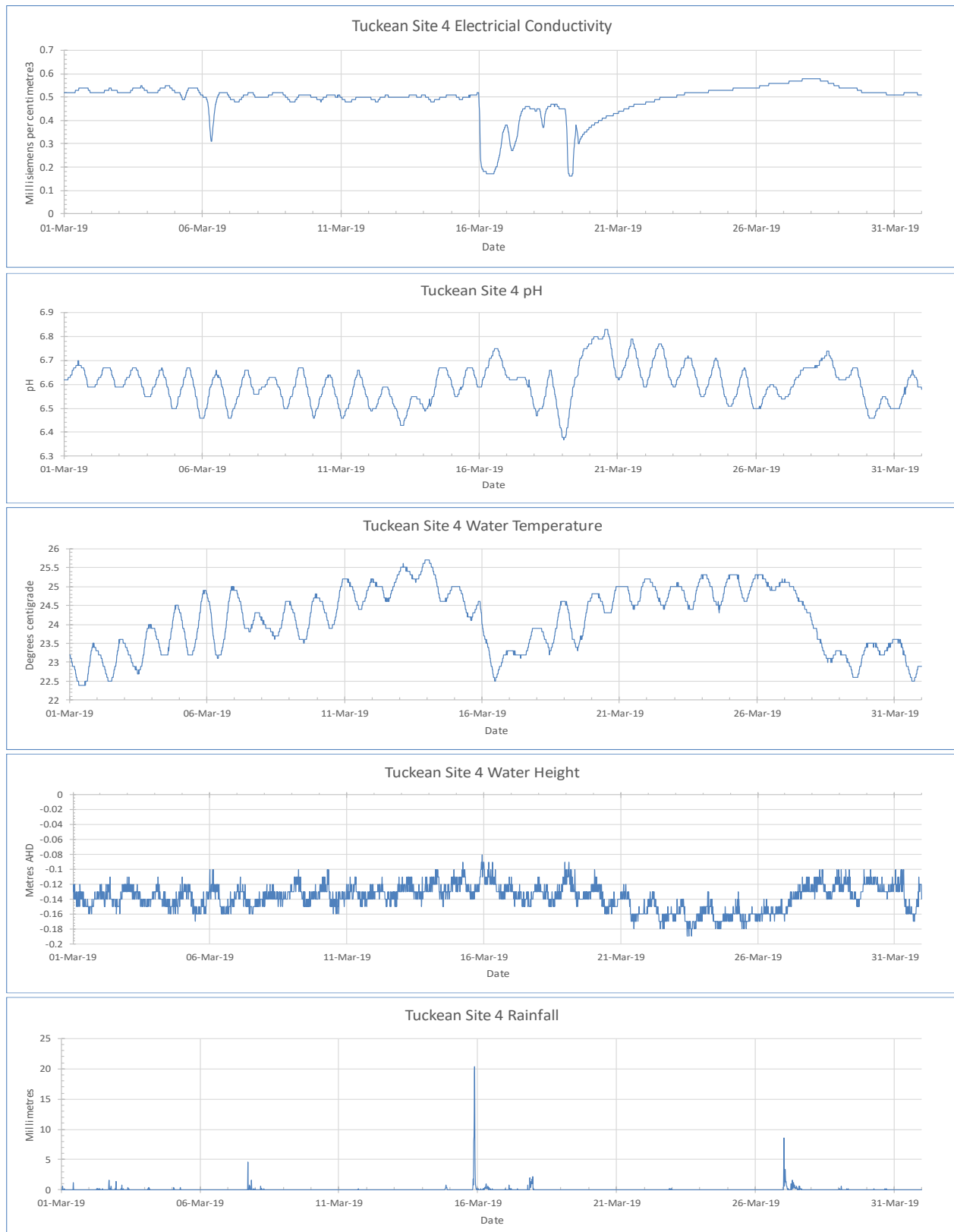


## Tuckean site 4 water quality – March 2019

Data logger located in Tuckean Swamp, Northern NSW



## Interpretation

Note – Site 4 was cleaned and calibrated on 19<sup>th</sup> March.

**Electrical conductivity (EC)** was recorded in March between 0.16 and 0.58 millisiemens per cubic centimetre averaging 0.49 ms which compares to the February average of 0.49 ms. EC measures the ability of the water to conduct an electric current, which is the inverse of electrical resistance (R expressed in ohms) and is affected by rain and runoff, acid water, tidal brackish water and temperature.

**pH** was recorded in March between 6.4 and 6.8 with an average of 6.6 which is acid and has fallen by 0.2 compared to the February pH average of 6.8. Low rainfall, high transpiration and evaporation and restricted tidal entry have resulted in the lowest groundwater levels recorded over summer during the last 33 years. Falling groundwater exposes acid sulfate soils which oxidise, however during March low groundwater levels were restricting acid water from entering drains. Increased rainfall during March has so far been insufficient to raise ground water and flush acid water into drains. Peaks of pH normally occur in late afternoon as plants draw CO<sub>2</sub> from the water, while troughs occur in early mornings as plants respire CO<sub>2</sub> forming carbonic acid. pH is measured on a logarithmic scale, therefore each consecutive whole number below neutral represents 10 times the acidity than the previous number.

**Water temperature.** Water temperature for March ranged between 22.0 and 26.1°C with an average of 24.15 deg C which has decreased by 0.15°C compared to the February average of 24.3 deg C due to seasonal change. Temperature variations are caused by season, time of day, solar radiation and air temperature, while cloud cover, rain, degree of shading also affect water temperature.

**Water level** was recorded for March between -0.19 and -0.08 m AHD giving a range of 0.11 m with a max daily tidal range of 0.07 m and average height of -0.14 m AHD which is 0.01 m higher than the February average of -0.15m due to increased rainfall. Average water level at site 4 is 0.27 m lower than site 1 due to low rainfall, evaporation, transpiration and the restricted entry of tidal water. For accuracy the sensor will need to be resurveyed in to AHD. Rainfall, tidal fluctuations, river level, sluice gate opening, in stream vegetation, sediment build up and drain blocks and to a lesser extent temperature, wind and barometric pressure can all affect the water level.

**Rainfall:** In March the site 4 data logger recorded 166.6 mm over 17 days which compares to 79.0 mm recorded over 19 days in February. Peak 15-minute rainfall of 20.4 mm was recorded between 9:00 pm and 9:15 pm on 15<sup>th</sup> 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.