

# AquaVision Intelligence

## Smart Water Quality Monitoring that Goes Beyond Section 82 Compliance

AquaVision Intelligence is a platform developed by EMR to provide water utilities with a fully integrated Continuous Water Quality Monitoring capability, designed to go beyond compliance obligations imposed under S.82 of the Environment Act, 2021.

Built on best-of-breed technologies from leading manufacturers, AquaVision Intelligence provides near real-time monitoring of key water quality parameters together with comprehensive visualisation, reporting and alarm notification, and open interfaces to third party applications and systems on a secure, resilient Azure cloud.

Using edge-driven data, utilities can tap into crucial insights for command and control centres to react quicker to adverse events. Through data integration, utilities can also model future events through predictive analysis of edge data.

AquaVision Intelligence goes beyond the provision of hardware and software, and extends to end-to-end service and life-cycle management, incorporating site selection and surveying, environmental impact assessment, permit and licence applications, communications network provisioning and management, hardware installation and commissioning, maintenance and calibration, 24/7 performance monitoring and reporting as well as the management of remote user access and privileges.

## The Hardware Layer

### Power in Simplicity

As a system integrator, EMR works closely with leading equipment manufacturers to develop application-specific solutions. In order to ensure long term supply chain security, AquaVision Intelligence is built around an open, standards-based software platform capable of integrating data from multiple sensor and sub-system manufacturers, thereby reducing supply chain risk.

This also provides a platform for the development of the system over time, and the adoption of emerging technologies and sensors.

Sondes for the AquaVision Intelligence outstation are platform agnostic.



They support connection of up to eight measurement parameters including temperature, pressure, conductivity, oxygen concentration, oxygen saturation, fluorescence, chlorophyll, and incorporate a self-cleaning wiper, which extends service intervals to lower operational costs.

## Technical Data

- **Hosting Options:** Cloud (AWS/Azure) or On-Premise (local server)
- **Sondes/Sensors:** Vendor agnostic
- **Connectivity:** MQTT, OPC-UA, HTTPS
- **AI Features:** Machine learning for predictive analytics and anomaly detection
- **Visualisation:** HTML5-based dashboards for desktop and mobile access
- **Calibration:** Sensor calibration and storage performed in conformance with ISO/IEC 17025:2017

Powered by LiPo batteries with a 60+ day recharge interval at a 15-minute reporting frequency, the AquaVision Intelligence incorporates data logging and multi-network 4G/5G data transmission, with options for satellite where cellular coverage is inadequate. In the event of an interruption to communications, the logger continues to store readings which are then uploaded to the AquaVision Cloud on restoration of service.

The AquaVision Intelligence field hardware can be kiosk, wall-mounted, pole-mounted or fully submerged in a weatherproof and vandal-resistant pedestal enclosure with all electronics above a ground-level concrete plinth. This arrangement ensures that service personnel are working at a safe and comfortable height while protecting the equipment from flooding and external impacts.

**Suitable for both pumped and in-river deployment and available in a number of form factors including kiosk, wall-mount, pole-mount and fully submerged option.**



### AquaVision Intelligence Sonde

#### Measurement Parameters

- Dissolved oxygen
- Temperature
- pH
- Turbidity
- Ammonia
- Conductivity

#### Technical Specification

- Response Time: < 30 seconds
- Operating Temperature: -5 to +50°C
- Dissolved Oxygen (% saturation): 0 - 200%
- Dissolved Oxygen (mg/l): 0 - 20 mg
- Temperature: -5 to +50 °C
- pH: 0 - 14 pH units
- Turbidity: 0 - 3000 NTU
- Ammonium: 0 - 5 mg/l
- Conductivity: 0 - 50,000 µS/cm

## The Integration Layer

### A Smart Engine at the Core

The Ignition SCADA platform serves as the core integration engine, providing enterprise-grade data orchestration and visualisation capabilities. This platform architecture enables seamless unification of operational data streams through standardised protocols and robust APIs.

Data streams from sewer networks, waste water treatment plants, telemetry, GIS and even local or regional weather stations can be easily integrated into one holistic environmental system, providing a single source of truth and supporting your unified operations centre.

## Unified Operations Centre

### A Single Source of Truth



## The Intelligence Layer Beyond Monitoring and Compliance

The future of water quality management is already taking shape through our platform's evolution. Advanced AI integration through our SCADA integration enhances predictive capabilities while expanded sensor networks provide ever-broader coverage.

Enhanced public health protection mechanisms work alongside stronger environmental stewardship tools to create a comprehensive approach to water quality management.

Our solution thinks alongside its human operators, employing advanced analytics and machine learning to model future events through predictive analysis of edge data. It identifies subtle patterns that might escape human notice and forecasts potential challenges, enabling truly data-driven decision-making that transforms reactive management into proactive stewardship.

### Key Features

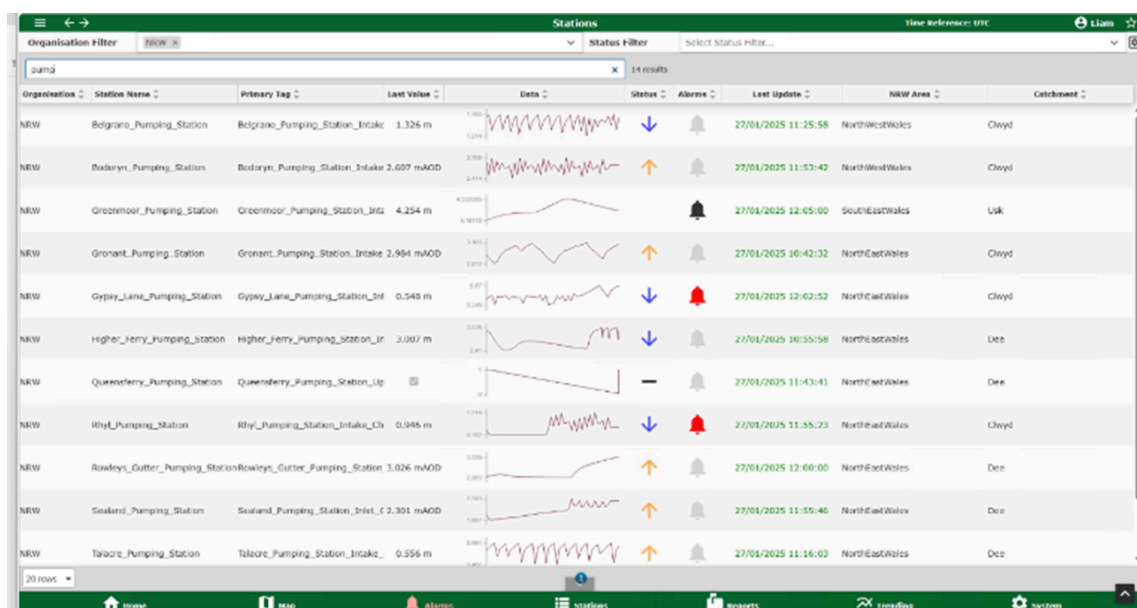
- **Third Party IIoT Platform Integration Hosting Options:** Cloud (AWS/Azure) or On-Premise (local server)
- **Exceptional Redundancy and Security:** Security, Disaster Recovery and high availability are native capabilities of MQTT infrastructures
- **Dynamic Reporting:** MQTT, OPC-UA, HTTPS
- **Visualisation:** HTML5-based dashboards for desktop and mobile access
- **Unlimited Licensing Model:** Especially suited to water utilities who need to monitor extensive networks including CSO discharge points and water quality sensors

## Data Presentation

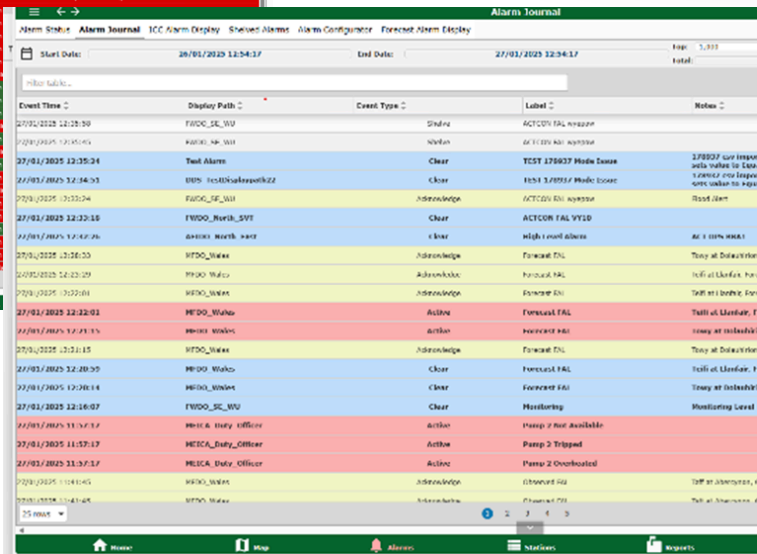
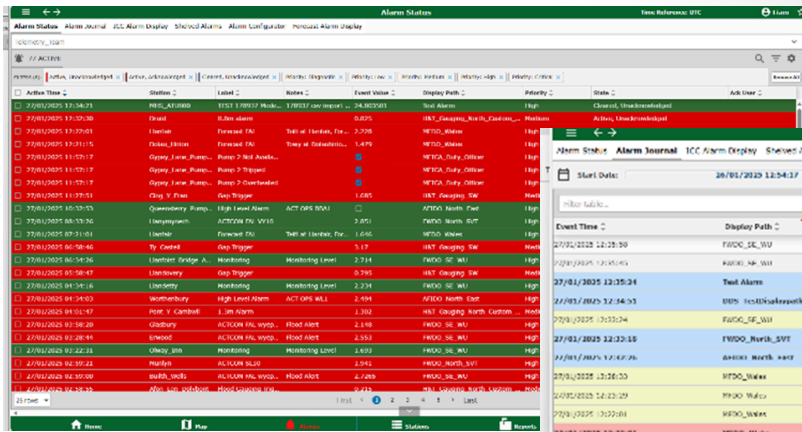
### Intuitive and Easily Configurable

The nature, data type and manner of presentation is totally flexible and readily configurable to meet evolving requirements. Granular information will be presented through comprehensive alarm and event logs, and performance graphics.

Custom screens provide relevant information in a manner, which is appropriate to the audience and the individual user, with authorised users provided with a drag-and-drop screen-build option to facilitate the creation of screens for their specific areas of interest or preferences, while templates are created for commonly used screens.



Site Summary Display



### Alarm and Event Logs

#### Monitoring and Reporting

The AquaVision Intelligence portal will provide users with a bespoke display determined by their role and credentials with access privileges differentiated between un-authenticated (public) and authenticated users.

Members of the public who use the internet-facing portal will be presented with a landing page leading to an overview map showing the distribution and status of the monitoring stations.

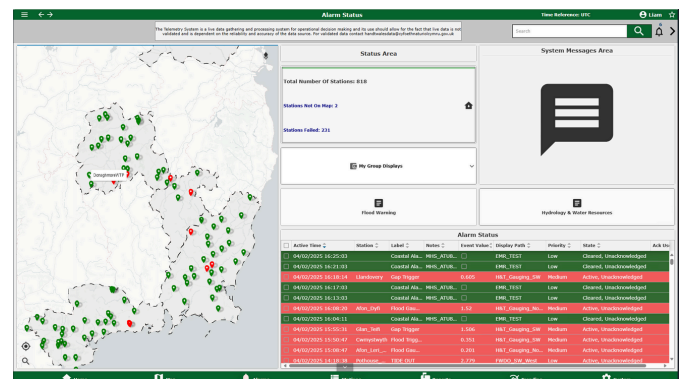
#### Navigation

Sidebar menus provide navigation to key system areas including overview map, trends, reports, alarms etc.

Navigation will be intuitive allowing users click on the site-specific icon to access the more detailed data such as recent trends, events and any contextual messages posted by the water utility relating to the site or an incident.



Web Landing Page with Navigation



Network Status Overview

### System Administration, Security and Personalisation

System administration, user and device management, performance monitoring and alarm handling is securely accessed by authorised personnel using MFA, providing an audit trail of all access requests and actions performed. All system access is role-based with users assigned according to their area of responsibility. This ensures that each user group is provided with the appropriate displays

and is restricted to performing only those tasks for which they have authoring rights (e.g. assigning alarm responsibilities, acknowledging alarms, inserting notes). Authenticated users can customise their default displays using the intuitive screen builder tool and the templating functions. This ensures that they are afforded ready access to those areas of the system that are of most significance to their role.



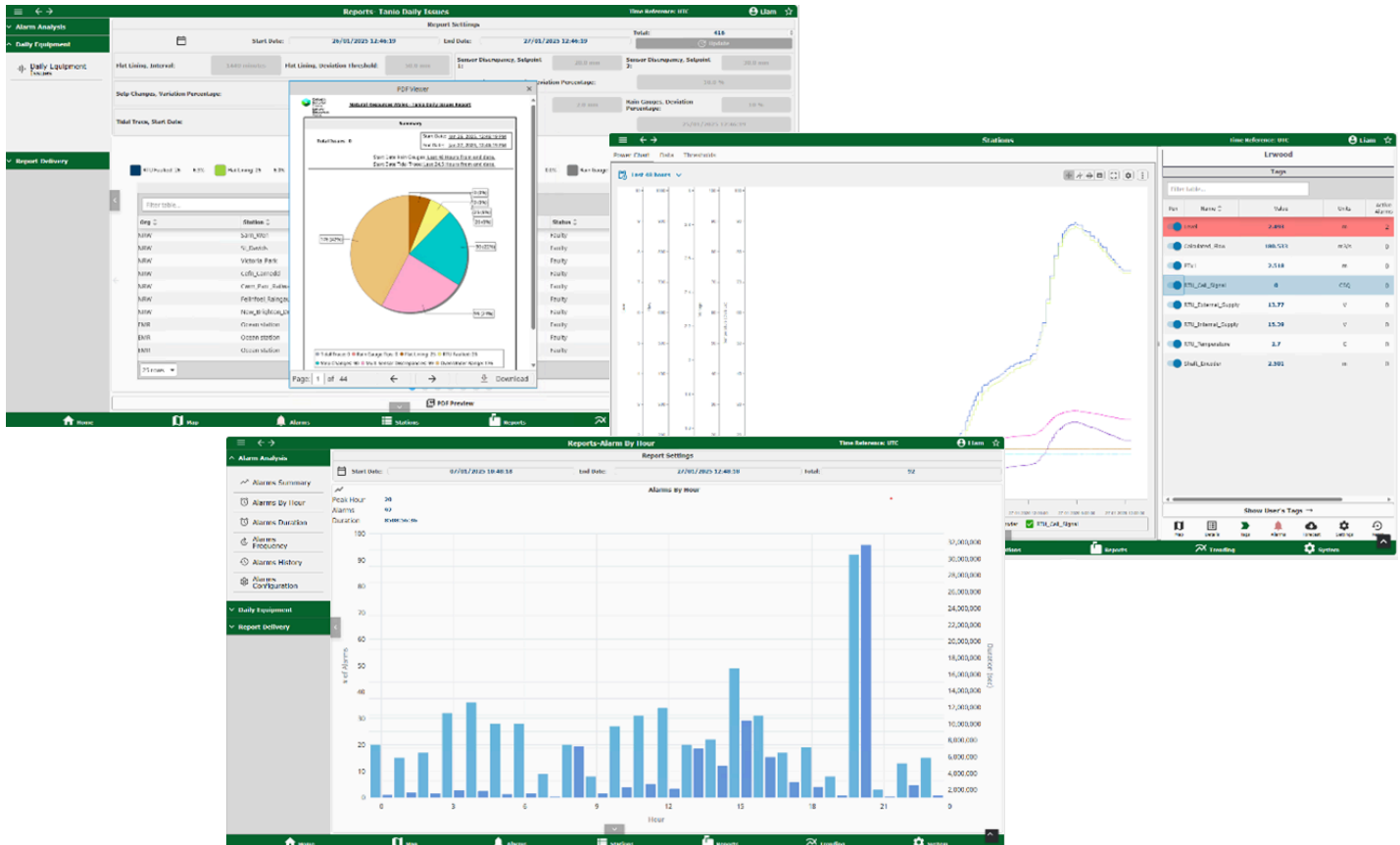
## Historical Data and Report Generation

Historical data is presented on screen and/or as PDF documents and can be configured for schedule generation and transmission or on-demand for downloading.

The extensive graphing tool creates a user-configurable display of individual or groups of signals and the timescale.

It facilitates the insertion of sticky notes to provide context to incidents or events as well as the export of sequenced data to CSV or other formats.

There is no limit on the report type with charts, tables and text compiled to meet the customer requirements.

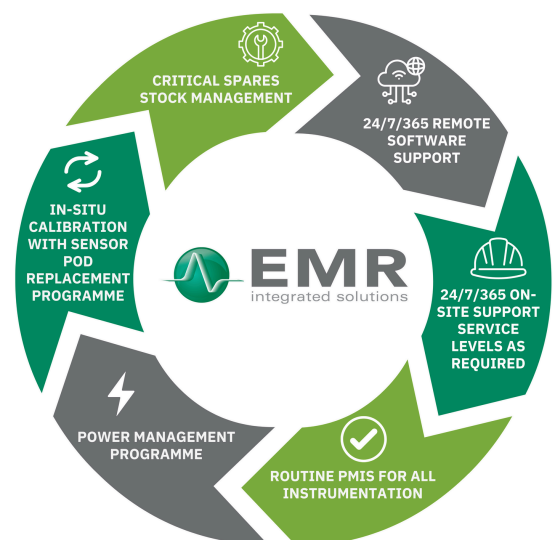


Pie, Bar, Graph Charts Report Generation

## Flexible Services Modular Design for Modern Utilities

Our services are modular in design and clients can choose from:

- Consultation
- Design
- Site Survey/Selection/Audits
- Installation & Commissioning
- Maintenance
- Calibration Management
- Hosted Network Monitoring
- Multi-year Service Level Agreements



## Our Deployment Approach Tried and Tested

Our solution is engineered and installed to facilitate high-quality, long-term data collection while minimising downtime. The siting of hardware follows strict guidelines, with downstream monitors positioned at the point of complete cross-sectional mixing of contaminants. This position is determined through documented calculations and estimations of the maximum point of harm from ammonia.

Safety and security considerations are paramount. Our solution includes protection against unauthorised access, safe maintenance access routes, and appropriate flood risk mitigation measures.

We acknowledge biosecurity protocols to prevent the spread of invasive species, protection against local catchment hazards, and compliance with health and safety policies. All installations follow manufacturer specifications and include measures to prevent biofouling in areas of high nutrient concentration.

## Overall Benefits

- ✓ Ensure complete alignment with Section 82 Environment Act 2021 requirements
- ✓ Reduce compliance risk through real-time monitoring and automated alerts
- ✓ Achieve operational excellence through automated, real-time intelligence gathering and a unified view of water operations through seamless system integration
- ✓ Enable data-driven decision making with advanced analytics and machine learning
- ✓ Reduce capital expenditure with flexible licensing model
- ✓ Build public trust through transparent water quality reporting


## About EMR Integrated Solutions

EMR Integrated Solutions is a leading supplier of integrated operational telecommunications (OT), SCADA, telemetry and cybersecurity solutions across the utility, critical national infrastructure (CNI), transportation and renewable energy sectors. The company is headquartered in Ireland with offices in the United Kingdom.

Its highly experienced and industry-certified team has the expertise, engineering know-how and project management capability to deliver large, complex, integrated solutions on time and within budget.

Customers include large water utilities such as Severn Trent Water, Affinity Water, South West Water, Northumbrian Water and Irish Water. Our portfolio also serves renewable energy providers, transmission system operators (TSO) and distribution system operators (DSO) for gas and electricity and national transportation providers. To date we have deployed our solutions for customers in Ireland, United Kingdom, France, Italy, the Netherlands, and Cyprus.

# Work with a Trusted Utility Partner

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