



## CASE STUDY

# DELIVERING PAS 2080 CERTIFICATION SUPPORT FOR SCOTLAND'S RAIL ELECTRIFICATION PROGRAMME

CLIENT: CONFIDENTIAL

LOCATION: UK

### Highlights:

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



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



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



+44 (0) 3301 200 151



**Arthian**

## CONTEXT

A major rail electrification programme in Scotland is delivering new electrified infrastructure across five interconnected route sections. The programme is a critical enabler in the transition from diesel traction to lower-emission electric and battery-electric rolling stock, supporting national decarbonisation objectives while maintaining operational performance across a complex, live rail network.

From the outset, the contractor identified the need for specialist, independent carbon management support to enable not only compliance with Network Rail requirements, but also the successful achievement of PAS 2080 certification. Arthian was appointed at an early stage to provide strategic and technical support, shaping the programme's approach to whole life carbon management and establishing the governance, processes and evidence base required for certification.



## THE CHALLENGE

As Principal Contractor, the delivery organisation is required to demonstrate robust and transparent whole life carbon management in line with Network Rail's environmental requirements, including NR/L2/ENV/015 1 and NR/GN/ESD072, alongside alignment with PAS 20803. This includes the establishment of repeatable processes for undertaking Whole Life Carbon Assessments (WLCA) at defined project stages, reporting carbon performance consistently, and evidencing progressive carbon reduction throughout design and construction.

The programme presents several technical and managerial challenges. The five route sections are progressing at different stages of design maturity, requiring an approach that can accommodate varying levels of data certainty while still providing credible and comparable carbon insights. In addition, the electrification works involve complex interfaces between civils, structures, permanent way, power systems and construction logistics, all of which require careful consideration within the carbon assessment process.

## THE SOLUTION

Arthian developed and implemented a targeted, PAS 2080-aligned Carbon Management Plan (CMP) specifically structured to support the contractor in achieving PAS 2080 certification. The CMP was designed as a practical delivery tool rather than a purely compliance-driven document, defining clear roles, governance arrangements, assessment stages and reporting lines across the value chain.

A strategic decision was taken to undertake a detailed WLCA on the most advanced route section (Part 5) at Engineering Stage 5 (ES5). This provided a robust baseline against which earlier-stage sections could be benchmarked as they progressed through design. The WLCA was undertaken in accordance with RICS Whole Life Carbon Assessment v2, structured to BS EN 17472, and initially focused on lifecycle stages A1–A5.



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



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



+44 (0) 3301 200 151



## THE SOLUTION, CONTINUED

Project-specific quantities, construction methodologies, fuel use and transport distances were modelled using the RSSB Rail Carbon Tool, ensuring alignment with Network Rail's wider carbon management framework and providing confidence in the robustness of the assessment outputs.

PAS 2080 principles, such as systems thinking, early intervention, transparency and continual improvement, were embedded within the CMP and supporting procedures. Implementation is ongoing, with early-stage engagement underway with designers, contractors and key suppliers to build capability and shared understanding. This has established the foundations for structured carbon data capture, future optioneering and progressive carbon reduction as design maturity increases.

## OUTCOMES AND VALUE

The structured, early-stage approach enabled the contractor to successfully achieve PAS 2080 certification, providing independent assurance that robust whole life carbon management processes are embedded across the programme.

In addition, the client benefits from:

- A clear and auditable carbon governance framework that reduces assurance and compliance risk
- A repeatable WLCA process aligned with engineering stage progression
- Improved visibility of carbon and cost hotspots to inform future value engineering
- Enhanced organisational capability and market credibility through PAS 2080 certification

### Key Statistics

- 119 STK rail corridor covered
- One detailed WLCA completed at ES5, informing four earlier-stage route sections
- PAS 2080-aligned CMP implemented across ES4–ES6
- Lifecycle stages A1–A5 assessed using industry-recognised tools and standards



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



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



+44 (0) 3301 200 151

