

CASE STUDY

UNDERGROUND CABLE ROUTE DESIGN

PENTIR WIDER WORKS 400kV



PROJECT AT A GLANCE

Client:	National Grid
Project:	Pentir Wider Works
Value:	£61,000
Location:	Trawfynydd, North Wales
Year:	2016 - 2017
Duration:	6 Months



PROJECT BRIEF

LSTC were appointed by National Grid to assess the feasibility of a new 400kV circuit (2642MVA) within a substation site on a decommissioned nuclear generation site in a national park. With LSTCs in house overhead and underground teams it enabled cooperative working in house.

CHALLENGES

LSTC had to design a new termination tower providing a connection to a new underground circuit within the substation site. A new 400kV circuit with 2 cable per phase and an additional phase for the existing circuit was required from the new overhead connection gantry and the proposed substation termination.

OUR APPROACH

Due to the limited capacity and presence of an existing 400kV trough system a full topographical survey, utility tracing and GPR investigation were conducted to understand existing spatial capacity and apparatus within the substation. Cable system design was conducted in parallel to understand the working corridor required.

LSTC delivered a detailed cable system design that when combined with the onsite investigations allowed for a suitable methodology to be provided. With a new gantry, overhead tower design and position agreed it was then possible to provide a cable design and route to the final connection point that met the rating standards of 2642MVA as requested by the client.

PROJECT OUTCOME / DELIVERABLES

- Detailed cable design to 400kV.
- Feasibility studies for particular technical solutions.
- Full topographical surveys & on site utility identification.
- GPR survey and analysis.
- Cost estimations of technical solutions.
- Accredited staff for EHV SS working.
- Detailed ratings study including derating analysis & Thermal Resistivity testing.
- Programme delivery including estimated planning application periods and construction periods.
- Overhead tower termination design & substation termination design.
- Technical Consents, tender package and construction information & detailed design and reports were provided.