

Location
Kings Lynn, UK

Client
Queen Elizabeth Hospital
NHS Foundation Trust

Completed
2025

Structure
RAAC 'Best Buy' Hospital

QEH is a 1960s structure that includes both RAAC structural wall panels and a RAAC roof. CPT was commissioned to assess the corrosion risk of the wall panels and implement remediation measures to manage the risk while awaiting the construction of a new hospital. Initial surveys identified limited staining, high moisture levels, as well as cracks and spalling due to corrosion.



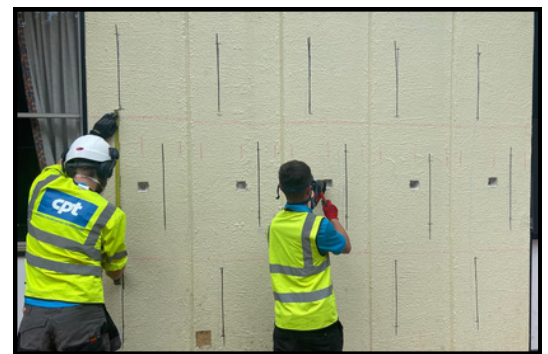
The Problem Identified

The RAAC panels exhibited deterioration stemming from reinforcement corrosion caused by moisture ingress, cast-in chlorides and carbonation. The aerated structure of the RAAC, combined with moisture ingress, accelerated the carbonation process, creating an environment conducive to expansive corrosion. Such corrosion can remain concealed within the aerated concrete, without apparent staining and delayed crack propagation. Progressive cracking and spalling do ultimately emerge, compromising the structural capacity of these elements and increasing the risk of long-term failure.



The Solution Developed

To address the corrosion risk present within the RAAC panels, a hybrid anode system was installed. RAACGuard strip anodes were chased into the RAAC panels using a proprietary embedment putty, followed by the application of an electrolyte. The system was energised for a controlled period of 7–14 days, during which the environment surrounding the embedded reinforcement was realkalised while chlorides were drawn away from the steel interface. Upon completion, the anodes were connected directly to the reinforcement, and the system was encapsulated beneath a protective coating, providing a durable and aesthetically clean finish. The success of the impressed phase was measured using pH indicators, detecting restored alkalinity in the aerated concrete surrounding the steel.



The Benefits Provided

The hybrid anode system has significantly improved the durability of the RAAC panels by increasing the pH around the reinforcement, restoring passivity, and driving chlorides away from the steel interface. The initial powered phase restores the steel to a passive state and, during the second, galvanic phase, provides a dynamic, maintenance-free protective current that responds to environmental changes, such as future moisture ingress. The system delivers robust, long-term corrosion protection, increasing the durability of the RAAC elements.

CPT Products Used

