

Case Study: UNESCO World Heritage Property



A modernised radio system delivering seamless, sitewide coverage with integrated safety alerts to enhance communication, coordination, and visitor operations across a large multi-site heritage estate



Communication
without compromise.

Introduction

One of Ireland's significant heritage attractions required a modernised communication system capable of supporting staff across a large, multi-site estate. The location includes a main Visitor Centre, remote archaeological areas, and a transport service linking key landmarks. The archaeological site attracts approximately 140,000 visitors annually, and two-way radios are used by both static personnel and bus drivers transporting visitors across the 3 km site.

The Challenge

The site presented several coverage and operational difficulties. The terrain is notably uneven, with hills and elevations which caused a reduction in signal strength, particularly in areas where communication reliability had been an ongoing issue. Staff regularly move between the Visitor Centre, remote landmarks, and transport routes, making seamless communications essential.

The previous DMR Conventional setup could not provide consistent coverage across the estate, resulting in blackspots and reduced clarity for both on-foot staff and mobile radio users. Additionally, no LAN infrastructure was available in some locations, creating an additional technical challenge for linking radio sites.

The organisation also required the ability to receive automatic fire alarm alerts via radio, to improve safety response times for all personnel on site.

The Solution

To address these challenges, a DMR IP-linked radio system with Site Roaming was implemented, providing unified communication between the visitor centre and archaeological sites and allowing radios to automatically connect to whichever site delivered the strongest signal. The system design integrated with the existing repeater at the Visitor Centre and included the installation of a KTI-5 interface for IP connectivity.



An NXR-1800E repeater was installed and linked to the Visitor Centre via 4G routers, with NX-3820 mobiles used for fire alarm integration and site dispatch alongside estate-wide NX-3320E, NX-3320E2, NX-1300DE2, and NX-3820E units supported by four base stations. Fire alarm telemetry enables instant alerts to all radios, while DMR IP technology improves coverage, removes blackspots, and provides automatic roaming so users remain on the strongest signal at all times.

Benefits

The upgraded system delivered several operational and safety improvements, including expanded coverage that provides reliable communication in previously weak or unreachable areas, and seamless roaming that allows radios to automatically switch to the strongest site, supporting mobile teams and bus drivers. Safety response has been enhanced through integrated fire alarm alerts that increase situational awareness and reduce reaction times, while a modernised configuration with updated channel names and individual call lists streamlines day-to-day communication. Overall, staff, dispatch points, and transport services now operate with greater clarity and reliability across all locations.

Final Thoughts

The enhanced DMR IP radio system has transformed communication across the heritage site, ensuring robust coverage, dependable performance, and improved safety features. With the ability to expand the network and integrate additional technologies in the future, the organisation now has a scalable platform capable of supporting long-term operational needs. This upgrade delivers the reliability required in a dynamic, multi-site environment where seamless communication is essential for both visitor experience and staff coordination.



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