

## A new railway for old in east London

**David PLACE**  
Bridges Director  
Mott MacDonald Ltd  
Croydon, UK  
[david.place@mottmac.com](mailto:david.place@mottmac.com)



David Place, born 1951, received his civil engineering degree from Kings College, Univ. of London. He has over 30 years experience in design and construction of major railway and urban mass transit projects in the UK and internationally.

**Roger COX**  
Engineering Manager  
London Overground  
London, UK  
[rogercox@tfl.gov.uk](mailto:rogercox@tfl.gov.uk)



Roger Cox, born 1954, received his civil engineering degree from The City University, London. He has worked on the design and construction of rail and station infrastructure in London for over 30 years, primarily major interchanges on the Underground.

### Summary

The East London Line extension is one of the most intensive railway reconstruction projects undertaken in the UK. An existing operational railway with Victorian infrastructure has been taken out of service so that it can be extended and upgraded to provide a high quality metro style passenger service across London in readiness for the 2012 Olympics. The project comprises three distinct elements: skirting the east side of the city's financial district. There is a new build 0,85km elevated section that forms the link between a disused railway viaduct built in the 1860s that provides a route northwards from the City, and a subsurface branch of the London Underground built in the 1870s that extends beneath the River Thames into south east London through Marc Brunel's historic tunnel (completed in 1843).

**Keywords:** Urban renewal, railway bridge construction, refurbishment, maintenance, fire safety.

### 1. Introduction

Passenger service on London Underground's East London Line (ELL) closed in December 2007 for the upgrade and extension of the railway. Built by a joint venture of six railway companies that had purchased Marc Brunel's Thames Tunnel in 1865, this line had some of the oldest civil engineering infrastructure on the London Underground network. The line was opened from New Cross Gate to Wapping in 1869. A northward extension, mainly in cut-and-cover tunnel, from Wapping to Shoreditch opened in 1876, and at Shoreditch a connection was made with the Great Eastern Railway to give access to Liverpool Street station. This 9km route was operated by steam trains until the line was electrified in 1913.

North of the City, the North London Railway (NLR) had built a 3km extension from a triangular junction at Dalston where there was a new station, with three tracks running southwards, mainly on the Kingsland viaduct, to Broad Street station on the edge of the City. When opened in 1865 there was intermediate station at Shoreditch, and another was added at Haggerston in 1867. The railway was such a success that the viaduct was widened for a fourth track in 1874. The line was electrified in 1916 and, despite declining passenger numbers in its latter years, continued in service until 1986.

In 1933 the East London Line became part of London Underground (LU), operating as a branch of the Metropolitan Line until the 1980's when its separate ELL identity was restored. Plans to extend the ELL northwards by taking over the NLR Broad Street branch were first formulated in the 1980s. After a public inquiry in 1994, the Transport Works Act (TWA) Order for the Northern Extension was obtained in 1996. The line was temporarily closed in 1995 to carry out work to the 150 year old, 350m long brick lined Thames Tunnel [1], and to construct Canada Water station to provide