

Jacobs Rail & Transit



ABOUT JACOBS SOLUTIONS

Our 1,500 Rail and Transit professionals worldwide support over 230 clients with the right mix of engineering, programme delivery, and operations management expertise. We design and help deliver the most challenging capital improvement and expansion projects, to keep people and goods on the move while enhancing customer experience and environmental sustainability.

As a global leader in transportation, we embrace our position as a leading consultant and seek to be the trusted partner of choice. We work with our

clients to create transportation solutions that deliver value for society in a more sustainable world, with a focus on Rail and Transit owners and operators in the United States, Canada, United Kingdom and Europe, the Middle East, Asia-Pacific, and Australia / New Zealand.



Jacobs

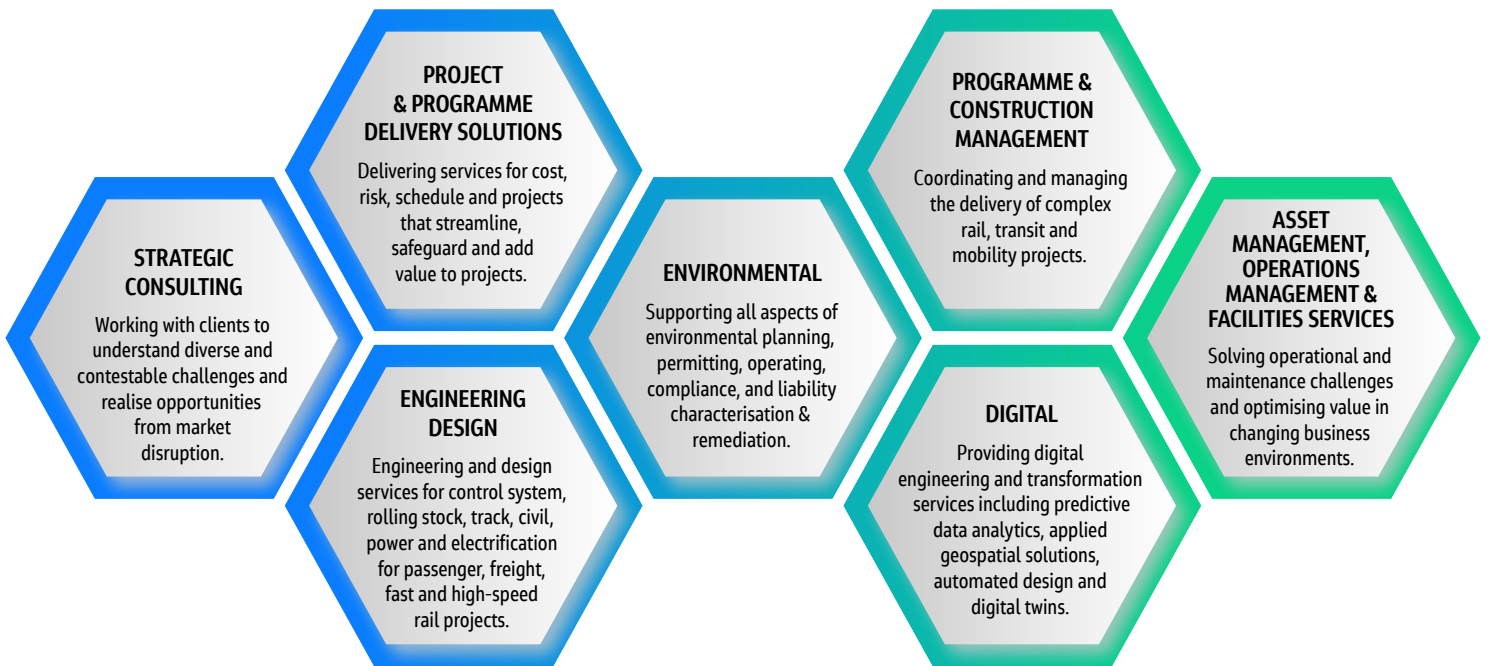
Challenging today.
Reinventing tomorrow.

JACOBS SERVICES

Whether your journey includes keeping pace with capacity demand, accelerating technology innovations, ensuring safety and security, or maintaining existing transport networks, we are on board to serve all aspects of high-speed and conventional passenger rail, freight and logistics, mass / public transit, and innovative bus solutions.



Our global network of expertise and knowledge is yours, so you can create, deliver and succeed with certainty – not just today but into tomorrow. We draw on our expertise across a wide range of disciplines to deliver innovative solutions for a more connected, sustainable world.



PROGRAMME AND CONSTRUCTION MANAGEMENT

As the top ranked Programme Management firm⁽¹⁾, Jacobs provides programme and construction management services for complex transportation and transit programmes worldwide. We draw on our integrated processes and databases, refined through delivering award winning projects. Our multidiscipline approach takes advantage of best practices developed across large, complex transportation programmes.

Note: (1) by Engineering News-Record



MAJOR PROGRAMMES

At Jacobs, we work with our clients to deliver some of the largest and most complex infrastructure programmes. Our work spans the full range of services from Staff Augmentation to full Delivery Partner approaches. We tailor our support to each client's requirements. Among the major programmes we support in Europe are:



Crossrail | UK – A 100 km new route connecting London from East to West and integrating with Heathrow airport, the Great Western and Great Eastern national railways. Jacobs undertook a wide range of services on the programme including as a strategic partner, in a fully integrated team between client, Programme Partner, Project Delivery Partner, and Project Representative.

Power Supply Upgrade | UK – As part of the Rail Electrification Alliance, Jacobs is providing multidiscipline design services on the East Coast Main Line traction Power Supply Upgrade Programme which includes telecommunications, signalling, civils, traction and signalling bonding, and additionally provides environmental support.

East West Rail | UK – East West Rail will re-establish a rail link between Cambridge and Oxford to improve connections between East Anglia and central, southern and western England. Jacobs is currently supporting the programme in its Programme Partner role and providing Economic and Transport services.

Dublin Metrolink | Ireland – This is a high-frequency, high-capacity public transport service between Swords and Dublin City Centre via Dublin Airport. A Jacobs / Idom JV were appointed as Engineering Designer for Metrolink in January 2018 to develop the Concept Design to a Preliminary Design including statutory documents and reports necessary for the Railway Order submission.



PROCUREMENT AND SYSTEMS ELEMENTS

Jacobs provides advisory services to our clients which includes developing fleet strategies, undertaking modelling traction power optioneering to support whole life train fleet cost analysis, requirements and specifications development to support fleet procurement, testing and inspections of train fleets, producing designs for retrofitting existing train fleets, and in identifying infrastructure requirements to support the introduction on new train fleets.



Merseytravel | UK – Merseytravel is modernising the Merseyrail Electrics network to meet the growing needs of the Liverpool City Region. Jacobs is providing technical support through the procurement process covering the rolling stock, depot facilities, infrastructure, communications and maintenance systems, from concept, through design, manufacture and testing and commissioning.

National Transport Authority Advisory | Ireland

Jacobs was awarded a Rail Fleet Advisory role, to support the procurement of the new train fleet as part of the DART Network expansion. Jacobs supported the development of the fleet transport strategy and went on to develop a detailed technical specification, and supported the development of the tender documentation and tender evaluation process.





DESIGN SERVICES

Among our specialised services, we offer design for signalling, communication systems, mechanical and electrification systems; permanent way (track) including switches and crossings & plain line, down to the supporting structures, including earthworks, bridges and tunnels for all bus and rail modes.



HS2 Phase 1 : Lot C1 | UK – The Align JV is designing and constructing this 21.6 km section of the high speed route. As a member of the design partner team, our services include leading the design management team and undertaking full multidisciplinary design of assets which includes the Chiltern Tunnel and portals, earthworks and the Colne Valley Viaduct.

Hither Green Resignalling | UK – Jacobs provided design services for the \$60m replacement of all signalling within the Hither Green Interlocking Area including site surveys, asset condition assessments, technical option definition, feasibility assessments, train detection strategy, and designs for signalling, E&P and telecommunications systems.

Derby Station Remodelling Project* | UK – Jacobs were appointed as Principal Designer of this \$200m multidisciplinary scheme which consisted of a new 320m island platform with two lifts connecting to the existing footbridge, a retail unit, waiting rooms, toilets, staff office, accommodation, platform canopies and modifications to existing platforms.



Edinburgh Glasgow Rail Improvement Programme | UK

As the Lead Design Organisation, Jacobs managed engineering design integration for the 80 km twin track line between Edinburgh and Glasgow. We were also designer for all main system engineering disciplines including electrification and plant, permanent way and the associated civils works.



Cork Light Rail Transit | Ireland – This is a 17 km \$1b east-west tram system and is one of the biggest elements of the ambitious Cork Metropolitan Area Transport Strategy. Jacobs was appointed as the Engineering Designer to analyse route options and develop initial designs for the system.

West Yorkshire Combined Authority (WYCA) Mass Transit | UK – As the Design Lead for Design Delivery Partner consortium Jacobs scope of consultancy services includes the development of route options between all districts, the concept design of route options for 3 'corridors' and addressing tram technology requirements.



ASSET MANAGEMENT

Jacobs provides expert condition assessment, forecasting, and decision support for major capital programmes. Our work includes undertaking RAM assessments developing asset management strategies with our clients, and developing and implementing digital twins to support the reduction in asset maintenance costs and increase asset reliability.

High Speed 1 | UK – Jacobs undertook a deep-dive Asset Management review to establish the “as is” state which informed the framework we developed for implementing a risk based asset management approach to optimise the operation, maintenance and renewals of the 109 km High Speed 1 railway between St. Pancras and Eurotunnel. This enabled the prioritisation of asset maintenance & renewal projects which resulted in estimated savings over \$120m.



Transpennine Route Upgrade | UK – TRU is a multi-billion-dollar Programme that aims to increase capacity, improve reliability, and reduce journey times on the route between Manchester Victoria and York via Huddersfield and Leeds. Jacobs are providing various asset management services, including a system level analysis of Life Cycle Costs, Human Factors and completing Reliability, Availability and Maintainability analysis which informed the performance modelling of the Route. Additional services have included developing a common data environment and a digital twin for the programme.

CONSULTING AND ADVISORY SERVICES

We are a diverse, global team of technical experts, advisors and practitioners who work collaboratively across all market sectors. We work throughout the infrastructure lifecycle from strategy, financing and economic advice, business case and planning advice, through to capital and operational delivery improvements across our client's organisations. Our ability to provide real and robust, deliverable solutions and trusted advice leads to better, more certain outcomes and greater sustained value.

Sweden High Speed Lines | Sweden – The Swedish Transport Administration is planning to develop new high-speed lines between Stockholm-Malmö and Stockholm-Gothenburg. Jacobs is providing strategic consultancy services which includes technical advice and services across planning, system design and delivery of three ongoing projects which will form part of a \$23.8b 660 km high-speed rail network.

Great British Railways (GBR) | UK – Jacobs are supporting the establishment of this new public body, which will oversee the railway in Great Britain, assuming the current responsibilities of the Department for Transport (DfT) and Network Rail. Our work includes developing GBR's Long

Term Strategy for Rail, developing GBR's policies, evaluation frameworks and commercial analysis for revenue recovery; GBR operating model development (including creation of new digital and data approaches); and collaborating with government and industry stakeholders to agree a \$1.8b benefits realisation plan.

UK Train Operator Franchises | UK – Jacobs has worked for the UK Department for Transport (DfT) regarding the procurement and management of train operator contracts including operational and commercial advice, contract mobilisation, and review of annual business plans from the train operating companies.



PLANNING AND ENVIRONMENTAL

Jacobs works with rail & transit clients from project inception through to delivery. We undertake Preliminary Engineering design, Environmental Impact Assessments, Environmental Statements and support our clients in the submission of the Railway Consent Orders / Hybrid Bills, for BRT, light rail, and passenger rail and freight programmes throughout Europe.



High Speed 2 (HS2) | UK – HS2 will be the UK's new high speed rail network. Jacobs was appointed Development Partner with HS2 Ltd and led the development of the engineering, design and environmental work on the London to the West Midlands line. As the Development Partner, we worked as part of a fully integrated, co-located client team delivering a preliminary design, Environmental Statement and depositing and supporting a hybrid Bill through the oral hearings and parliamentary process.

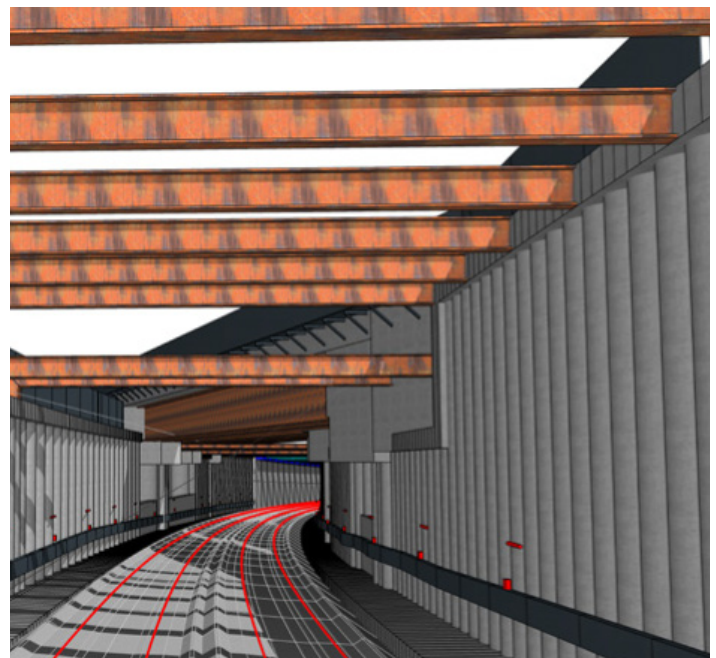
The Western Rail Link to Heathrow project | UK

This project is a new 6 km rail link that includes a complex connection to the Great Western Main Line and a 4.5 km tunnel interfacing directly into Heathrow Airport. The project will reduce journey times and increase capacity into Heathrow Airport, and enable passengers to travel directly to the airport from the West. Jacobs are the Lead Design Organisation providing a suite of multidisciplinary services undertaking scheme development and outline design. We also supported our client in the preparation of the environmental and technical information required to complete the Development Consent Order.

The Cork Line Level Crossings (CLLC) Project | Ireland

This project will remove seven staffed level crossings on the Dublin-Cork line. Jacobs developed the scheme from route option appraisal through to completion of the Railway Order process and we are now in the detailed design and construction procurement phase of the project.

East West Rail | UK – EWR will connect communities between Oxford and Cambridge. In its Programme Partner role Jacobs produced the draft Environmental Impact Assessment Scoping Report and are subsequently guiding the assessment and production of the Environmental Statement.



ADDITIONAL SERVICES

In addition to our core Programme Management, Construction Management and Design services Jacobs is investing in new technologies and capabilities to help our clients take on their biggest challenges. Among the new capabilities that Jacobs can deliver to rail and transit clients are:



StreetLight

Using our proprietary data processing engine RouteScience® to algorithmically transform trillions of spatial data points over time, StreetLight measures vehicular, transit, bicycling, and pedestrian travel patterns, making them available on-demand via the world's first SaaS platform for mobility, StreetLight InSight®.



Artificial Intelligence

Jacobs has recently expanded our partnership with Palantir, focused on leveraging Palantir's AI capabilities to commercialise new AI solutions spanning critical infrastructure, advanced facilities, supply chain management and more.



PA Consulting

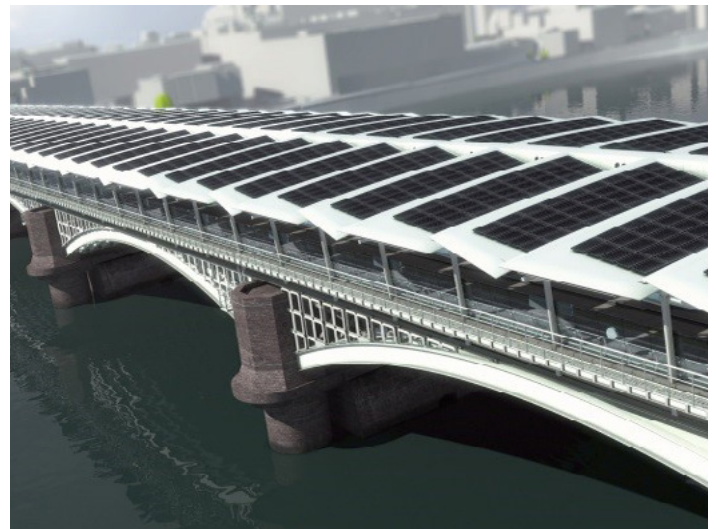
Jacobs 65% stake in PA Consulting unlocks expert support grounded in a deep understanding of the systems and technology that shape the rail and transit sector. No other combination can offer the same mix of technology and consulting expertise.

SUSTAINABILITY AND RESILIENCE

Reducing global transportation sector emissions is a top priority, and the greening of infrastructure and public / private vehicle fleets are ways to take steps towards reducing their carbon footprint and environmental impacts. Jacobs delivers resilience through comprehensive infrastructure, technology, intelligence, and operational solutions that help governments, cities and private sector rail & transit clients survive, recover, and adapt to the acute shocks to their transport systems experience.

Rebuilding Blackfriars Station | UK – Jacobs undertook the Lead Designer role providing multidisciplinary design services for the \$750 million project. The design included the station infrastructure, the northern ticket hall, London Underground station, southern ticket hall, the Bridge 410 roof, which incorporated the world's largest solar array on a bridge providing 850 MWh per year providing over 50% of the station's electricity requirements.

East Coast Railway Infrastructure Protection Projects | Ireland – These will be the largest coastal protection scheme in North-Western Europe which is planned to defend the railway infrastructure and boost coastal resilience in the face of a changing climate with its associated rising sea levels. Jacobs have been commissioned for detailed design and planning services, including environmental assessments and statutory submissions for the programme.



Clár Cosanta Bhonneagar Iarnróid an Chósta Thoir East Coast Railway Infrastructure Protection Projects

Jacobs

Iarnród Éireann
Irish Rail

Protecting
our coastal railway

An Roinn Iomparáid
Department of Transport

Riailtíocht na hÉireann
Government of Ireland

Tioncharfál Bannam
Project Ireland
2040

NTA
Náisiúnta Náisiúnta na hÉireann
National Transport Authority



Merseytravel Battery Trains | UK – Jacobs provided technical support for developing business cases and selecting solutions for fitting batteries to some of its new fleet. The batteries store the energy from braking that would otherwise be dissipated in resistors, reducing the overall energy consumption. Batteries may also be used to extend the range of units beyond the electrified network, saving cost over the alternative of electrifying the routes.

The BusConnects Core Bus Corridor Schemes | Ireland
 These will provide over 200 km of enhanced walking, cycling, and bus infrastructure on key access corridors in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along these corridors. Jacobs was appointed as one of the four Engineering Designers to deliver the 12 Core Bus Corridor Schemes.

South West Rail Resilience Programme | UK

Jacobs has developed a geotechnical scheme design to mitigate cliff instability and provide long-term resilience to the operational railway. As Designer, Jacobs has developed novel stabilisation solutions that has reduced the expected construction costs by two thirds.



JACOBS TECHNICAL CAPABILITIES



Please visit the link in the QR code to learn more about our capabilities or contact railandtransitinfo@jacobs.com

- Environmental
- Track and Civil
- Stations
- Maintenance Facilities
- Rail Systems
- Payment Systems
- Systems Assurance and Security
- Vehicle Engineering
- Operations
- Bus and Bus Rapid Transit Systems
- High Speed Rail
- Management Consulting
- Intermodal facilities

