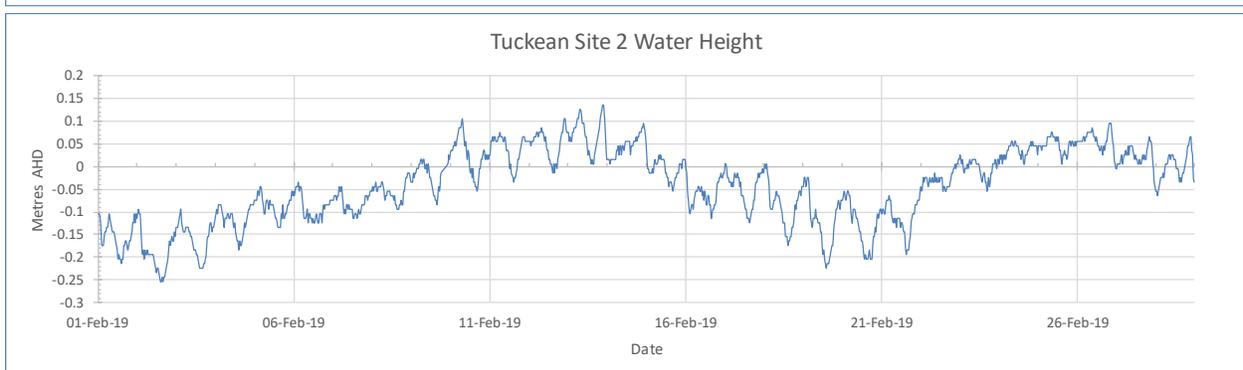
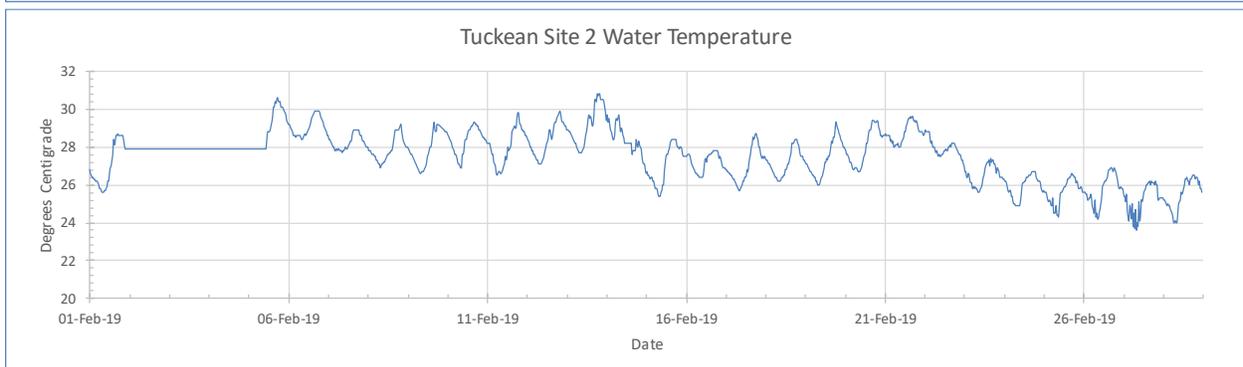
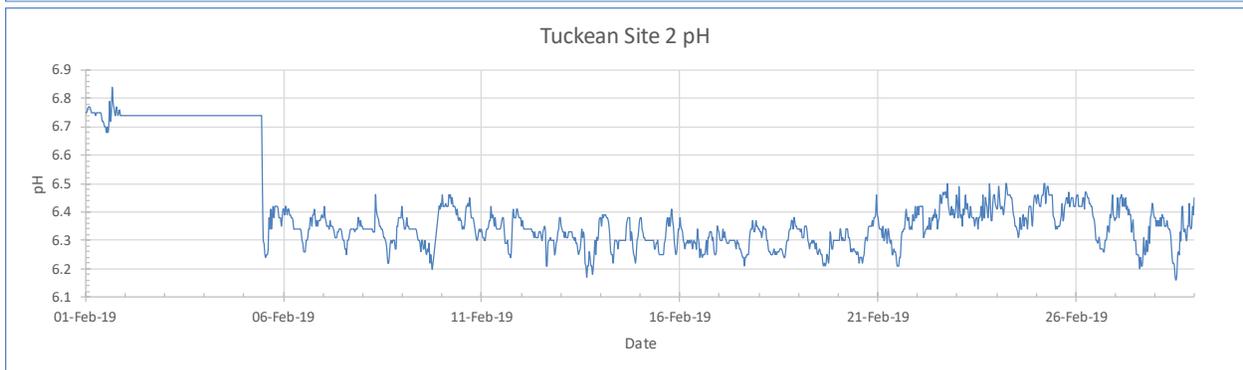
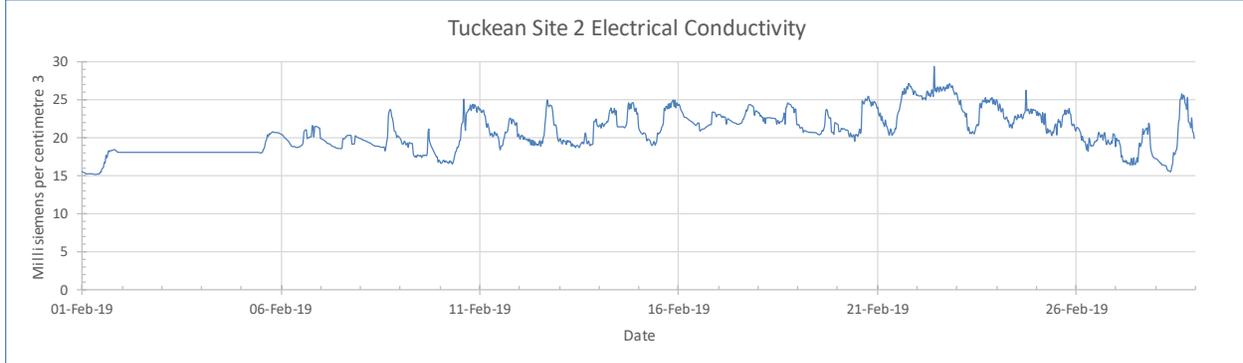
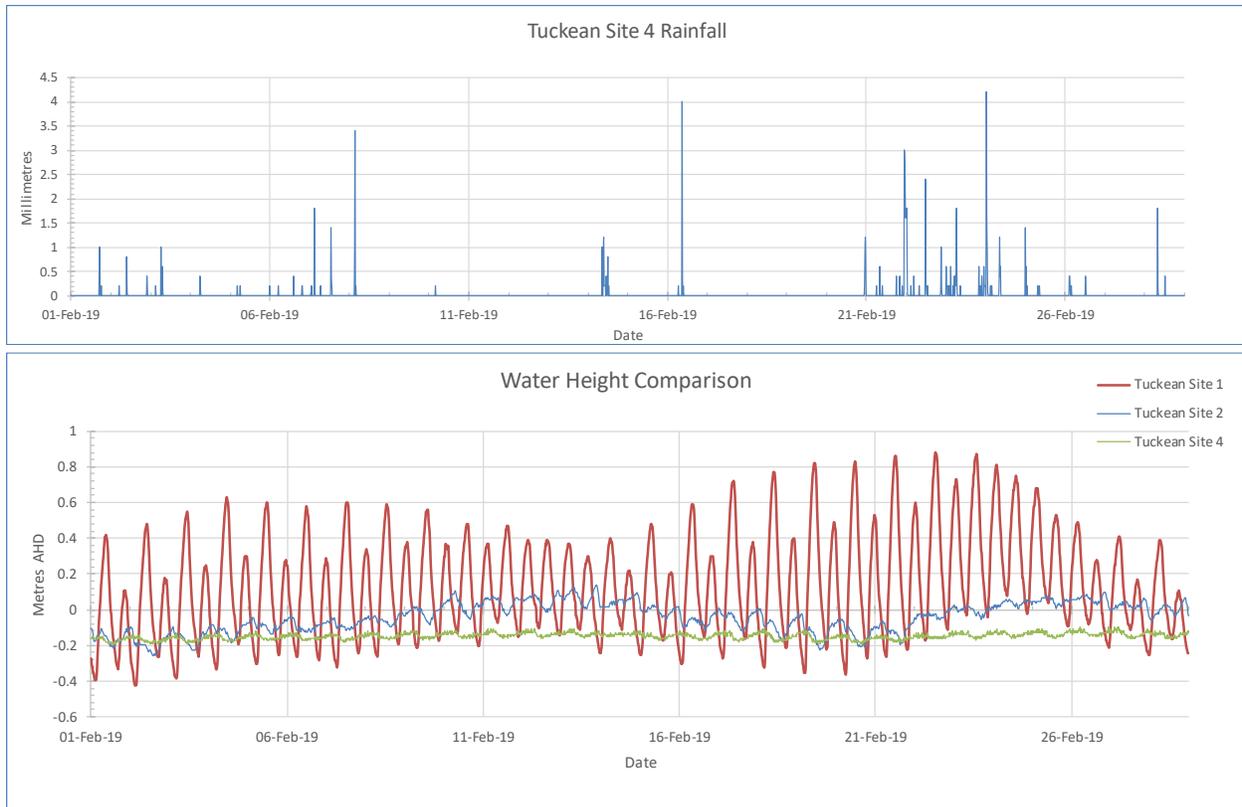


## Tuckean site 2 water quality – February 2019

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





## Interpretation

A new meter was installed on the 5<sup>th</sup> with pH, EC and temperature data before that time being unreliable. The sensors were cleaned and calibrated to the new meter on 5<sup>th</sup> Feb.

- Electrical conductivity (EC)** was recorded in February between 15.3 and 29.5 ms/cm averaging 20.86 which has risen by 12.35 compared to the January average of 8.51 ms/cm due to low rainfall, falling Tuckean groundwater levels and leaking gates. 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 in February between 6.2 and 6.8 with an average of 6.4 which has fallen by 0.2 compared to the January average of 6.6 due to increased rainfall. 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 in February between 25.2 and 30.2 deg C averaging 27.5 which has fallen by 0.9 compared to the January average of 28.4°C due to the influence of cyclone Oma in the last week of February. 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 February ranged between -0.26 and +0.14 giving a range of 0.40 m and averaging -0.04 m which has risen by 0.11 m compared to the January average of -0.15 m due to rainfall. The February site 2 average was 0.17 m lower than the site 1 average of + 0.13 m and 0.11 m higher than the site 4 average of -0.15 m. Due to restricted water entry at the barrage sluice gates maximum daily tidal variation at site 2 was 0.19 m compared to 1.44 m at site 1. This compares to the maximum daily tidal variation of 0.07 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, barrage leakage, degree of sluice gate opening, river height, rainfall in the catchment and to a lesser extent temperature, wind and barometric pressure.
- **Rainfall:** In February the site 4 data logger situated 4 km to the north recorded 79.0 mm over 19 days which compares to 12.2 mm recorded over 1 day in January. Rainfall included 47.6 mm from cyclone Oma in the last week of February. Peak 15-minute rainfall of 4.2 mm was recorded between 12:00 am and 12:15 am on 24<sup>th</sup> February. The February 33-year average for this location is 176.5 mm therefore rainfall is well below average. During February the Rocky Mouth Creek data logger located 19 km to the SSW recorded 54 mm over 16 days, while the Ballina AWS located 19 km to the NE recorded 70.2 mm over 18 days.