

# Johnstone River Water Quality Monitoring Project – Technical Report

## Water Quality and Investigations – Great Barrier Reef Catchment Loads Monitoring Program

The Great Barrier Reef Catchment Loads Monitoring Program (GBRCLMP) monitors and reports on water quality constituents and annual loads of nutrients, sediments and pesticides discharging to the Great Barrier Reef from 14 priority catchments. One of these is the Johnstone, which is currently monitored from two separate stations, on the North and South Johnstone. This project will establish a single end-of-system site in the Johnstone Catchment, utilising new technologies that will enable it to monitor far more of the catchment than was previously possible.

After examination of the hydrology and structure of the lower reaches of the Johnstone River, the best approach was determined to be the installation of two linked sites; one to monitor river height, flow and discharge (Flow site, Figure 1), and the other to collect samples based on discharge levels (Sampling site, Figure 1). This was due to the prohibitive width of the Johnstone River at the mouth, and the desire to include Ninds Creek in the sampling, to capture outflows from the Innisfail Sewerage Treatment Plant.



**Figure 1** Map of Innisfail and the lower Johnstone River, including the flow and sampling sites

The flow site consists of a Horizontal Acoustic Doppler Current Profiler (H-ADCP) mounted on a counter weighted swing arm, which is fixed to a council owned recreational fishing platform. In addition to the H-ADCP, there is an Ott Compact Bubble Sensor (CBS) to provide a continuous reading of the height of the river. The counter weighted swing arm was specifically designed for the site, to avoid staff needing to be near the water during maintenance procedures, because of the threat posed by crocodiles. This site is powered and

controlled from a secure housing positioned at the top of the bank. This housing contains a power supply system, as well as a data logger and modem, for the storage and upload of data, and the issuing of directives to the sampling site over the mobile network.



**Figure 2** The H-ADCP swing arm locked in the monitoring position (left), the H-ADCP being raised on the swing arm for maintenance (centre) and the flow site's secure housing (right)

The sampling site consists of a stream-end installation for enclosing and protecting the intake pump, galvanised steel conduit to protect the sampling hose and pump power supply, and a cyclone rated equipment hut, which houses two refrigerated auto-samplers, an in-situ water quality probe, a data logger, a wireless modem and the power system.



**Figure 3** The stream-end pump housing



**Figure 4** The sampling site

The installation of the flow monitoring station has been completed (Figure 2), as has the infrastructure of the sampling station (Figures 3 and 4), and they will be operational by the 30<sup>th</sup> June, 2015. Once operating, the stations will collect samples for sediment, nutrient and pesticide analysis, and will report height, flow, discharge, turbidity and electrical conductivity in real time.