Background

WCPSU Phase 3 converts the traction power supply on the West Coast Main Line (WCML) from a booster RC classic system to a 25-0-25kV Auto-Transformer system, between North Wembley and Carstairs.

Phase 3 is split into three stages; the first of which is Phase 3A and runs from North Wembley to Whitmore. Keltbray Rail has been commissioned to undertake the design, supply and installation contract for Phase 3A.

The scope is to design, supply and install approximately 370km of Autotransformer Feeder wire and all associated SPS, cabling, return screening conductor (RSC) and cross bonding. This also constitutes the upgrade of the existing system to be capable of withstanding a 12kA fault current, meaning upgrade of several Mk1 isolators and installation of continuity jumpers at locations along the route.
Project Details

For this project WHRSL were engaged to provide the along track design of the Auto-transformer Feeder Cable for both aerial and insulated cable route, track bonding including the Return Screening Cable route, removal of the Insulated overlaps associated with removal of the existing booster transformers, replacement of track side isolators were the fault conditions are greater than 6kA. The works also includes the assessment of the routes to maintain not only signal sighting but also mechanical and electrical clearances to signals.

Due to the volume of design work required and the time constraints applied by Network Rail, a collaborative approach was required for the delivery of the design.

The following being examples of the innovative approach taken by WHRS:

• Production of enabling works design in schedule format, accompanied with an ATF design handbook, in lieu of full AFC design packs. This facilitated the installation of the small part steelwork in the low risk areas without the need for cross section and layout drawing, which accelerated the construction programme.

• Progressed the return screening conductor (RSC) and the across track bonding design in schedule format to mitigate delay in receiving source records.

• Collaborative approach to the Network Rail acceptance of design process as there are over 200 Form B design packs due to be issued. WHRS facilitated and provided design representation for the Network Rail IDR, which allowed any questions or issues arising to be resolved immediately, thus accelerating the acceptance period by eliminating a protruded DRN process.