

London Aquatics Centre, London



Project Outline

Contractor	Balfour Beatty
Location	London, England
Sector	Leisure
Disciplines Covered	Fire Detection Aspirating Detection Voice Evacuation & Public Address Accessible Toilet Alarms Induction Loop Systems
Key Points of Interest	20 Underwater Speakers 49 Addressable Accessible Toilet Alarms 13 VEPA Rack Suites

Project Overview

The London Aquatics Centre located in Stratford on the Queen Elizabeth Olympic Park complex designed by architect Zaha Hadrid. Constructed by Balfour Beatty in 2008 and completed in July 2011 ready to feature in the 2012 Summer Olympic and Paralympic events.

The London Aquatics Centre is home to a 50-metre competition swimming pool, a 25-metre competition diving pool and a 50-metre warm-up pool which all feature a movable floor. The movable floor makes the depth of pools adjustable along with the movable boom system that changes the size of the pools as and when required.

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After the Olympic games, the London Aquatics Centre, London Legacy Development (LLD) closed the Aquatics centre for redevelopment. The building was handed over to the community and used by the surrounding members of the public. The building had an initial capacity of 17,500 spectators when the Olympics took place however in 2014 when the building reopened after redevelopment the seating had been reduced to 2,800 spectators this can be expanded by a further 1000 spectators when large events occur.

The Challenge

The challenge for the London Aquatics Centre was to offer a complete package featuring fire detection, voice evacuation/public address and accessible toilet alarm systems. The systems had to meet BS5839 recommendations while taking into account various environmental constraints. Humid conditions and high ceilings were just a couple of issues present. The future redevelopment would also need to be taken into account at the design stage for the partial removal of the system when the project was downsized as part of the London Legacy Project after the Olympic Games had taken place.

The Solution

Fire Detection System - Protec offered complete fire detection coverage to the Aquatics Centre. The installation features a Protec 6000 series fire alarm system. The system consists of a fire alarm control panel linked to multiple loop expansion units located strategically around the building via a secure fire alarm network. The fire alarm system offered ten fire alarm loops which monitored and controlled the Protec 6000 series fire alarm devices around the site. The fire alarm devices consisted of a mixture of smoke detectors, heat detectors, manual call points, wall-mounted beacons across the site.

Voice Evacuation & Public Address System - Alongside the fire alarm and air sampling systems, a VEPA system was installed within the building. As the building hosted a maximum of 17,500 spectators in a confined space, the evacuation procedures put in place needed to be carried out quickly and effectively with as little distress to the spectators as possible. This type of scenario lends itself well to a VEPA system as the evacuation messages of a voice evacuation system is proven to cause less alarm and distress than that of a tone-type fire alarm sound, making the evacuation of a building a lot quicker and safer.

The VEPA system consisted of a series of 13 VEPA rack Suites to broadcast the music, public address and evacuation messages to the 582 speakers located around the complex. The VEPA rack suites were fully engineered in line with our strict QA procedures at our central production facility in Nelson, Lancashire and comprised of amplification, digital programmable matrix (DSP), five-disc CD player, fault monitoring, and battery backup.

The VEPA system offered several underwater speakers once installed in the swimming pools this broadcasted music to the synchronized swimmers during the Olympic events.

Accessible WC Alarm System - In addition to the other fire safety systems, Protec provided a disabled WC alarm system, due to the size of the building it called for a large-scale Accessible WC system. The majority of Accessible WC alarms on the market today rely on radial type wiring configurations. It becomes an issue on large scale installations as they call for a vast amount of materials and installation time. Protec decided that this project would benefit from a more bespoke system. So, with that repurposed a fire alarm panel and used it as a disabled toilet alarm system. The system benefits from one complete loop and monitors multiple Protec 6000 series fire alarm interfaces these link to the relay inputs of the 49 standalone disabled WC alarms located around the complex.

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The Aftercare

Since completion of the initial construction of the Aquatics Centre, LLD appointed Protec to carry out the works required for the redevelopment of the project. The contract reduced the size of the aquatics centre from the 17,500-seat capacity down to 2,800 and handed back to the community for sporting and community events.

Protec continues to offer a fully comprehensive service and maintenance contract for the London Aquatics Centre, providing 24 hours a day 365 days a year responsive callout service.