

CASE STUDY

132KV UNDERGROUND CABLE DESIGN

PROJECT TYPE & VOLTAGE

132kV EHV Cable

SERVICES

Cable Rating, Routing, Feasibility & Detailed Design

ASSET OWNER

Scottish Southern Electricity Networks (SSEN)

WORKS SUBCONTRACTED

All works completed in-house



CHALLENGE

Delivering a viable route for a new 132 kV cable circuit

Groundline was appointed to undertake the feasibility and detailed design of the 12 km Slough 5, 132 kV cable circuit, connecting Iver GSP and Slough Grid Primary Substations. Building on duct infrastructure installed during the earlier Slough 4 project, Groundline identified gaps in the existing network that threatened the scheme's deliverability. Through detailed review and targeted design development, these constraints were overcome, enabling a practical, low disruption solution for the new connection.

SOLUTION

Groundline undertook a comprehensive desktop study to prove the proposed route and resolve identified constraints.

This included cable rating analysis, selection of suitable cable sizes, development of geotechnical design specifications, and identification of joint bay locations and installation limitations. A full suite of design deliverables was produced, including route and profile drawings, joint bay layouts, cable schedules, bonding schematics, EMF and induced voltage assessments, thermal and shortcircuit ratings, an installation methodology, and supporting bills of quantities and material schedules.

Technical assessments were carried out using the latest CYME Cable Ampacity Program (CYMCAP), modelling multiple SSEN approved cable options to confirm current ratings, shortcircuit performance and soil dryout limits for a trefoil ducted installation. Construction requirements were also defined, including joint bay locations and a cable pulling strategy aligned with the existing duct orientation from Slough to Iver.

IMPACT

Reduced disruption to the local community / Lowered cost and risk

By proving the existing duct routes and developing a robust, detailed installation and pulling design, Groundline enabled the project to move forward without the need for new duct construction. This significantly reduced disruption to the local community, lowered construction risk and cost, and overcame the challenges of incomplete asbuilt records—delivering a reliable and efficient solution for the new 132 kV cable circuit.