



## CASE STUDY

# PAS 2080 CARBON MANAGEMENT SUPPORT FOR A MAJOR RAIL ELECTRIFICATION PROGRAMME

CLIENT: CONFIDENTIAL

LOCATION: UK

### Highlights:

- Whole Life Carbon Assessment for Complex Rail Infrastructure
- Practical PAS 2080 Implementation Resulting in Certification

## THE CHALLENGE

A principal contractor delivering overhead line equipment (OLE), route clearance and associated track interventions across a 136 km rail corridor required robust, auditable progress against carbon and sustainability requirements, including Network Rail's NR/L2/ENV/015 and NR/GN/ESD07, alongside alignment with PAS 2080 and BREEAM Infrastructure.

Arthian was appointed in April 2025 as part of the integrated delivery team to strengthen carbon management, align governance with PAS 2080, and turn complex carbon data into actionable insights. The programme supported ambitious whole life carbon reduction objectives and contributed towards a target of achieving BREEAM Infrastructure 75% ('Excellent').



info@arthian.com



www.arthian.com



+44 (0) 3301 200 151



**Arthian**



## THE CHALLENGE, CONTINUED

The programme spanned eight route sections and involved more than 70 multidisciplinary interventions. Carbon impacts were dominated by steel-intensive OLE structures and foundations, alongside route clearance and track-lowering works. The client's objectives included demonstrating a minimum 25% whole life carbon reduction and clear alignment with PAS 2080 across strategy, design and construction stages.

At mobilisation, multiple carbon datasets, reports and assumptions existed across the supply chain but required consolidation and refinement to enable effective interrogation. Several route sections were already at advanced design stages, limiting the opportunity to influence specifications. Carbon management therefore needed to focus on the most material emissions hotspots, while maintaining a clear and auditable evidence trail to support client assurance, governance and future audit requirements.

Delivery was undertaken within established engineering standards for OLE and track interventions, and required coordination across designers, contractors and specialists as lower carbon approaches were evaluated. Carbon reporting also needed to align with both client and Department for Transport expectations, including robust baselines, documented assumptions and effective change control.



[info@arthian.com](mailto:info@arthian.com)



[www.arthian.com](http://www.arthian.com)



+44 (0) 3301 200 151



## THE SOLUTION

Arthian embedded a carbon management function within the integrator team and rapidly implemented a practical, PAS 2080-aligned approach. Through utilisation of the RSSB Rail Carbon Tool, existing datasets and reports were assimilated, reviewed and refined, resolving inconsistencies, improving transparency across partners. The Carbon Management Plan was updated and finalised, clearly defining roles, responsibilities and governance arrangements.

To maximise impact within programme constraints, Arthian applied the PAS 2080 Avoid-Switch-Improve hierarchy and prioritised high-emission sources and the key decisions still open to influence. Steel OLE and foundations represented approximately 60% of whole life carbon impacts on assessed route sections, so targeted optioneering was undertaken with design teams to test specification changes, validate assumptions and reflect improvements within updated WLC assessments.

Regular collaborative working sessions were facilitated with designers, construction leads and subcontractors across electrification, route clearance and track disciplines. These sessions enabled carbon reduction opportunities to be assessed alongside buildability, safety and cost, embedding carbon considerations into routine decision-making rather than treating them as a standalone reporting task.

## OUTCOMES AND VALUE

The improved governance and usability of carbon information laid the groundwork for the delivery team to make faster, better-evidenced decisions that supported adoption of lower carbon specifications and approaches. Updated WLC assessments at the Construction-Ready Design stage demonstrated a further 10–14% carbon reduction across two route sections, building on earlier savings. Arthian's PAS 2080 support also contributed to the contractor achieving PAS 2080 certification.

This project demonstrates how proportionate, PAS 2080-aligned carbon management can operate as a practical delivery tool. By focusing on key hotspots, strengthening assurance and creating a clear audit trail, Arthian helped reduce delivery risk, protect commercial outcomes and provide confidence in carbon performance across a complex rail infrastructure programme.



[info@arthian.com](mailto:info@arthian.com)



[www.arthian.com](http://www.arthian.com)



+44 (0) 3301 200 151

