



# NORTHERN LIGHTHOUSE BOARD

## BENEFITS AT A GLANCE

- Provides a single pane of glass for real-time reporting on the status of all lighthouses, buoys and AtoNs at a glance
- Automatic notification if lights fail to activate at the appointed time, negating the need for manual checks
- Land-based AIS (Automatic Identification System) provides virtual digital addresses for hazards at sea, negating the need for NLB vessels to physically travel to site to mark them as such
- Historic data analysis provides valuable predictive information for pro-active maintenance and support
- Future-proofed technology will protect NLB's financial investment for many years to come

## THE REQUIREMENT

The Northern Lighthouse Board (NLB) currently operates and maintains 208 lighthouses and 174 buoys as well as providing radio aids to navigation (AtoN) around the coast of Scotland and the Isle of Man. The authority is also responsible for ensuring other AtoN providers such as port authorities, are conforming to international standards.

Faced with technology obsolescence of their legacy SCADA system, NLB went out to tender for a new monitoring and reporting solution that would serve the organisation for the next 20 years. Since 1998, all lighthouses and AtoNs are unmanned so timely and accurate telemetry data is crucial for NLB to support their mission-critical maritime safety mandate.

Following a competitive tender, EMR Integrated Solutions were awarded the contract.

## SOLUTION

Phase one of the project involved the design and build of a high-availability telemetry/SCADA network in hot stand-by mode with full resiliency as standard. This could simultaneously use protocol emulation for the legacy DATAC outstations while also providing robust, secure data collection across the new outstation estate based on Schneider RTUs and 4G LTE cellular networks.

All data from lighthouses and buoys is transmitted back to a centralised SCADA system, powered by Inductive Automation's Ignition platform. Thanks to a custom-designed dashboard, staff can view their full estate at a glance and this 'single pane of glass' is critical for ongoing monitoring and reporting.

The SCADA network generates data on AtoN status, light, power and other performance parameters.



## SOLUTION COMPONENTS

- Design and deployment of telemetry network across NLB's estate based on Schneider RTUs
- Installation and configuration of Ignition SCADA instance
- Design and build of custom dashboards with interactive maps, displaying 'single pane of glass' reporting on NLB's estate
- Extension of SCADA network to 'Rigwatcher' program and provision of land-based AIS for vessels and other hazards at sea
- Project management services through EMR's dedicated PMO

## EXTENDING THE POWER OF SCADA

Following the success of phase one of the project, NLB took the decision to extend the SCADA network to two other elements of their maritime remit.

Under their 'Rigwatcher' program, NLB's commercial division monitors hazards at sea. And for the many decommissioned oil rigs, formerly part of North Sea Oil this means extending monitoring and reporting to these sites, which can also pose a danger to shipping if left unmonitored.

In addition to this, EMR has provided and integrated shore-based Automatic Identification System (AIS) equipment capable of not only transmitting their own position and identification but also generating virtual AIS data for hazards at sea, which will be achieved through remote configuration in real-time, using an Ignition SCADA system. This provides essential collision avoidance for hazards, which arises from shipwrecks or the creation of exclusion zones.

## ABOUT THE NORTHERN LIGHTHOUSE BOARD

The Northern Lighthouse Board is the General Lighthouse Authority responsible for the waters surrounding Scotland and the Isle of Man.

It has been providing a vital safety service to mariners since 1786 and its service makes a significant contribution to the prevention of accidents and incidents around the coastline, safeguarding not only lives and property, but also protecting precious marine environment.

NLB operates two ships NLV PHAROS and NLV POLE STAR. The ships carry out buoy work, deliver stores and supplies to lighthouses and inspect navigation aids on oil and gas rigs in the Scottish sector.



**Joe Jeffrey,  
Delivery &  
Planning Manager,  
Northern  
Lighthouse Board**

**"The Ignition system continues to form a crucial element of the NLB's delivery of Aids to Navigation. Providing real-time data and analysis drives maintenance planning and can deliver early warning of faults allowing for timely rectification. Longer term trends also support wider organisational decisions for the future and identify areas for continual improvement whilst integration of new technologies ensures that the NLB will be able to continue its vital service to mariners throughout the 21st Century and beyond."**