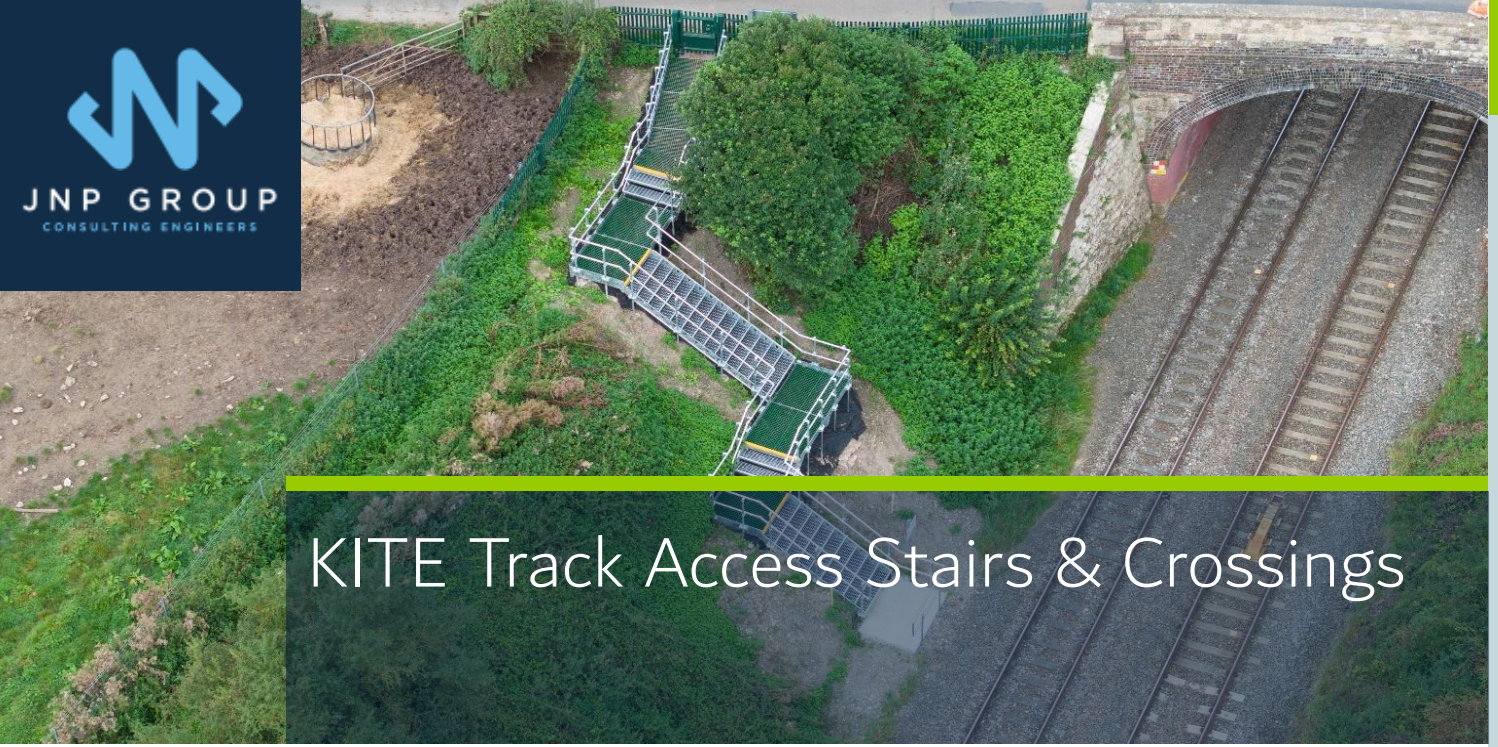

KITE Track Access Stairs & Crossings

Case Study

Client: KITE Projects Limited

Design Services Provided

- Geotechnical services
- Slope stability assessment
- Design of foundation solution and localised bespoke retention
- Provision of Form G drawings including DRA & PRL
- Production of Network Rail submission
- Attendance at IDC meetings
- Responding to DRN comments and providing AFC information
- Provision of As Built drawings

Overview

These schemes focus on new and upgraded track access points for Network Rail personnel together with improvements to public foot crossings.

Track access points are for Network Rail personnel to safely reach the track for asset maintenance purposes. They have been installed across the network in a variety of locations; in cuttings and embankments, with consideration given to overhead line equipment, third rail, and other site constraints, including service ducting, culverts, bridge abutments, and steep slopes.

The crossings have been designed for use by the general public to create safer crossing points on established footpaths across Network Rail land in the form of upgraded stairs, walkways, gates, stiles, signage, and crossing surfaces.

The stairs on these schemes are a KITE design and relatively straightforward to assemble. The small parts enable construction workers to easily carry the parts onto sites that are frequently difficult to access and build in situ.

JNP Group provided designs for every site as well as attending meetings with Network Rail and the contractor to agree on a compliant solution to give the required access.



Project Solutions

These schemes often provided logistical issues due to the locations of the access points. JNP Group carried out a review of every site to ensure the best possible solutions for clearance from the track. Some small areas of retention are often required in accordance with Network Rail standard drawings or, if the conditions require it JNP Group carry out bespoke retention designs. In addition, slope stability assessments were carried out where appropriate, and the design layouts were reviewed to achieve compliance with Network Rail Standards.

Other considerations taken into account in the design stage are the ground conditions, excessive embedment depth, and trough routes. JNP Group's solution was generally to base the design around poor ground conditions to limit the amount of GI required. Trough routes were also a consideration and are often located in the same area as the stair foundations. The KITE system is adaptable, and foundation posts can be arranged to avoid troughing routes. In addition, stair landings have removable panels to ensure access to the troughs can be provided.

In some access stairs locations, the proximity of overhead line equipment and third rail prevents the use of conductive materials. To combat this, non-conductive GRP handrails and cover plates for the stringer and kickplate are used to avoid electrical conductivity issues while also providing a corrosion-resistant, low-maintenance solution.

The crossing designs ensured that public access was maintained using the safest possible designs. This included new stiles or kissing gates where there was a boundary with neighbouring landowners and installing clear warning signage to alert users of associated hazards.



Case Study

Project Challenges

- Insufficient clearance from track in cuttings.
- Overhead line equipment and 3rd Rail
- Steep embankments
- Trough routes
- Excessive embedment depth
- Ground Conditions
- Interdisciplinary Issues

Project Solutions

- Site reviews, adapt plans with localised areas of retention.
- GRP handrails and cover plates in areas where conductive materials cannot be used.
- Slope stability assessments, design layout reviews.
- Adaptable foundation post layouts, removable landing panels to provide access.
- Bespoke retention designs
- Designs are based on poor ground conditions to ensure compliant designs.
- Interdisciplinary checks are carried out to ensure that all asset managers are comfortable with the provided solutions.

JNP GROUP
CONSULTING ENGINEERS

Summary

JNP Group provided the overarching design for each site for submission to Network Rail. Factors such as slope stability, ground conditions, proximity to overhead line equipment, trough routes, culverts, bridge abutments, and embedment depths were taken into consideration. JNP's multidisciplinary approach ensured that all asset managers were comfortable with the provided solutions, resulting in fast and efficient installation of KITE track access stairs and crossings that complied with Network Rail standards.









Case Study

JNP Group Project Team

Project Manager:

Vicky Walker

Project Team:

Shuaib Tailor, Luke Asquith-Watson, Joshua Gardner

