

AGILE. EXPERIENCED. COLLABORATIVE.

# CAPABILITY STATEMENT: RAIL

Civil engineering consultancy specialising in rail projects that deliver safe, compliant and cost-effective infrastructure.



WHITFIELD  
CONSULTING  
SERVICES

# CIVIL ENGINEERING FOR RAIL INFRASTRUCTURE

## CONTEXT

The UK and Ireland's rail industry is undergoing transformation: ageing assets require renewal, decarbonisation is essential to meet Net Zero, and passengers demand better services. Control Period 7 (CP7) and the All-Island Strategic Rail Review call for cost-efficient, integrated, and sustainable improvements across the network.

Civil engineering design plays a critical role in upgrading and modernising the railway – ensuring safety, compliance, and constructability within challenging operational constraints. At WCS we provide design that reduces risk and delivers lasting value.

## WCS AT A GLANCE

- Trusted by clients including Murphy, SPL Powerlines, Transport for London, UK Power Networks Services, Hitachi Energy
- Major rail projects include Piccadilly Line Upgrade, Midland Main Line Electrification, Reading West Station, Downs Park Road Overbridge Reconstruction, Doncaster Depot Power Upgrade
- 300+ infrastructure projects delivered
- RISQS-audited, ISO 9001, 14001, and 45001 accredited

## OUR VALUES IN ACTION

**Agile.** Fast, flexible responses to site constraints and operational demands.

**Experienced.** Proven record across multidisciplinary rail projects.

**Collaborative.** Effective integration with clients, contractors, other suppliers, and rail stakeholders.



“

WCS engineers have had plenty of site experience, which gives a better appreciation of what the construction team will eventually face. We don't often get that with designers. That's one of the strong points that WCS offers.

”

William Ross,  
Project Director, Murphy

# CORE SERVICES & OUR APPROACH

## OUR CORE RAIL EXPERIENCE

Our expertise covers the design and delivery of rail civil engineering infrastructure components including:

- Foundations, drainage, and earthworks
- Ground retention structures, embankments, and slope stability analysis
- Platforms, tunnels, footbridges and Access for All schemes
- Over and underbridges
- Over and under-track crossings
- Road/Rail Access Points (RRAPs)
- Stations and interchange upgrades
- Substations, switching compounds, and associated lineside equipment
- Lineside civils and cable routing
- Overhead Line Equipment (OLE) and signalling foundations
- Rail systems support

## SPOTLIGHT: SME COLLABORATION & CO-ORDINATION

We provide comprehensive support for our clients by drawing on a trusted network of partner organisations. Together, we can deliver a full multidisciplinary engineering design service, while also providing the depth of expertise that only specialists can offer. Our clients benefit from our collective knowledge, experience, and integrated collaboration – enabling innovative, sustainable, and cost-effective project outcomes.

## OUR SERVICES

- Feasibility and concept design
- Detailed civil and structural engineering design
- Temporary works design and coordination
- Design assurance
- Tender assistance and bid support
- Advanced CAD & BIM packages
- Survey support
- Construction support
- Multi-disciplinary design with trusted partners
- Principal Designer role
- Contractor's Responsible Engineer (CRE), Contractor's Engineering Manager (CEM), and Project Engineer (PE) roles.

## OUR APPROACH

- Support from feasibility through to detailed design and delivery
- Tailored services to suit project and client requirements
- Safety and constructability considered at every stage
- Seamless integration with contractors, utilities, and operators
- Sustainability embedded across all projects

## WHY CLIENTS CHOOSE WCS

- We pride ourselves on delivering creative and practical engineering solutions
- Detailed understanding of technical and regulatory demands
- Capability in both temporary and permanent works across multiple infrastructure environments
- The ability to respond quickly and solve problems efficiently
- Wealth of experience including extensive site knowledge and constructibility
- Understanding other specialists and the needs of contractors

# CASE STUDIES

We help deliver the infrastructure that underpins safe, efficient, and sustainable railways, today and for future generations. WCS can provide civil engineering design support at every stage, built on a breadth of experience across the rail sector.

## PICCADILLY LINE UPGRADE – MODERNISING THE LONDON UNDERGROUND

**Client:** UK Power Networks Services | **End client:** London Underground

This £2.9bn programme is modernising substations and installing 10km of HV cabling within Victorian tunnels, supporting the introduction of 94 new trains to replace the line's 86 existing trains, which have been in service since 1975. The upgrade is designed to improve reliability, accessibility, and sustainability on the Piccadilly Line, with peak passenger capacity increasing by up to 23%. The new trains will feature walk-through carriages, air-conditioning for the first time on a deep tube train, wider doors, enhanced digital displays, step-free access, and on-train CCTV, while also reducing energy consumption by 20% in support of Transport for London's decarbonisation goals.

WCS delivered civil and structural engineering design, surveys, switchgear room layouts, gauge and cable route assessments, ground investigations, and tender support – all while keeping the line operational.

### KEY ACHIEVEMENTS:

- Successfully delivered civil and structural designs in complex, constrained tunnels
- Supported safe installation planning for HV cabling and substation works
- Structural alterations to existing substations to facilitate installation of new equipment



## MIDLAND MAIN LINE ELECTRIFICATION – SUPPORTING DECARBONISATION

**Client:** SPL Powerlines | **End client:** Network Rail

The Midland Main Line electrification is a £1.5bn upgrade of the route between London and Sheffield via the East Midlands, replacing diesel-powered trains with cleaner, electric alternatives. The programme involves installation of 447 single track kilometres of overhead line equipment across multiple route sections, new substations, track sectioning sites, and associated civil works to enable electrification, supporting the UK's decarbonisation goals. Within this complex, multi-phase project, WCS provided detailed civil engineering and survey support. Our team delivered services including lineside civils and substation surveys and design, OLE foundations, drainage, maintenance access points, and Road Rail Access Points (RRAPs).

The team also delivered temporary works design that ensured the safe transport of the UK's largest ASG25 substation using gantry lifting – achieved without closing the railway.

### KEY ACHIEVEMENTS:

- Delivered civil and structural designs to enable electrification works safely within operational constraints
- Coordinated surveys, assessments, and investigations without disrupting ongoing operations
- Supported innovative solutions for transporting and installing large-scale substation equipment
- Integrated advanced CAD/BIM and geospatial tools to improve accuracy and collaboration across multiple stakeholders

## DOWNNS PARK ROAD OVERBRIDGE – REVITALISING A HISTORIC STRUCTURE

**Client:** Murphy | **End client:** Network Rail

The Downs Park Road Overbridge, a 154-year-old structure in Hackney, required urgent restoration due to severe structural deterioration. WCS was appointed by Murphy to provide civil engineering design services as part of Network Rail's CP6 East Anglia Structures remit.

The project aimed to restore the bridge's integrity, increase traffic capacity, and enhance safety for road users, ensuring it remains functional for another 120 years.

WCS provided comprehensive civil engineering design, from concept to detailed design, attended an off-site trial erection and offered on-site technical support.

### KEY ACHIEVEMENTS:

- Delivered a structural design that restored the bridge to safe, long-term operational use
- Conducted detailed surveys and assessments to inform precise repair and strengthening strategies
- Sustainable practices included reusing original materials and optimising steel girder sizes, reducing embodied carbon by approximately 25%
- Devised efficiency measures that resulted in an estimated 30% cost reduction compared to alternative solutions
- Construction undertaken in a rail blockade during school holidays to minimise community disruption



## READING WEST STATION UPGRADE – IMPROVING PASSENGER EXPERIENCE

**Client:** Nationwide Engineering | **End client:** Network Rail

Reading West Station required a new ticket hall and gate to improve passenger facilities and accessibility. WCS provided civil and structural engineering design, 3D BIM analysis, integrated design packages, architectural coordination, stakeholder engagement, and on-site technical support throughout construction.

### KEY ACHIEVEMENTS:

- Delivered civil and structural engineering design for a complex station upgrade, including integration with architectural services
- Applied advanced 3D BIM techniques for detailed visualisation and effective collaboration across multiple disciplines
- Provided continuous on-site technical support during construction to address issues promptly and minimise delay
- Led stakeholder engagement and design team meetings to maintain alignment and resolve design challenges efficiently

# SUSTAINABLE PRACTICES

**Sustainability is embedded in the way WCS designs and delivers infrastructure. Our team considers carbon reduction, material efficiency, and asset longevity from the earliest stages of every project.**

Sustainable practices include:

- Life-cycle carbon assessments included at feasibility stage, using the Rail Carbon Tool
- Strengthening and reuse prioritised over new-build wherever feasible
- Specification of sustainable materials such as low carbon concrete and reclaimed aggregates

Our work has been recognised across the industry, leading to WCS being named winner at the New Civil Engineer Awards in the Environmental, Social and Governance (ESG) Leader category.

“We’re passionate about the critical role civil engineering plays in creating more sustainable infrastructure, and we’re committed to doing our part. We believe our greatest impact lies in the projects we deliver: targeting those that promote sustainability and help to achieve Net Zero goals.”

**Asa Whitfield** CEng, FICE, FCIArb,  
Managing Director, WCS



# GOVERNANCE & ACCREDITATION

**Consistent excellence is underpinned by a strong foundation of formal governance and industry-recognised standards.**

Our commitment extends to robust internal processes, including document control, use of Common Data Environments (CDEs), and ongoing compliance with evolving industry best practices.

We hold ISO 9001 (Quality Management), ISO 14001 (Environmental Management), and ISO 45001 (Health & Safety Management), alongside rail-specific accreditations and qualifications such as RISQS, CIRAS, Achilles Link-Up, and Sentinel, with all relevant individuals Personal Track Safety (PTS) trained.

These accreditations guide our operations and ensure high standards across quality, sustainability, and team wellbeing.



Cert No. 20550



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# OUR LEADERSHIP TEAM

With offices in London, Scotland and Northern Ireland, we are a dynamic and expanding company. Through our clear vision and vibrant, committed team, WCS has built a reputation for excellence in civil and structural engineering.

Our leadership team includes:

**Jeremy Barnes** CEng, FStructE, MICE – Technical Director

**Nick Lowe** BEng(Hons), CEng, MICE – Director

**Dr Natalja Petkune** BEng, MSc, PhD, AStructE CEng – Director

**Kirsty Glover** CEng, MICE, MBA, MEng – Associate Director

**David Crumley** – CAD & BIM Manager

## CONTACT US

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They're really good, really professional. They do exactly what they say they will in terms of deliverables and they're really lovely people to work with.



**Sharon Harrison,**  
Operations Manager, Hitachi Energy

## SOME OF OUR CLIENTS:





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