

# National Grid Cable Tunnel

Client: Costain/Skanska Joint Venture

Location: London

Value: £1.3m

Duration: 12 Months



Excavation of shaft



Birds-eye view of shaft

## In Brief...

National Grid supplies electricity through transmission networks, operating at 400kV and 275kV which connects to the three substations at Hackney, St John's Wood and Willesden to supply points where power is fed into the local distribution system.

Within London a network of 275kV cables were installed in the 1960's which needed replacing as they had reached the end of their technical life. Due to increasing electricity demands the cables were upgraded and replaced with 400kV cables which were installed within a deep level tunnel.

## Customer Benefits...

- Polypropylene fibres were used in place of the standard steel fibres within the third shaft. This design and material development provided both cost savings and health and safety benefits whilst still meeting the performance specification for the shaft lining
- We performed a range of preparation work at Channel Gate Road and Willesden which included diversion of water mains, underground power, waste water, gas mains and management of contaminated ground including high quantities of asbestos. This ability to undertake a one stop shop approach reduced interfaces and sped up the process of site clearance to enable a timely start to the main works
- We worked collaboratively with other contractors on site. Liaising with them directly to create an effective and safe traffic route and access walkway, as some of the sites shared access with other contractors

## Technical features...

Barhale's role as shaft and tunnelling specialists, was to deliver the first shafts on the project, on time, on budget and to spec in order to allow the main project tunnel construction to proceed to programme.

Two of the shafts constructed were on the critical path for the first tunnel drive and involved the use of SCL.

- Channel Gate Road Shaft - 12.5m ID x 38m deep, with 6m of underpinned segmental rings followed by 32m of SCL (Sprayed Concrete Lined) shaft incorporating TBM eye structures and a cast in situ reinforced mass base plug
- Willesden 1 Shaft - 12.5m ID x 37m deep with 17m of underpinned segmental rings supplied by FP McCann's followed by 20m of SCL shaft incorporating TBM eye structures and a cast in situ reinforced mass base plug
- Wimbledon 1 Shaft - 15.0m ID x 37m deep with 17m of segmental rings, installed as wet caisson and underpin, followed by 20m of SCL shaft incorporating TBM eye structures and a cast in situ reinforced mass base plug