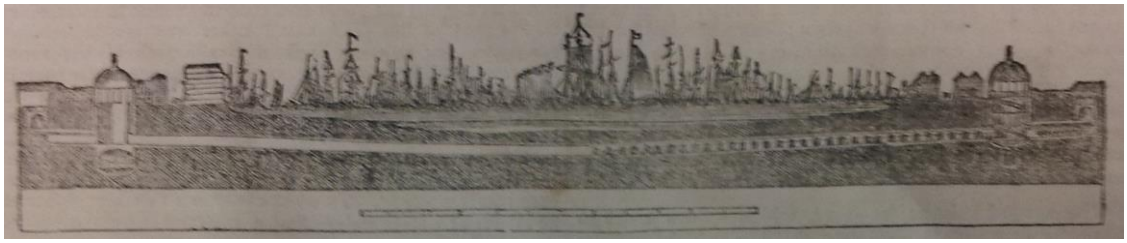
Transport for London

TfL Corporate Archives Research Guides

Research Guide No 25: The Thames Tunnel

The Thames Tunnel as it stands today was the brainchild of the French engineer Marc Isambard Brunel (1769-1849), and was originally intended for the passage of freight to serve the adjacent London Docks as well as for pedestrians. Finance was obtained from private investors including the influential Duke of Wellington. The Rotherhithe/Wapping site was chosen and the Parliamentary Bill for the construction of the tunnel received Royal Assent in June 1824 with Brunel as Chief Engineer.

The year 1825 saw the formal opening of work with the sinking of a shaft at Rotherhithe, with the boring of the tunnel commencing later that year. In 1827 Brunel's son, Isambard Kingdom, who had been acting as resident engineer, was officially confirmed in the appointment.



The method of tunnelling was to construct a shield, which was basically an iron frame containing a number of cells that were each occupied by a single miner. This shield would sit in contact with the tunnel face and each miner would dig out small areas of the face. When one section of the face was complete, the shield would be propelled forward by jacks at its rear. This concept forms the basis of tunnelling work today, albeit with more sophisticated technology.

Almost from the start, the project was beset with problems. Being the first known tunnel to have been constructed beneath a navigable river, flooding was frequently a problem. The first major flood occurred in 1827, 549ft of tunnelling having been completed. That same year, Marc Brunel suffered a paralytic stroke. A second major flood occurred in 1828; six men were killed and Isambard was badly injured, being laid up for several months.

The miners worked in foul air conditions, with the sewage-laden river water leaking into the workings emitting methane gas. One of the inundations was caused by gravel-dredgers in the river resulting in the river bottom being too close to the top of the shield. A bed of iron rods was laid on the bed of the river and bags of clay were dumped on top in order to seal the hole and allow pumping of water from the tunnel to begin.

In August 1828, the tunnel was bricked-up after a new issue of shares failed to raise adequate money.

In 1834, the first part of a £270,000 Treasury Loan was made over to the Thames Tunnel Company. The following year, the new shield was installed and tunnelling restarted. Further floods occurred in 1837 and 1838. The following year the tunnel reached the low-water mark on the north (Wapping) shore and in 1840 land was acquired for the Wapping shaft. In recognition of this achievement, Marc Brunel received a knighthood.

Finally in 1841 tunnelling work was complete and the tunnel paved and fitted out for pedestrians, although the 40ft wide spiral roadway approaches that would have permitted horse-drawn traffic to use the tunnel were never built. Access remained via long stairways at both ends, which were not conducive to use by pedestrians and it also suffered from competition from existing ferryboats, there being no other way of crossing the river in this vicinity.

The 1200ft tunnels - there were two side-by-side with a number of cross-passages - opened to pedestrian traffic in March 1843 with all due pomp and ceremony and a toll of 1d. During the first twenty-four hours 10,000 people had paid to enter and over the following weekend over 10,000 people per hour were visiting. The total number of visitors reached one million by the following July, in which month Queen Victoria and her entourage visited.

The overall cost of the tunnel, including fitting-out was £634,000.

The tunnel was lined with alcoves and occupied from the start with numerous attractions for the visitors: traders selling refreshments, knick-knacks and souvenirs of every description. An annual Fancy Fair was organised in the tunnel with musicians, tightwire artists, dancers and other attractions. Marc Brunel died in December 1849, followed by his famous son, Isambard Kingdom Brunel, ten years later. During the late 1850s the tunnel, having lost its appeal, was becoming seedy and run-down, the haunt of tramps and drunkards.

At the time, railway construction was in full-swing and the tunnel was sold for £200,000 to the

newly-formed East London Railway Company, incorporated in 1865. This line was to connect the existing railways south and north of the Thames.

The tunnel opened to London Brighton & South Coast Railway (LBSCR) trains in December 1869, operating from New Cross (now New Cross Gate) to Wapping & Shadwell (now Wapping). Wapping station was constructed in the tunnel's original entrance shaft. Much of the tunnel's architectural features were obscured or obliterated.

Whilst the East London Railway owned the infrastructure of the tunnel, passenger services were operated by the LBSCR and later the South Eastern (SER) and Great Eastern Railway (GER).

For what was a relatively minor stretch of railway, the line saw the involvement of a number of significant railway companies. For example, a meeting of the East London Railway Joint Committee in 1897 involved representatives from the Brighton company (LBSCR), the South East & Chatham Railway (SE & CR), South Eastern Railway, District Railway, Metropolitan Railway, the East London Railway and the Great Eastern Railway (GER). As well as passenger traffic, the line was used for goods trains, quite appropriate considering that the movement of goods was the original purpose of the tunnel.

South of the river, a connection was built from Surrey Docks (now Quays) to Old Kent Road in 1871. The line was extended northwards to Shoreditch in 1876, with a connection to the GER into Liverpool Street. In 1880 a spur was opened to New Cross and in 1884 a connection to what is now the District line (the St Mary's curve) opened, enabling through workings to the District and Metropolitan Railways.

The line was electrified in 1913, with services from New Cross and New Cross Gate station to Shoreditch, and to South Kensington via Edgware Road.

After the 1923 Grouping of the railways, goods services over the line were provided by the London & North Eastern Railway, with the Metropolitan looking after passenger services.

The line became part of the Underground system with the formation of the London Passenger Transport Board in 1933, having received various names over the years. Originally known as the East London Branch and regarded as part of the Metropolitan line, it became the East London Section in 1970 and later the East London line.

Passenger services via the St Mary's curve ceased in 1941and services settled down for many years to become a shuttle between New Cross or New Cross Gate to Whitechapel, with Shoreditch eventually reduced to a peak hours service. Freight services over the line and through the tunnel ceased completely in 1962, with only the occasional special passenger train through to Liverpool Street main line station until 1966, when the connection was lifted. The connections at the southern end were removed, with the only link with the rest of the Underground system being via St Mary's curve for stock transfers.

Surface-type rolling stock of various types was used on the line until the 1970s, when replaced by 1938 type tube stock. This, in turn, was replaced by 'A' stock from the Metropolitan line.

The tunnel was closed in 1995 for refurbishment, leading to a controversy over planned 'shotcreting' with concrete, which would have obliterated its original appearance. Architectural interests won the day with Grade II* listing of the tunnel in March 1995. An agreement was reached with London Underground to leave a short section at one end untreated and more sympathetic treatment of the rest of the tunnel. The route re-opened in 1998, much later than originally anticipated.

In December 2007, the line was closed entirely for tracklaying and re-signalling prior to reopening in April 2010 as part of the new Overground network. This resulted in a complete transformation in the services over the East London line and through the tunnel. Connections were reinstated at New Cross Gate, where a new flyover was built enabling through services from West Croydon and Crystal Palace to Dalston Junction via a brand-new station at Shoreditch High Street. Services were later extended to Highbury & Islington, connecting with existing National Rail lines and the Underground.

At Rotherhithe, a plaque commemorating the Brunels and the tunnel was unveiled. The Brunel Engine House at Rotherhithe, which had been built to house the drainage pumps for the tunnel, became the Brunel Museum and during the 2000s was refurbished and enlarged. The original access shaft of 1825 had been capped with concrete during World War II and now forms part of the museum.

Walking tours of the tunnel, during periods of closure, are arranged on occasions.

There is a considerable amount of material on the Thames Tunnel to be found in the TfL Archive, principally the following:

Reference Number	Description
LT002009/574	Assignment dated May1695 relating to land in Rotherhithe that was to be used by the future Thames Tunnel Co.
LT002009/227; LT002009/228; LT002009/229	Conveyances relating to land in Wapping adjacent to the (site of) the tunnel dating from 1671 and 1870.
LT002009/231	Indenture dating from 1870 referring to the Conveyance of land on the south side of Wapping abutting on the east side of the shaft of the tunnel.
LT001393/001	Scrapbook including articles concerning the construction of the Thames Tunnel and Metropolitan Railway 1829-1921.

Reference Number	Description
LT000407/159	Contract for the original electrification of the East London line in 1913.
LT000407/170	Papers from the General Post Office concerning protection of their wires through the Thames Tunnel (1912-13).
LT000407/148	Correspondence from 1921-22 between the Metropolitan Water Board and the South Eastern and Chatham Railway regarding the possibility of running a water main through the tunnel. This did not proceed due to clearance problems and the risk of flooding in the event of the pipe being breached.
LT000407/149	Correspondence dating from 1922 between the Metropolitan Railway, the South Eastern & Chatham Railway, and other interested parties concerning fears that pile-driving taking place in the vicinity of Wapping station due to building works, might imperil the safety of the tunnel.
LT000644/044	Minutes of the East London Railway Joint Committee Meetings relating to Air Raid Precautions for the tunnel (1943).
LT000644/127	Letters from the London Brighton & South Coast Railway (LBSCR) to the East London Railway Joint Committee regarding a police report of 1885 concerning an anticipated 'outrage' in the tunnel, and reports from the LBSCR Police and Secretary of State (Home Department) as to how the tunnel and its associated works might be made more secure.
LT000547/317	1975 review of London's passenger rail network, including details of Ringrail as part of a public transport-orientated strategy for London.
LT001639/007	1880s plan showing property along the East London Railway to be included in the Railway's lease provisions.