

# CASE STUDY

Water Utilities



**Integrated SCADA and Telemetry Network for  
Monitoring of Disinfection System for Irish  
Water**

## COMPANY OVERVIEW

# IRISH WATER



The company's mission is to ensure that all customers receive a safe and reliable supply of drinking water and have their wastewater collected and safely returned to the environment.

As Ireland's national water utility, Irish Water is responsible for providing water and wastewater services throughout Ireland.

Irish Water commits to protecting the environment in all its activities and supporting Ireland's social and economic growth through appropriate investment in water services.



# SELECTION AND SYSTEM DESIGN

In 2018 EMR was awarded a contract for the provision of an integrated SCADA and telemetry system for the monitoring of newly-installed disinfection systems in small treatment plants and storage facilities across the west of Ireland covering Mayo and Leitrim.

The design of the system was undertaken based on the URS prepared by Irish Water and involved a number of HAZOP and other workshops with participants from Irish Water, EMR, the M&E contractor and the local authority who are the Irish Water operations partner.

Based on the agreed URS, EMR carried out field surveys which determined the nature of the sites, installation conditions, communications network availability and any access constraints or safety concerns.

This was followed by the development of an FDS which detailed how we proposed to meet the requirements of the URS with reference to the Irish Water standards.



Based on the outputs from the field surveys, the decision was made to use 3G/4G/LTE routers at the majority of sites with satellite used for the most remote locations, where cellular service was insufficient to sustain the required system availability.



# THE SOLUTION

## SOLUTION COMPONENTS

- Installation of ca. 30 RTUs
- Integration with PLCs installed by others as part of the M&E contract
- Installation of a cloud hosted SCADA server
- Installation of all communications and networking infrastructure
- End-to-end commissioning of the system

### RTU Design

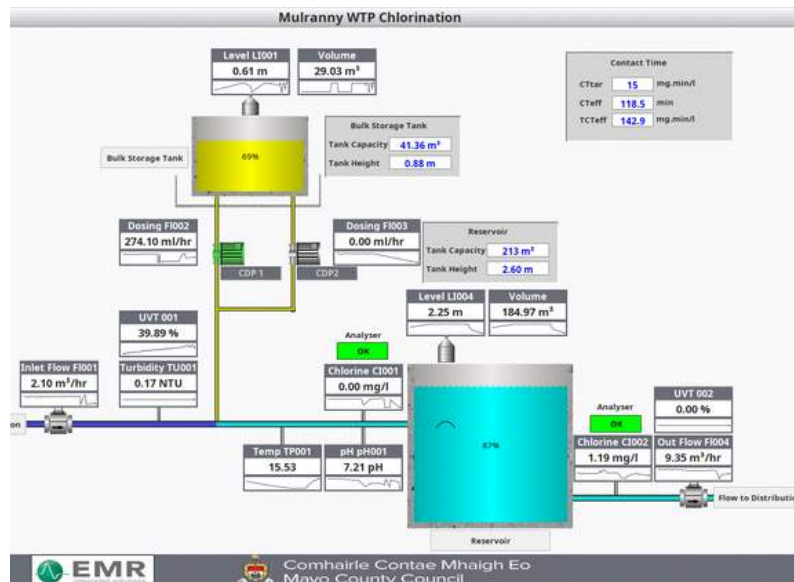
The chosen RTU was the Seprol S2000 which talks DNP.3 to the SCADA and Modbus TCP to the PLC. Design drawings incorporating the enclosure type, RTU, 3G/4G/LTE router or satellite modem, PSU and I/O interface were prepared and signed off by IW from which EMR built the wall mounted units.

### SCADA Design

The SCADA design team developed the mimic library and agreed data presentation with the client representative while the protocols for the SCADA server hosting within the local authority comms room were agreed with the local IT department together with remote access, firewall and IP addressing requirements. IO data base, scaling and addressing was agreed with the PLC provider.



MAP OVERVIEW



PLANT CHLORINATION MIMIC

# THE SOLUTION

## Systems Integration to PLCs (Programmable Logic Controllers)

The sites all contained recently commissioned Unitronics PLCs installed under the M&E contract.

It was agreed that EMR would connect to the PLC using Modbus TCP and the data tables, addresses and scaling was agreed with the M&E contractor and Irish Water.

In order to smooth the field integration EMR carried out bench testing of the Unitronics/RTU interfaces in our workshops before attending site and this proved useful as issues were discovered with the setup of the PLC which we were able to have addressed by the PLC programmer before we attended site.

## End-to-End Testing

End-to-end testing was carried out by EMR's field engineering and telemetry teams in conjunction with Irish Water and local authority personnel. Given that the PLCs had previously been commissioned by the M&E contractor this testing generally involved verification that the data presented on the SCADA screen corresponded with the data displayed on the local, PLC connected HMI.

Where discrepancies arose, these were investigated by EMR's technicians with signals traced to source to check validity, status and scaling. Where errors were identified these were addressed to the appropriate person/organisation for rectification.

In most cases these revolved around changes to the scaling of instrumentation during commissioning or maintenance by the M&E contractor and the problem could be addressed remotely by EMR's telemetry control centre personnel without revisit.



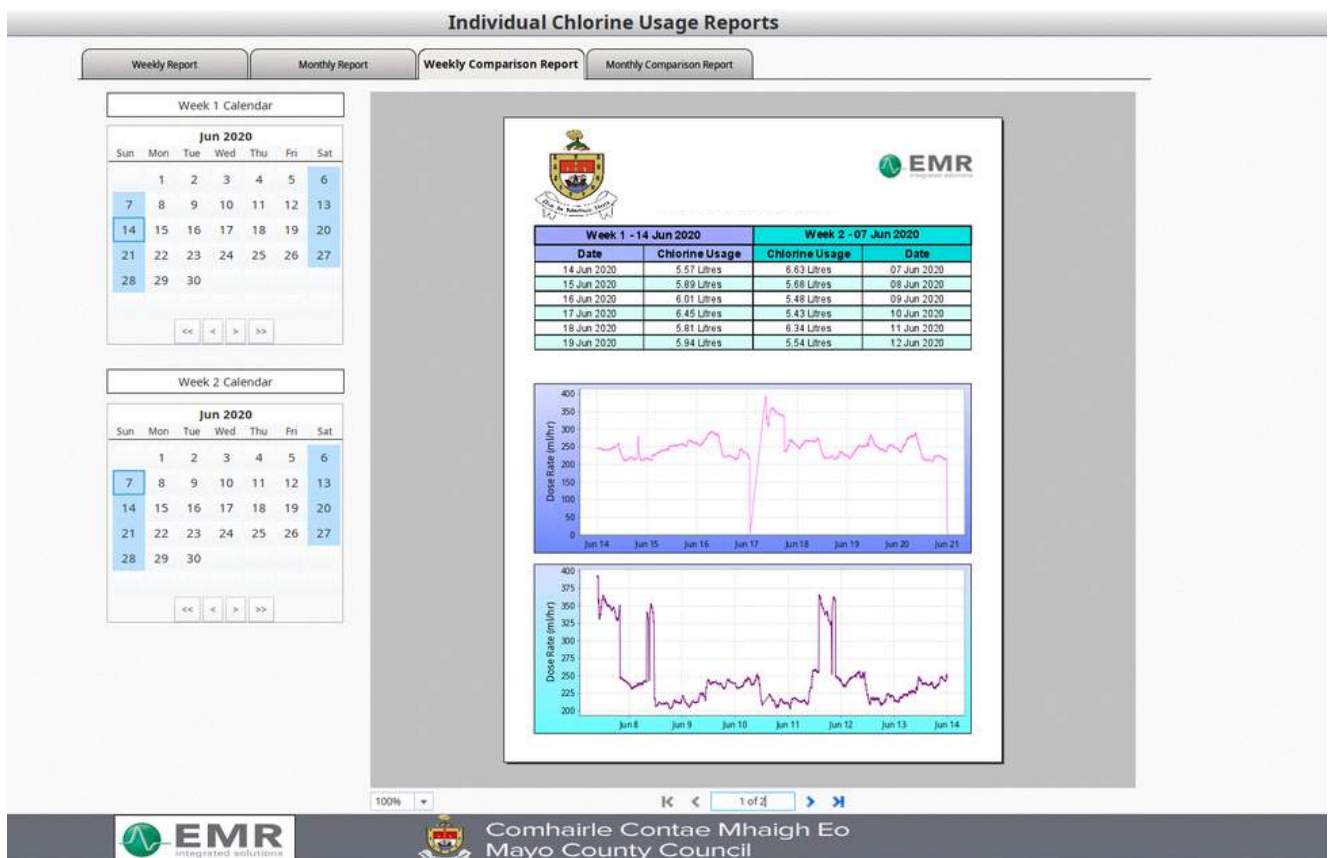
TREND SET-UP SCREEN

# THE SOLUTION

## Training and Handover Documentation

Once commissioned, training was provided to system users and maintenance personnel through a combination of on-site and on-line sessions while user manuals, as-built drawings and copies of the software applications were provided a part of the hand-over.

EMR continues to host, develop and expand the system on behalf of Irish Water/Mayo County Council with the integration of existing major water treatment plants and site SCADA among the ongoing projects.



## WEEKLY COMPARISON REPORTS

## WHY EMR?

"We have a strong track record of completing similar projects for Irish Water, up and down the country. We deliver on time, on budget and to stated objectives and that's why they continue to do business with us."

Mark Quinn, Managing Director, EMR Integrated Solutions



## ABOUT EMR

EMR Integrated Solutions is a leading provider of communications, SCADA and instrumentation solutions. With a track record stretching back to the early 1980s and a management team with a wealth of industry experience, the company has established a strong, successful foothold in markets as diverse as retail, hospitality, utility, transport, telecoms and public safety.

The organisation has customers across Ireland, the UK and Europe and has the expertise, engineering know-how and project management capability to delivery large, complex, integrated solutions on time and within budget.



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