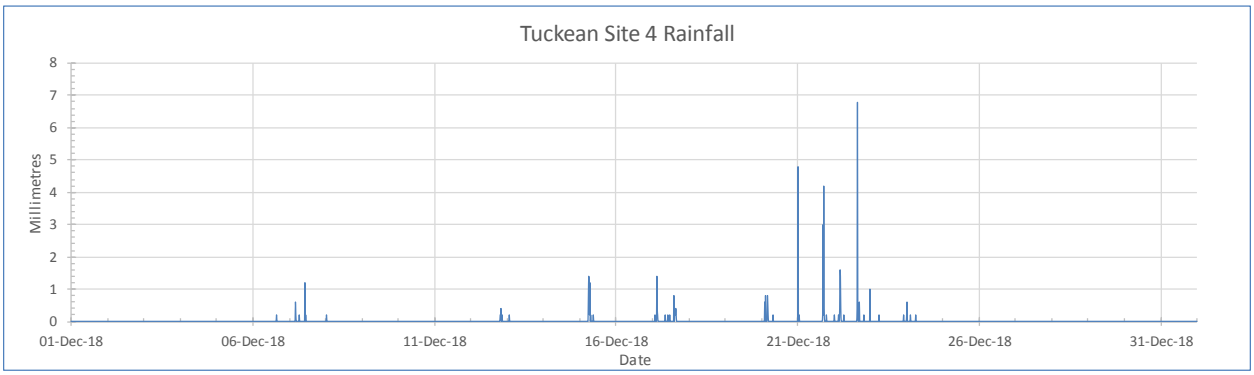












Interpretation

The original water quality meter was replaced with a new meter and is working properly indicating an intermittent fault in the original meter which will require repair. As a result, EC, pH and temperature data was only available from 18th, however depth and rainfall were unaffected.

- **Electrical conductivity (EC)** was recorded from 18th in December between 0.75 and 2.49 ms/cm averaging 0.77 which compares to the November average of 0.21 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 recorded from 18th in December between 6.4 and 6.6 with an average of 6.2 compared to the November average of 5.1. 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 from 18th December between 25.2 and 30.2 deg C averaging 25.8 which compares to the November average of 22.1ºC. 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 December ranged between -0.35 and +0.085 giving a range of 0.435 m and averaging -0.11 m which has fallen by 0.09 m compared to the November average of -0.02 m.

The December site 2 average was 0.17 m lower than the site 1 average of + 0.06 m and 0.01 m higher than the site 4 average of -0.12 m. Due to restricted water entry at the barrage sluice gates maximum daily tidal variation at site 2 was 0.28 m compared to 1.21 m at site 1. This compares to the maximum daily tidal variation of 0.09 m at site 4, 6.6 km upstream, which is 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 December the site 4 data logger situated 4 km to the north recorded 46.2 mm over 12 days which compares to 45.8 mm recorded over 8 days in November. Peak 15-minute rainfall of 6.8 mm was recorded between 3:15 pm and 3:30 pm on 22nd December. The December 32 year average for this location is 132.1 mm therefore rainfall is well below average. During December the Rocky Mouth Creek data logger located 19 km to the SSW recorded 80.2 mm over 19 days, while the Ballina AWS located 19 km to the NE recorded 36.6 mm over 11 days.