

Version No: 3 Issue Date: 16/8/2019 Portfolio: Turbidity	<b>Horizons Regional Council</b>	Section No: 9.1 Page: 1 of 1
<b>horizons</b> regional council 	<b>Hydrology Operations</b> <b>Manual</b>	 <small>Operations Manual table of contents</small>

## Turbidity Approved Sensors/Inspections

### Standard:

At the time of writing NEMS (National Environmental Monitoring Standards) for Turbidity Version 2 is in the final stages of being approved. Horizons procedures are intended to comply with the NEMS Turbidity standard.

### Approved Instrumentation for Turbidity at Horizons:

All continuous sensors deployed at Horizons shall conform to NEMS Turbidity.

- [EXO Turbidity Smart Sensor](#)
- [WTW Viso-Turb 700IQ](#)
- [CSI - OBS500](#)
- [Hach Solitax](#)
  - LISST ABS (Acoustic Sediment – Under R&D 2018)

### Notes:

\*1 If the sensor/sensor controller has an analogue output, (0 – 20 mA or 4 – 20 mA) they require high accuracy resistors  $\pm 0.1\%$

### Inspections

All Turbidity inspections shall be taken at the same time as the logger punch (minimum NEMS standard is 15 minute punches for catchment areas  $>25\text{km}^2$ ). Water samples shall be taken within 1m of the continuous Turbidity sensor or as near as practically possible (same depth and same approximate location).

Where a sample is not collected close to the in river sensor, please record in the comments section of the inspection chit.

Validation samples/measurements shall be collected at **least once every month** and **whenever the sensor is serviced**.

Ideally, a validation measurement shall be undertaken before and after any servicing of the sensor, for example, when cleaning the lens of biofouling.

If this is not practical, then a **sample/measurement shall be collected after the servicing/cleaning**.

Further information on cleaning sensors and required sampling and lab test are found within:

[9.4 Cleaning Turbidity Sensor: Validation Sample](#)

### Annual Validation

In addition, a range of validations shall be obtained at least once per year during a runoff event in which the turbidity range exceeds **100 FNU** as specified in NEMS Turbidity.

### Annual Clear-Water, Zero-Point Validation of the In-Situ Sensor

Once a year, the field sensor shall be removed from its mounting hardware, cleaned thoroughly (including the housing), and the sensor used to measure the turbidity shall be placed in a clean black plastic container of clear distilled water (with near zero turbidity, as measured with a calibrated portable or laboratory instrument or sample supplied for laboratory analysis). The clean black plastic container should be large enough to ensure no blanking (null readings) occur; review manufactures specifications.

The comparison shall provide sensor values within  $\pm 1$  FNU as specified in NEMS Turbidity