



HS2 new High-Speed Railway Line London/Birmingham – C2C3 section

Geotechnical studies / Scheme Design and
Detailed Design

2017 – On-going



UNITED KINGDOM

Client

Joint Venture
EIFFAGE-KIER-
FERROVAL-BAM
(EKFB)
HS2 Ltd

Partners

SETEC UK, SETEC TPI,
SETEC ORGANISATION,
SETEC INTERNATIONAL,
SETEC ALS, SETEC
FERROVIAIRE

Services fees

1.3 M€

Highlights

80 km
15 viaducts
Overbridges, culverts
3 cut-and-covers
Earthworks



The Project

This project concerns the construction of the High-Speed 2 (HS2) line in the United Kingdom, a high-speed railway line linking London to Birmingham (phase 1), and then to Manchester and Leeds (phases 2a and 2b) in the north of England. Phase 1 of the project, currently under way, concerns a 200 km-section between London and Birmingham. It has been split down into 7 civil engineering packages whose Design-Construction contracts have been awarded to various construction joint ventures. Two of these packages – packages C2 (North Portal Chiltern Tunnels to Brackley) and C3 (Brackley to South Portal of Long Itchington Wood Green Tunnel) – have been assigned to the Eiffage-Kier-Ferroval-BAM (EKFB) joint-venture. The design of the civil engineering works for the C2 and C3 central packages is ensured by the Design Joint-Venture comprised of Arcadis-Setec-Cowi (ASC).

Packages C2 and C3 cross rural areas in the Midlands, covering a distance of 80 km. They include 15 viaducts, 3 cut-and-covers over a total length of more than 6 km, very high earthworks (embankments up to a height of 14 m and excavations down to a depth of 30 m), as well as several bridges and road realignments.

Key features

- Coordination of the geotechnical issues
- Geotechnical Detailed design
- Participation in the Optimisation team
- Cat. 2 and Cat. 3 checking

Our Services

The geotechnical issues identified along C2 and C3 are varied and, in particular, include risks of dissolution in the chalky formations, settlement under the embankments and, in conjunction, heave phenomena in the excavations in the clayey formations, as well as the presence of landslide shear surfaces that could be reactivated following the earthworks.

In addition to the ongoing ground investigation campaigns (boreholes, in-situ tests, geophysical tests, laboratory tests), it is also planned to carry out a variety of field trials: loading tests, trial embankments/cuttings, etc.

The C2 and C3 Scheme Design were carried out from the autumn 2017 to the end of 2019. The Detailed Design studies have begun at the beginning of 2020 : for this Detailed Design phase, various setec subsidiaries (setec international, setec tpi, setec als, Terrasol, setec organisation), and our partners Cowi and Arcadis, are working together to carry out the studies (earthworks, alignment, civil engineering, geotechnics for the earthworks and structures, highways, drainage, landscaping and BIM) on a geographical section covering a distance of approximately 25 km among C2 and C3 packages.

In this multidisciplinary team, Terrasol is in charge of coordinating the geotechnical issues, is more particularly involved in the geotechnical design of 4 viaducts and 21 overbridges, and also participate to the Optimisation team, on the whole linear of C2 and C3. Finally, Terrasol contributes to the checks, both on critical assets of C1 package (Category 3 checking) and for some assets of C2 and C3 packages (Category 2 checking).

terrasol

Immeuble central seine
42 - 52 quai de la rapée
75583 Paris cedex 12 France
Tél +33 1 82 51 52 00
Fax +33 1 82 51 52 99
terrasol@setec.com