

## Crossrail London Crossrail Ltd.

<b>Location:</b>	London, United Kingdom
<b>Date:</b>	2006 – 2017
<b>Structure:</b>	Underground Railroad Stations and Ancillary Structures
<b>Length:</b>	SCL/NATM Tunnel Section: Approximately 12.5 miles (20 kilometres)
<b>Cross-Section:</b>	Varies 26 feet (8 metres) to 53 feet (17 metres)
<b>Geology:</b>	Fill, Terrace Gravels and Alluvium (Gravel, Sand, Silt and Clay); London Clay and Various Deposits of the Lambeth Group (Sand, Silt, Clay); Groundwater Tables Above Tunnel Roof Elevations
<b>Cost:</b>	Approximately US \$32 Billion
<b>Client:</b>	Mott MacDonald
<b>Owner:</b>	CrossRail Ltd. (CLRL)

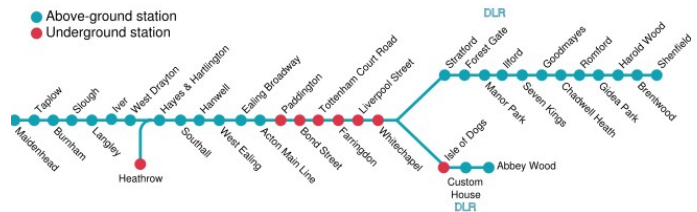


Figure 1. Tunnel alignment of new CLRL.

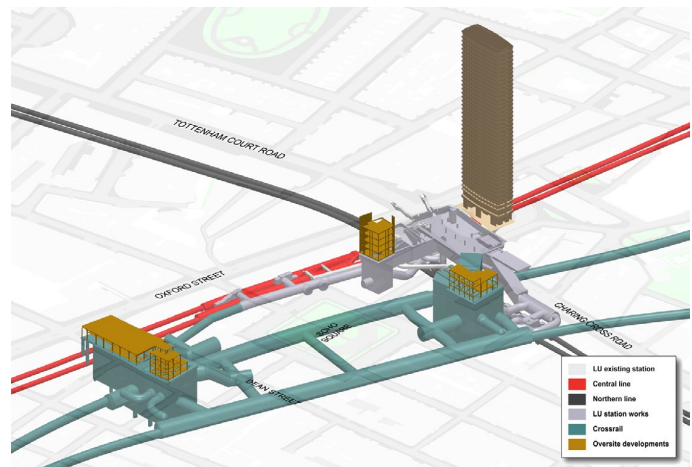


Figure 2. Three-dimensional (3D) schematic of Tottenham Court Road Station. (Courtesy of World Tunneling)

### Design Services Sprayed Concrete Linings:

Crossrail provides a world-class railway connection between the east and west of London.

The project's goal is to conveniently connect London's Docklands in the East via West End to Heathrow Airport. It inter-connects with major existing railway lines to the east, west, and south-east of the city. The central section is located below the busy city of London. A total of seven new underground stations are located along the tunnelled section, five of which were constructed using SCL/NATM technologies.

Gall Zeidler Consultants (GZ) provided design services for the detailed design, specifications, contract documents and construction strategy of the project's five SCL/NATM underground stations (Liverpool Street, Whitechapel, Bond Street, Tottenham Court Road and Farringdon). The design services also included SCL/NATM ancillary subsurface structures, including ventilation and access / egress shafts, turn-out caverns and adits.

Gall Zeidler Consultants provided senior SCL/NATM technical representatives on site during the construction and the handover period.

All tunnelling works have been completed and the line is expected to be in operation from 2019.



Figure 3. High-rise building along tunnel alignment.