

DATA CENTRE

DEVELOPMENT IN HEMEL HEMPSTEAD, HERTFORDSHIRE

Team - Power | **Value** - £22m | **Voltage** - 132kV | **Capacity** - 70MVA

Client - Undisclosed | **Duration** - 18 months | **Date** - June 2023 - October 2024

Pre-construction

JSM employees completed the detailed design which included cable schedules & calculations, protection drawings, Distribution Network Operator (DNO) substation design, auxiliary transformer design, battery sizing calculations & equipment schedule.

Design approval was granted from the DNO and Client alongside other third parties such as National Highways and the Environmental Agency.

Construction

The works consisted of 16km of double 132kv circuits in highly congested roads of which, four were major trunk road locations. These works were completed over numerous weekends using 24 hour shift working to ensure that the road was open to traffic during the agreed times.

As part of the route, 30 x 132kv joint bays and 60 x fibre chambers were also part of the build. In addition to this there was a horizontal directional drilling (HDD) direction drill (265m) under the M25 motorway and another HDD direction drill under the River Colne (170m).

In total, 102,000km of 132kV cable was installed and 33km of 24 fibre was installed.

Post-construction

Works included hot commissioning, energisation and providing As-Built records. Monitoring of the M25 for 4 weeks, post HDD.



Principal contractor

Auxiliary transformer design

Compound construction

Compound earthing

DNO switchgear & substation

Motorway monitoring

Civils

132kV Cables & Duct installation

Horizontal Directional Drilling

High-congestion traffic area

Jointing & Terminations

Hot and cold commissioning with Energisation

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Project challenges

Challenge

Horizontal Directional Drilling (HDD) underneath M25

This aspect of the project was extremely challenging due to the tight parameters set by National Highways as this road being drilled has the highest level of traffic seen daily in the UK. This therefore resulted in a large amount of consultancy and documentation to allow this to progress to a construction phase.

Solution

After consideration, HDD was the preferred solution. Design approval with various surveys including pre and post monitoring of the motorway running surface levels, bore hole samples with loading/settlement calculations were conducted to satisfy the highways agency that the HDD would not cause any issues to the M25 during installation. The works area had to have ground reinforcement to accept a 100-ton drilling rig.

Plant installation

Installing ducts across the River Clone.

All options were considered including a cable bridge, damming the river and a HDD directional drill was the preferred solution. Various surveys including bore hole samples with loading/settlement calculations were conducted to satisfy the Environment Agency that the works would not cause any issues to the riverbed and no possible impact to the environment or wildlife in the locality. A temporary haul road had to be installed to get the drill rig into position to set up ready for the works.

Duct installation

Installing ducts over petrol pipeline and high-pressure gas mains.

Joint survey, preconstruction, carried out with asset owners and approved method of installation (hand excavation) agreed with watching brief in place at time of works.

