



Farrington Elizabeth Line Station

Project Outline

Contractor	Various
Location	London & Southeast Regions of the UK
Sector	Rail & Transport
Disciplines Covered	<ul style="list-style-type: none"> ➤ Fire Detection ➤ Aspirating Fire Detection ➤ Disabled Refuge ➤ Fixed Fire Suppression ➤ Sprinklers ➤ Water Mist ➤ Smoke Damper Control ➤ EDNE Signage ➤ Charged Fire Hydrant Main
Key Points of Interest	<ul style="list-style-type: none"> ➤ 8 Elizabeth line Stations ➤ 6 Elizabeth line Tunnel Portals ➤ 2 Elizabeth line Depots ➤ 21 Tunnel Cross Passages

Project Overview

The Crossrail project built the new Elizabeth line for Transport for London (TfL). The new line stretches from Abbey Wood in southeast London and Shenfield in Essex to Heathrow in west London and Reading in Berkshire, providing commuters with quick, easily accessible travel into the UK's Capital. The new Elizabeth line didn't just focus on adding new stations and infrastructure but also on improving what was already there. Upgrades to the existing stations included urban realm improvements such as new walking, cycling and accessible facilities alongside improved customer information offerings. It ensures the new Elizabeth line provides quicker journey times and makes the whole experience more relaxed and enjoyable for passengers.

Over the 13-year construction, construction and upgrade works have been completed on 41 stations. Ten of those were brand new stations built purely for the Elizabeth line alongside several tunnels, shafts, portals, and depots also being created. The central section is estimated to provide capacity of up to 200 million passengers a year. The line opened on 24th May 2022 during Queen Elizabeth's platinum jubilee year.

The Challenge

Safety is at the heart of the Elizabeth line project. As the railway will be transporting millions of passengers a year, this would have to be done safely and efficiently. Specialist specifications were put in place in addition to the strict fire detection and fire protection standards. The primary reason for this is the evacuation of the underground section of the railway is a lot more complex than that of an above-ground railway, with lessons learnt from historical safety incidents such as the King's Cross fire in 1987.

This would mean that the fire detection and protection systems would have to be fit for purpose regardless of the location, be it above ground in a public concourse or 20 metres deep under London in a tunnel environment. Protec would have to supply, install, and commission multiple fire alarm and fire protection systems across many Crossrail sites both above and below ground.

The Solution

Protec were employed as early as 2013 across eight Crossrail station sites and multiple Crossrail infrastructure premises, delivering fire detection and fire protection solutions for the new Elizabeth line. Protec supplied, installed, and commissioned the approved life safety systems identified in the client's specification and strict installation guidelines to ensure the system would comply with the strict assurance requirements of the project including withstanding variable everyday environmental conditions.

Fire Detection - In some circumstances, the Crossrail fire specification stated that only a particular fire detection system manufacturer was to be used. It was down to the need for integrating new systems with existing systems while keeping continuity across the London Underground infrastructure. In this instance, Protec were entrusted with procuring the specified systems to fall in line with the clients' requests. Protec fulfilled the request to provide fire detection systems across eight stations, six portals, two depots and twenty-one cross-passages. All the systems provided by Protec were then installed precisely to the specification to ensure the fire safety systems met the relevant British

Standards and client's specifications and, in turn, fulfilling LPS 1014, certification for the design, installation, commission and servicing of fire detection systems.

Fire Protection Systems - Protec designed, supplied and installed both automatic and non-automatic fire protection systems for the various stations and other infrastructure buildings. These systems are used to protect the Elizabeth line assets and to protect life in accordance with the Specifications.

The types of systems that were provided included automatic fire protection systems such as Fixed Gas Fire Suppression Systems and Low-Pressure Water Mist Systems, non-automatic systems included Charged Dry Falling Main System for use by the London Fire Brigade.

As with the fire alarm systems and for assurance, the client's requirement were that works associated with fire suppression system, had to be undertaken by an organisation with the minimum level of 3rd party accreditation compliant with LPS 1048 Level 4 Approved Company and an LPS 1204 approved company for gas extinguishing systems.

The scheme was broken up into several individual contacts over the many years of construction. Each contract was completed on time and within budget. Overall, Protec's contribution to the project was invaluable in providing first-class life-safety and asset protection systems.

The Aftercare

The fire safety systems have been handed over to the client for the systems to be serviced and maintained by their incumbent fire and maintenance companies. Going forward Protec will still feature in the service and maintenance of the life safety systems by being employed as a sub-contractor to carry out the works as and when required.