



AquaVision Intelligence

EMR Integrated Solutions & Tetra Tech Section 82 Compliance

OVERVIEW

EMR Integrated Solutions and Tetra Tech established a joint venture in 2025 to deliver end-to-end Clean Water Quality Monitoring solutions across the UK. Built on a 25-year working relationship, the JV combines EMR's 45 years of OT, SCADA and telemetry expertise with Tetra Tech's 500+ UK water field engineers and ISO 17025 certified calibration laboratory.

Our joint solution, AquaVision Intelligence, provides near real-time monitoring upstream and downstream of storm overflows and sewage treatment works. Data is transmitted to a secure Azure-hosted cloud and published within one hour of capture — designed to meet the requirements of the Defra Interim Technical Standard (August 2024).

KEY BENEFITS

Regulatory

- Designed to meet the requirements of Section 82, Environment Act 2021 and the Defra CWQM Interim Technical Standard (August 2024)
- Calibration performed under ISO/IEC 17025:2017 in a certified laboratory
- Data storage hosted at Tier III data centre certified to ISO 9001, ISO 14001, ISO 27001, ISO 50001 and UK Government Cyber Essentials
- Annual Environment Agency report included as a managed service deliverable
- Designed for the emerging MCERTS accreditation pathway, with independent audit targeted for April 2027

Operational

- Equipment downtime capped at <10% annually; no gap exceeding two consecutive weeks
- Sensor faults attended within 72 hours
- Up to 70-day battery interval (pumping distance dependent)
- 24/7 performance monitoring from EMR's Network Operations Centre

Commercial

- Modular service model: select only the elements your utility needs
- Unlimited Ignition SCADA licensing eliminates per-site costs as networks scale
- Open API reduces bespoke data delivery overhead and supports public portal obligations



MONITORED PARAMETERS

Mandatory under Section 82 / Defra Table 1:

- Dissolved oxygen — optical sensor; 0–200% saturation / 0–20 mg/l
- Temperature — thermistor; -5 to +50°C
- pH — glass electrode; 0–14 units
- Turbidity — nephelometric; 0–3,000 NTU
- Ammonia — measured as ammonium (NH₄⁺; 0–5 mg/l); NH₃ derived from concurrent ammonium, pH and temperature readings

Recommended (Defra Table 1)

- Conductivity — electrode; 0–50,000 µS/cm; supports data validation and QC

Additional Parameters

- Chlorophyll a
- Blue-green algae (BGA)
- CDOM / FDOM
- Rhodamine, fluorescein, PTSA, optical brighteners, tryptophan
- Crude oil, refined oil

Sensor-agnostic platform: multi-vendor hardware compatibility reduces supply chain risk.



HARDWARE SPECIFICATION

Max. sensors	Up to 11 (any removable; port plugged)
Sample rate	1 Hz
Data memory	>1,000,000 logged readings
Comms (sonde)	RS-232, SDI-12, MODBUS, USB, Bluetooth
Operating temp	-5 to +50°C
Depth rating	200 m (max 15 m for ISE / TDG sensors)
Wiper	Self-cleaning; wipes DO and fluorometer sensors
RTU	Various
Comms (RTU)	Dedicated CNI APN; encrypted on-board storage
Protocols	MQTT, OPC-UA, HTTPS, Modbus, FTP
Hosting	Azure or AWS cloud; on-premise available
Calibration	ISO/IEC 17025:2017 — Tetra Tech lab

GENERAL INSTRUMENT REQUIREMENTS (DEFRA SECTION 2.2)

- Response time: under 30 seconds across all parameters
- IP68 sensor and battery housing; IP67 display units
- Integrated anti-fouling wiper system across all sensors
- Remote fault reporting capability
- Data recoverable in the event of power failure
- Fully interchangeable sensor systems to minimise downtime on swap-out
- Upgradeable to ≥ 2 additional parameters without reinstallation

DATA MANAGEMENT & VALIDATION

AquaVision Intelligence provides a complete data management environment aligned with the Defra three-step validation framework set out in AtkinsRealis Standards Recommendation Section 5.4.

- Event logging: all parameter exceedances, comms events and system changes recorded
- Alarm logging: configurable thresholds with full escalation via email, SMS and voice

DATA MANAGEMENT PLATFORM

AquaVision Intelligence is built on cloud-hosted Ignition SCADA on Azure; resilient, redundant and NIS-compliant, with role-based access control and MFA across all user tiers.

Public Visualisation Portal

- Custom, secure Azure-hosted web portal — accessible on desktop, tablet and mobile via any browser
- Landing page with real-time site overview map and status indicators
- Site-specific dashboards: real-time parameter display with configurable alarm thresholds
- Historical trend display: multi-point X-axis, overlay of multiple parameters and sites
- User tools: notes, annotations, multi-point data export
- Scheduled and on-demand PDF report generation
- Near real-time data published within one hour of capture — meets Defra Section 5.3 obligation

Data Storage

- Telemetry outstation: minimum 3,000 reading local buffer; time and date-stamped (Defra Section 5.1)
- Encrypted on-board RTU storage; continuous local logging during comms outage, auto-upload on restoration

Deployment Module

- Mobile-based deployment and commissioning tool
- Geo-located site identification and documentation
- RTU and sonde configuration, commissioning and realtime data verification
- End-to-end audit trail from installation through to handover
- Cybersecure with MFA; all access logged

- Action log and audit trail: all user interventions logged with timestamp and user ID
- Remote setpoint configuration: thresholds, sampling intervals and pump cycles adjustable without site visit
- Daily QC annotation: maintenance visits, sonde changeover, pump failure, sonde out of water, sensor failure
- Automated flagging of suspect data as 'provisional until verified'

INTEGRATION AND REPORTING

- Open API: near real-time public data access; meets Defra Section 5.3 publication obligation
- Hydroweb integration for direct EA regulatory data submission
- GIS, weather data, sewer network telemetry and WwTW SCADA integration
- Data analytics and AI integration; machine learning and predictive analytics module
- Digital twin and decision intelligence capabilities

DELIVERY MODEL - EMR & TETRA TECH

Delivered jointly by EMR and Tetra Tech. Services are modular — utilities select only what they need. A utility with its own communications infrastructure can engage for hardware and calibration only. Scale as monitoring networks grow.

Both organisations have principal contractor capability and possess a proven track record in large, complex infrastructure programmes delivered on time and within budget.

Consultancy & Design

- Desktop survey, site selection, reconnaissance report
- Ecology survey; permit and licence applications (RPS333 / FRAP)
- Principal Designer; CDM compliance; site-specific RAMS
- Landowner negotiation and public engagement

Supply & Installation

- Sonde specification, configuration and set-up
- RTU and communications provisioning on dedicated CNI APN
- Construction, kiosk installation, power and telemetry
- FAT, SAT, commissioning and end-to-end data verification
- Digital asset tracking from deployment to decommission

Maintenance & Calibration

- Monthly visit; legacy sonde replaced with lab-calibrated unit
- No on-site sonde disassembly or individual sensor replacement
- Sonde returned to Tetra Tech ISO/IEC 17025:2017 certified laboratory
- Calibration certificates stored for minimum 25 years
- Hot-swappable battery replacement – no service interruption
- Sensor faults attended within 72 hours; 24/7 NOC monitoring

DEPLOYMENT OPTIONS

Downstream monitors sited at point of complete cross-sectional mixing per Defra Section 3.1. Calculations based on maximum point of harm from ammonia, retained for audit. Within 500m downstream of point of complete lateral mixing. Biosecurity protocols followed; INNS risk managed at all sites.

- **GRP kiosk (pumped)** — primary per Defra 3.2; separate wet/dry sections; alarm sensors
- **Solar RTU** — pole, wall or buoy
- **Portable Peli case** — in-river / temporary; IP68; 15/60 min reporting



About EMR Integrated Solutions & Tetra Tech

EMR Integrated Solutions and Tetra Tech established a joint venture in 2025 to address the Section 82 CWQM market. EMR brings 45 years of OT, SCADA, telemetry and cybersecurity expertise across water utilities, power networks, renewable energy, transport and maritime sectors. Tetra Tech contributes 500+ UK water field engineers, 500+ water engineering consultants and an ISO 17025 certified calibration laboratory. Together the partnership delivers end-to-end CWQM capability from site survey and ecology through to 24/7 managed services and EA regulatory reporting.

Get in Touch

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