



## Wensum Demonstration Test Catchment (DTC) supporting information

The Wensum DTC has a monitoring network installed to measure meteorological, hydrological and hydrochemical parameters in target sub-catchments. This document aims to describe the in-situ monitoring equipment, methods and protocols performed on our data before it is published on the archive.

### Quality assurance and quality control procedures

Quality assurance (QA) procedures are followed during data collection, detailed with our monitoring equipment. Regular maintenance activities are carried out at a weekly frequency and involve cleaning of flow-through cells, clearing of in-channel vegetation and debris where stage is monitored and cleaning of rain gauges. All field work and maintenance activities are entered into maintenance logs for each site, which are used during data quality control (QC) procedures.

QC procedures include the validation of high-frequency nutrient data using point samples in the Blackwater sub catchment. These samples are analysed in laboratories following standard methods. Inter-laboratory comparisons are used to check consistency in analytical procedures between sub-catchments.

QC procedures also include the identification of errors in all data sets. Errors flagged as critical include: periods of maintenance when data may be unrepresentative; equipment or power failures; or data below limits of detection. On-site visits by field staff are recorded in a maintenance log which is checked against the data during the quality control (QC) post-processing. Any data likely to be disturbed by the routine field work are removed, along with any known periods of downtime, hence some of the data is not included and there may be time breaks in the files accessible on the archive.

### Archived data

#### **Activity: Wensum Catchment meteorological data**

##### *Dataset: Automatic weather station data*

The Wensum DTC's weather station data has been corrected for issues predominantly associated with the anemometer, hence some of the data is not included and there may be time breaks in the files accessible on the archive.

##### *Dataset: Recorded rainfall data in the Wensum catchment*

Rain gauge data on the archive contains a quality check to ensure that the data has been matched with other rain gauge measurements, ensuring its validity. This and other periods of downtime are shown by a potential error associated with each measurement at an hourly resolution.

## **Activity: Wensum catchment sampling stations**

### Datasets: Kiosk monitoring data

The Wensum DTC's sampling kiosks monitor many hydrochemical parameters at a 30 minute resolution. Samples are also analysed less frequently at the University of East Anglia's laboratory, all using standard laboratory methods. The monitoring equipment used is detailed below:

**Pressure transducer** – Measures stage height

**Sontek Argonaut** – Doppler meter which measures stage height and infers flow from velocity and pre-programmed stream cross section

**Sontek IQ** – Doppler meter which measures stage height and infers flow from velocity and pre-programmed stream cross section

**YSI 6600 series multi-parameter sonde** - Measures water temperature, electrical conductivity, dissolved oxygen, pH, ammonium, turbidity and chlorophyll-a

**Hach Lange Nitratax SC** optical probe which measures N concentration. The Nitratax sensors are calibrated every 3 months using a standard solution.

**Hach Lange Sigmatax and Phosphax Sigma analyser (kiosk E and F only)** - Measures total phosphorus and total reactive phosphorus colorimetrically using homogenised sample from Sigmatax. The Phosphax Sigma is automatically cleaned and calibrated daily using reagents that are replaced every 3 months.

### Component: Kiosk Laboratory data

Water samples are collected at the monitoring kiosk's intake pipes and are analysed at the University of East Anglia's laboratory.

### Component: ISCO data

Automatic ISCO samplers are installed at monitoring kiosks to measure hydrochemical properties of storm derived water. These are analysed at the University of East Anglia.

### Component: Wensum catchment field drain sampling

Within the studied sub-catchment, field drains from many of the fields have been routinely sampled. These field drain samples are analysed at the University of East Anglia's laboratory.

## **Activity: Wensum catchment in-field measurements**

### Component: Porous pots

Throughout the sub-catchment, nine sets of ceramic porous pots have been installed at 90 cm depth in selected fields to cover a range of soil types. These are sampled and laboratory analysed to investigate soil water properties.

Component: Soil sampling