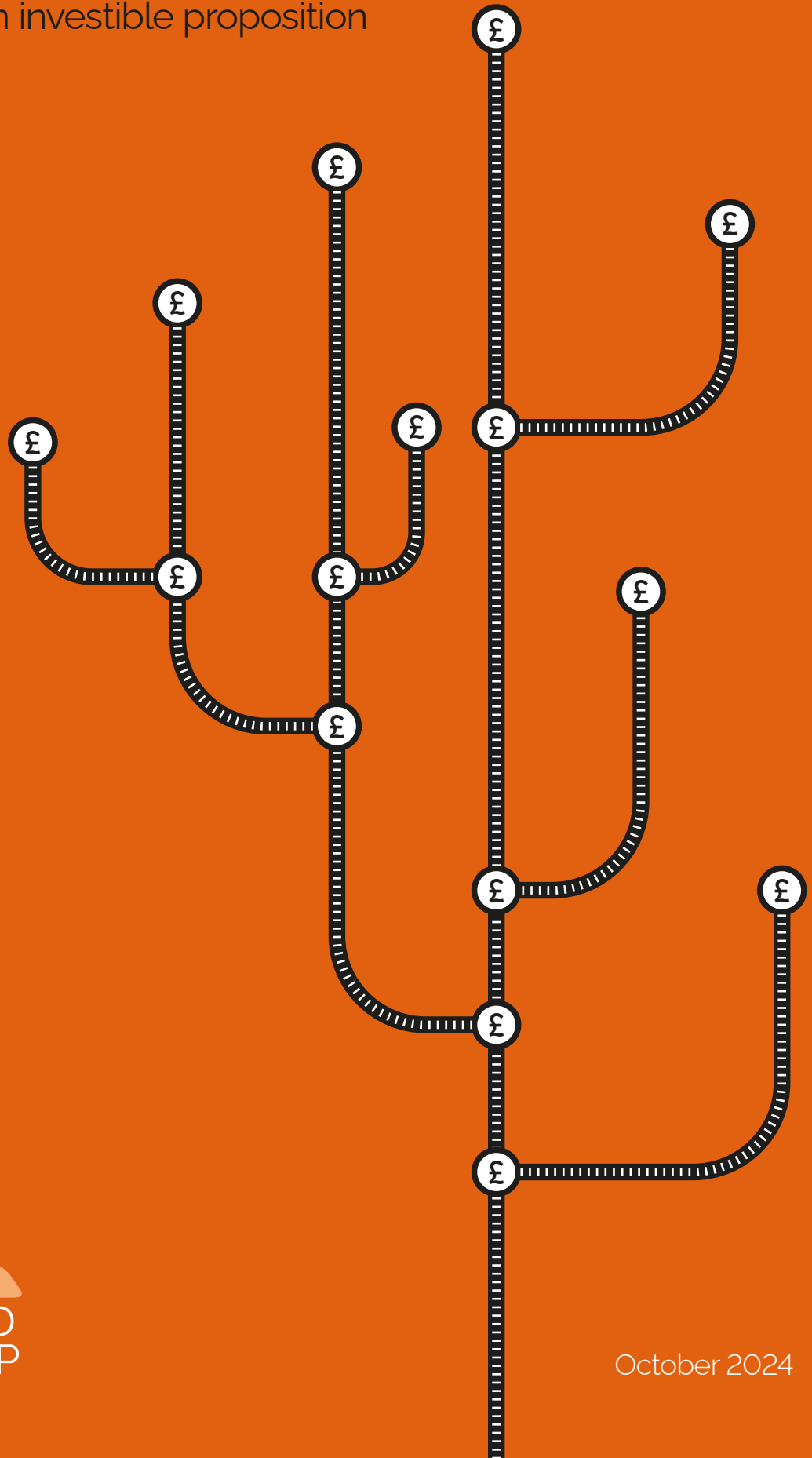


Driving Investment in Rail Infrastructure

Making rail an investible proposition



About High Speed Rail Group

The High Speed Rail Group represents companies with experience and an interest in high speed rail, most of whom are delivering high speed rail lines all over the world. With this perspective our members know the enormous economic, social and environmental benefits that a well-connected modern railway delivers.

In the UK, HSRG members are building Phase 1 of HS2, investing to create world class supply chains. From civil and structural engineering, including designing bridges and viaducts that navigate complex terrains, to the use of artificial intelligence to optimise operations and enhance safety, the project has played a pivotal role in developing a supply chain with highly specialised knowledge and skills.

This investment has positioned the UK as a leader in areas such as off-site manufacturing for the construction industry, and environmentally conscious construction. The UK is now also a key player in the

international tunnelling industry, contributing valuable experience and capabilities to the global infrastructure sector. Skills development and apprenticeships across all of these disciplines are bringing forward the next generation of talent in the UK.

We stand ready to work with government and other stakeholders to develop and deliver efficient and affordable plans for new and improved lines in the UK which tackle the country's fundamental challenges to build a growing economy, spread prosperity around our nations and regions, and meet the climate imperative.

We remain of the view that Britain needs a new intercity rail network for the nation to compete economically. Our future prosperity, particularly that of less affluent areas, demands it.

Find out more at www.rail-leaders.com

Our contributors

By bridging the gap between infrastructure development and financial investment, all the authors who have contributed to this report have driven meaningful conversations about how the UK can boost the economic viability of high speed rail whilst simultaneously unlocking and accelerating new growth and investment opportunities. Their contributions have been key to understanding the interests of investors in relation to the long-term benefits of a well-connected rail network.

The High Speed Rail Group would like to thank Amey, Centrus, Hitachi, HS1 Ltd, KPMG, Lloyds, Mott MacDonald, SYSTRA, The Infrastructure Forum, and Turley. In particular, thank you to Costain—their support has been instrumental in engaging with the investment community for this report, providing us with valuable insights and critical connections.

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Foreword

Dyan Perry
Chair, High Speed Rail Group

We are at a critical juncture for the rail industry having welcomed in a new government earlier this year. This presents a unique opportunity to establish a new direction for infrastructure—one that addresses the immediate priorities facing the sector and lays the foundation for the long-term success of our transport network.

Reflecting on my time as CEO of HS1, and now as Chair of the High Speed Rail Group, it is clear that investing in infrastructure has never been more crucial. Delivering a world-class inter-urban rail network in Britain is crucial for the nation's future prosperity, not only in terms of driving socio-economic growth across the country, but also strengthening the UK as an investible destination.

By stimulating local economies, fostering skills development, unlocking investment opportunities and enhancing connectivity, the ability of these large-scale infrastructure projects to drive broader and far reaching socio-economic growth cannot be underestimated. Nor can each project be viewed in isolation—the more we invest across the board, the greater the multiplier effect for the country as a whole.

To realise these benefits, we need to develop and more crucially, stick to, a comprehensive long-term infrastructure strategy that puts connectivity and modernisation at its heart. For high speed rail, this means committing to a rail network that not only connects the North-South and East-West corridors but also prioritises upgrading the West Coast Main Line where capacity is at critical levels and where benefits would be most impactful.

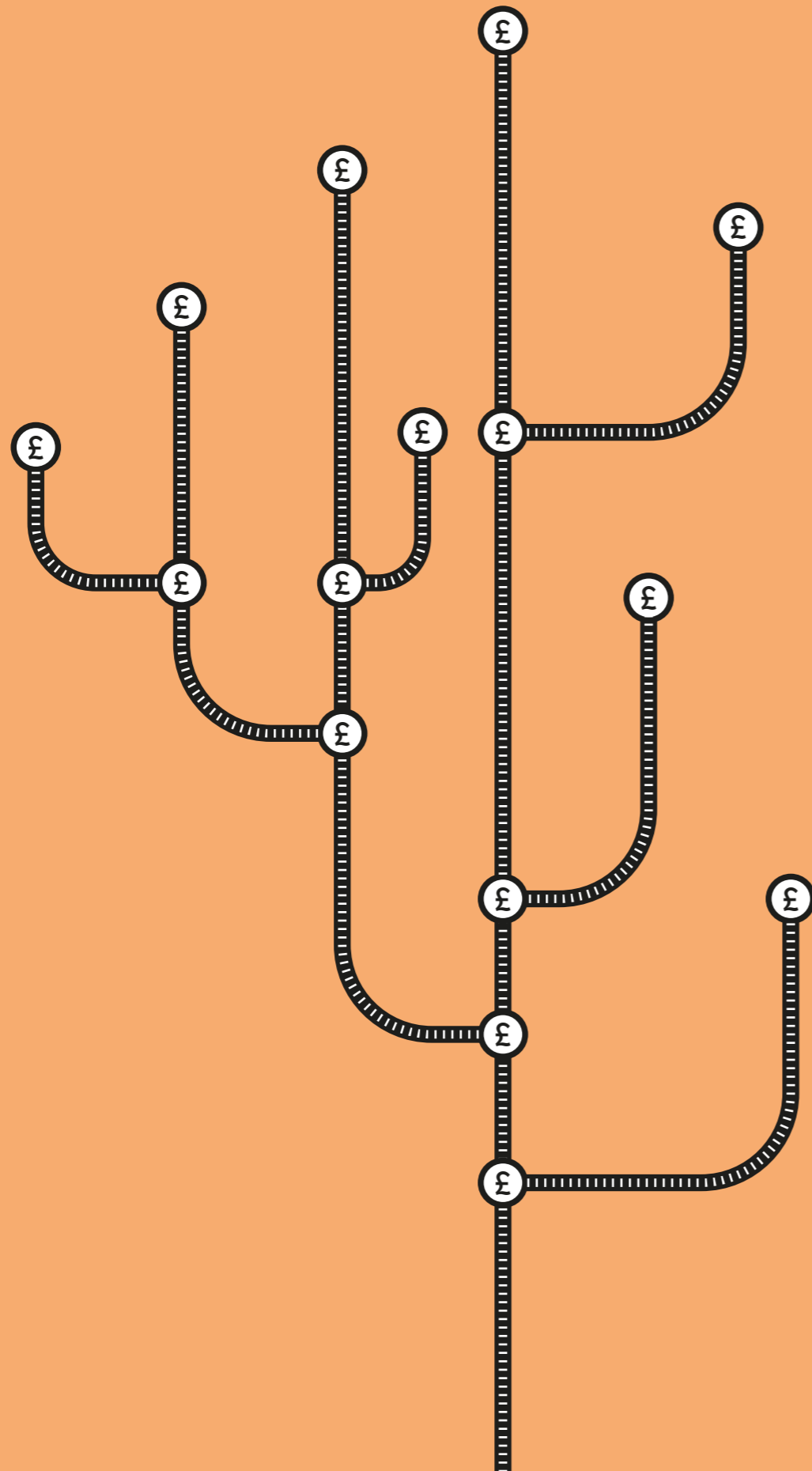
This long-term strategy must actively engage the investment community to explore a broad range of funding options, including those that harness private investment.

For major infrastructure projects like HS2, engaging with private financiers can enable projects to be delivered more efficiently and cost-effectively. It doesn't need to be an 'all-or-nothing' approach. After all, we know that some assets, such as rolling stock and stations, lend themselves more easily to private financing options than others.

We don't have to look far to see the benefits that private financing has on our railways. By utilising public and private funding, High Speed 1 shows us that we can deliver projects cost and time effectively, as well as generating substantial financial returns and inward investment for the industry.

Yet, success hinges on a collaborative commitment between the public and private sector. A commitment that reduces the current overreliance on government funding and actively embraces private capital. Investor confidence in the industry is at a low after years of inconsistent decision making and continuous project scope changes. This means committing to a long-term pipeline of infrastructure projects, establishing comprehensive regulatory frameworks, and fostering close collaboration with the supply chain. Ultimately, such an approach is essential if we are to deliver long-term infrastructure solutions that generate tangible benefits for taxpayers.

Each contribution within this report demonstrates that new and innovative approaches to financing are not only essential, but also possible to deliver. It discusses the critical steps needed to successfully deliver large infrastructure projects, drawing on lessons learnt from outside the sector, and outside the UK. We must all work collaboratively to deliver a more robust transport network fit for the challenges and opportunities of the 21st century.



Introduction

Investment into infrastructure drives economic growth, transforms prosperity and productivity, and revitalises local economies. Modern rail infrastructure in particular holds the key to a well-connected economy and a unified labour market. It also offers a significant opportunity for the new government to collaborate with both the public and private sectors in its mission to rebuild the UK, with strong potential to attract both domestic and international investments.

Demand for rail infrastructure in the UK is on the up. As research from the Railway Industry Association¹ revealed, rail passenger numbers could double by 2050. However, connectivity, reliability and capacity challenges continue to persist. Infrastructure in the North and Midlands remains behind the times and fragmented, holding back their regional economies, and a truncated HS2 line risks creating Britain's biggest bottleneck between Birmingham and Crewe.

As the critical need for investment has grown, recent decisions to roll back on major rail infrastructure projects, coupled with shrinking public finances, have posed significant challenges to funding infrastructure development and hence, realising these benefits. As the National Infrastructure Assessment,² led by Sir John Armit, highlights, this means the UK faces a substantial infrastructure gap between the assets we have today and the assets we will need to secure the future we want.

It is clear that government, industry and the private sector must collectively re-examine the path forward for infrastructure in how it is funded and embracing private financing options that deliver capacity and community benefits must be part of the solution. Doing so will not only provide the vital finance, often preceded by public sector investment, required for infrastructure development to go ahead, but it will also create the right environment for the industry to deliver infrastructure on time and within budget, with potential for future cost reductions.

The UK has a strong track record of successfully utilising private investment and public-private partnerships (PPP) to deliver long-term value to investors, taxpayers and customers alike. As Richard Catterson from Hitachi Rail explores in this report, the UK's renewable energy sector stands as a testament to the role that private investment can play when harnessed effectively. In 1990, renewable energy contributed less than 2% to total electricity generation; today, thanks to private capital and government backing, it approaches 50%.

Likewise, private sector funding has significantly improved rail infrastructure, as well as rolling stock, stations, car parks, and overall customer experience. It further stimulated increased competition and innovation within the sector, at a time when modernisation and efficiency were urgently needed to meet rising demand and evolving travel patterns.

Not only do other sectors in the UK utilise private partnerships, but the completed HS1, the UK's only high speed line, stands as a key example of a major infrastructure project funded through private investment. As discussed later in this report, HS1 has exceeded expectations and demonstrated

1. RIA, [government should seize opportunity to grow passenger rail](#)
2. National Infrastructure Assessment, [Infrastructure Progress Review 2024](#)

strong financial performance through strategic investments, cost reductions, and collaborative efforts. The line now carries 26 million people each year and has supported more than £427m of economic benefits to the UK and continental Europe every year. This demonstrates that private-public sector funding models in rail operations can and do work; they just need to be utilised and implemented effectively.

We urgently need a rail network that relieves capacity constraints north of Birmingham. Not only will this address connectivity issues and enhance regional development, future investments in high quality, modern infrastructure will help the UK cement its position as an international economic leader, sending clear signals on the global stage that the UK is "open for business." Investment into such a project will also drive the UK's position as a leader in the global infrastructure sector, further drive the development of a highly specialised supply chain and support skills development to ensure a strong pipeline of talent in the UK. However, ensuring the success of HS2, or any future iteration of such a project, depends on adopting the right financial models to see it through to completion.

Successful implementation of private financing will require the government to collaborate with the private sector and industry. They will need to foster an investment-friendly ecosystem that provides the stability investors seek and need. This means providing transparent and structured policy frameworks and pathways that focus on long term decision making. As suggested by The Rail and Urban Transport Review, led by Juergen Maier CBE, an Infrastructure Investment Playbook, that sets out different models for leveraging private investment, would go a long way towards reducing fragmentation across the sector and enhancing confidence in the execution of large-scale projects. This approach will reduce investment risks and provide investors with a clear and predictable outlook on returns.

The UK needs to act, or we run the risk of being left behind. As Sébastien Vecchiato of SYSTRA demonstrates in his chapter, France has led the way in high speed rail for over 40 years with one of the largest and continually expanding networks in Europe. The use of PPPs in delivering three French high speed rail projects has proven highly effective in controlling costs and ensuring timely, on-schedule completion. We must learn from our European counterparts and implement proven strategies to enhance our own high speed rail infrastructure.

The UK's current rail network as it stands, falls short of delivering a comprehensive network that is needed to spur on widespread regional, national and international social and economic growth. The UK must commit to a national infrastructure strategy that addresses both North-South and East-West connectivity. This isn't the responsibility of a single entity; it requires collaboration across government, industry, and the private sector.

As this collection of essays, written from the perspectives of industry leaders demonstrates, to achieve this, shying away from private investment into infrastructure is not a viable option. To date, short-term policy changes and inconsistent project implementation have undermined investor confidence, leading to a fragmented infrastructure landscape that is timely and costly. It has also deterred investment, from both private and capital purses. This needs to change. A fresh, long-term approach is urgently required—one that prioritises public-private partnerships and strategic investments in high speed rail and creates a flexible, investor-friendly environment for large scale infrastructure projects. The time to act is now, or risk falling behind both domestically and on the global stage.

Executive Summary

Making the case for private sector investment

Rail investment as a catalyst for long-term growth and urban transformation

Andy Rumfitt, Senior Director, Head of Business Cases and Funding, Turley

Exploring industry examples including the Jubilee Line Extension, the TransPennine Route Upgrade and the East West Rail scheme, this article unpacks the benefits of rail infrastructure in enhancing connectivity and boosting socio-economic activity. Overall, the article argues rail investments should be viewed as strategic long-term investments that drive sustainable development, reduce emissions, and supports regional integration for future economic growth.

Creating the right conditions for investment

Creating a cost-efficient environment for investment

Neil Henderson, High Speed Rail Director, Mott MacDonald

In this article, Neil advocates for adopting pragmatic, cost-effective design strategies, including minimum viable products and modular construction, to tackle challenges facing the rail industry, including cost overruns, delays, and negative public perception. Neil argues that by learning from past experiences, these approaches can enhance project delivery, ensuring they provide real value for taxpayers while effectively addressing user needs. Ultimately, this will help to ensure new rail infrastructure is a viable and attractive investment opportunity in the UK.

HS1: Leading the way for high speed rail in the UK

Richard Thorp, Chief Operating Officer, HS1 Ltd

HS1, the UK's only high speed railway, has successfully demonstrated the benefits of modern rail infrastructure, driving economic growth and enhancing connectivity since its opening. This article outlines how HS1's concession model fosters public-private partnerships, ensuring efficient management and continuous investment. Despite challenges like the COVID-19 pandemic, HS1 remains a profitable venture, generating substantial economic benefits. Looking ahead, HS1 advocates for expanded infrastructure to unlock further potential within the UK rail industry, emphasising the need for cohesive government transport policies.

Reconsidering private finance to boost the investment appeal of UK infrastructure

James Holmes, Rail Sector Director, Amey

With taxation and public borrowing at historic highs, there's a pressing need to embrace private sector finance. This article advocates for new public-private partnership models as well as a cohesive long-term transport strategy to attract private investment to support the vital renewal and enhancement of UK infrastructure. By fostering clarity in funding arrangements and adopting a whole systems approach that promotes collaboration among stakeholders, the UK rail sector can significantly enhance its appeal to investors.

Lessons learnt from the funding successes of the renewable energy sector

Richard Catterson, Head of Strategic Marketing, Hitachi Rail

The UK's renewable energy sector has experienced rapid growth in recent years, driven largely by substantial private investment. Central to attracting this investment has been stable policy frameworks, cutting-edge technological innovation, and strong collaboration between government, industry, and investors. The rail industry, by adopting similar strategies, can enhance its appeal to private capital, mirroring the success of the renewable energy industry and delivering benefits for passengers, freight customers, and the economy as a whole.

Financing future rail infrastructure

Seizing the moment: a call for closer public-private collaboration

Aarti Gupta, Rail BD & Investments Lead, Costain

Rail infrastructure has long struggled to attract significant private investment. The highly competitive nature of public financing, coupled with the complex and capital-intensive nature of rail projects, has made securing private sector participation a challenge. However, with public finances strained, private capital is essential for future infrastructure projects. Proven models like the Regulated Asset Base and public-private partnerships offer potential solutions. To succeed, the government must create stable project pipelines and foster early collaboration with investors, ensuring balanced risks, rewards, and alignment with broader social and environmental objectives.

Resetting investment to meet the UK's rail ambitions

John Downer, Board Director, The High Speed Rail Group

John Downer of the High Speed Rail Group advocates for resetting rail investment in the UK to not only deliver substantial financial returns, but also to act as catalyst for regional growth and long-term prosperity, essential to maximising both capacity and the long-term value of the UK rail network. The article focuses on strategic rail extensions from Birmingham to Crewe and Old Oak Common to Euston. Prioritising these expansions would double train capacity, enhance regional connectivity, and unlock financial returns. Delaying or truncating these projects risks lost growth opportunities. Collaboration with private investors and retaining key landholdings are vital steps toward sustainable, long-term rail infrastructure growth.

Securing funding to unlock infrastructure financing

Ian Clarke, Director, Transport Team, Infrastructure Advisory Group, KPMG LLP

The new government is targeting the highest sustained growth in the G7, and as Ian outlines in this article, achieving this requires close collaboration with the private sector to secure capital—especially in rail investment. However, rail projects depend on two key elements: funding and financing. Without secured funding, financing becomes impossible. Models like the Northern Line Extension and TfL's Land Value Capture Study demonstrate how innovative funding approaches can ease taxpayer burdens while driving growth through increased commercial and residential development, aligning well with the government's broader economic agenda.

France's successful delivery of public-private partnership financing for high speed rail

Sébastien Vecchiato, Technical Director, High Speed Rail, SYSTRA

France has led the way with high speed rail implementation through effective public-private partnership (PPP) funding models, which balance limited public investment with private capital. This approach has enabled projects like HSR SEA Tours-Bordeaux and the Nimes-Montpellier bypass to deliver on time and on budget. By incentivising contractors for on-time delivery and maintaining strict cost controls, these projects demonstrate how PPPs can enhance operational efficiency and reduce taxpayer burdens, offering valuable lessons for the UK's infrastructure ambitions.

Shifting the focus from rolling stock to fixed infrastructure

Stephen Layburn, Managing Director, Centrus

Despite a growing interest in rail investments, too much focus remains on rolling stock rather than fixed infrastructure. This article outlines the essential criteria needed to make fixed infrastructure projects more investible. It emphasises the need for clear commercial imperatives, risk management, and long-term revenue certainty, alongside collaboration between public and private sectors to enhance the rail network and ensure its long term success.

Understanding the Regulated Asset Base (RAB) model and its potential to finance future infrastructure development

The Infrastructure Forum

Infrastructure projects are crucial for economic growth, but they often face challenges like budget overruns and delays. As this explainer explores, the Regulated Asset Base (RAB) model offers a solution, as seen in the Thames Tideway Tunnel project. RAB treats infrastructure as a regulated asset, allowing for cost recovery through user charges, regulated returns for investors, and risk-sharing between stakeholders. This model ensures consistent funding, stable returns, and reduced public funding dependency. We should draw valuable lessons from this model and apply them to the rail sector.

Unlocking investment potential through an integrated approach to rail

Victoria Whitehead, Managing Director, Head of Infrastructure & Transport at Lloyds

The UK rail infrastructure sector has seen growth over the past decade, with private investment playing a key role in this. Rolling stock in particular has emerged as a stable and resilient asset class, attracting significant interest from investors. However, challenges such as the removal of Section 54 protections, governance complexities introduced by Great British Railways (GBR), and project uncertainty have dampened investor confidence. Despite these hurdles, GBR offers opportunities for streamlined governance, while transparent project pipelines and institutions like the UK Infrastructure Bank (UKIB) are essential for fostering collaboration and encouraging long-term private investment in the rail sector.

MAKING THE CASE FOR PRIVATE SECTOR INVESTMENT





Andy Rumfitt

Senior Director, Head of Business Cases and Funding, Turley

An economist and planner by profession, Andy started his career at Arup by safeguarding the High Speed 1 route, after the firm had lobbied Michael Heseltine successfully to move the proposed alignment to East London to secure the regeneration benefits. He has been involved in assessing the impacts of and making the case for many proposed schemes. These have ranged from connecting HS2 to Scotland and assessing 740 development sites for Crossrail 2 to producing business cases for the Sutton Tram Scheme and Bakerloo Line Upgrade and Extension. He helped to secure £8 million of European funding for the London cable car and drafted the Statements of Case for a number of DLR extension in East London, some of which were built.

Rail investment as a catalyst for long-term growth and urban transformation

It is generally accepted that rail, from high speed trains through to light rail and metros, has advantages over many other ways of travelling. Trains can move large numbers of passengers directly into and easily between towns and cities. The speeds and journey times are much better than road and most other public transport options. Rail can also move large volumes of containerised and bulk goods between distribution centres and end users. And the time spent travelling on a train can often be used more productively compared to the same journey in a car.

Rail plays a key role in supporting economic activity by connecting people to firms and firms to other firms. The wider this market and pool of labour, the greater the business interactions and the higher the productivity, so the logic goes. The benefits arise from the clustering of economic activities, easier sharing of knowledge and access to more and better staff.

We know that taking away train services in the UK in the 1960s and 1970s as part of the Beeching cuts led to a fall in population especially for the most skilled residents in the affected locations.

What is the evidence of economic benefits

Investment in the rail network, generally in the form of new lines and stations, has the potential to impact economies by reducing transport costs and stimulating the economy. There are also some studies that show investment in rail infrastructure leads to increased employment and positive business outcomes, particularly in the number of firms around a station.

What generally occurs, is that the benefits tend to cluster close to a station. Opening in May 1999, the Jubilee Line Extension (JLE) involved 16km of new track and cost £3.5 billion. This increased the number of jobs and firms by 6.6% and 3.6% within 750m of a station. While there was a slight reduction in jobs and firms by 1.6% and 1.3% respectively between 750m and 2km of a station, this reflects an economic shift, rather than loss of opportunity.

In terms of the housing market, the Jubilee Line Extension (JLE) and Docklands Light Railway extensions in the late 1990s were found to increase house prices by 5.5% within 2km of new stations. This mirrors studies that show that rail investment can attract higher-skilled and higher-income households, as well as improving housing stock, enhancing the overall economic landscape in areas with new stations.

So if the direct evidence varies what are the other benefits?

Building our future

Of course, transport schemes are more than just the sum of their net economic benefits. Some are so catalytic and transformational that they lay down an entire spatial framework for urban and economic development for the next 100 years and beyond: a skeleton for stimulating and accommodating future growth and bringing scarce land back into productive use.

In 1996, a private company, London & Continental Railways (LCR) was chosen by the UK government to build the 68 mile long high speed line from the St Pancras International terminus in London to the Channel Tunnel which had opened in 1994. Also known as the Channel Tunnel Rail Link (CTRL) and opening 13 years later in 2007, High Speed 1 (HS1) was the

first new railway to be built in England for over 100 years with trains reaching speeds of up to 185mph (300km/h) allowing fast, convenient travel to France and onwards into Europe.

As well as the new track, bridges and tunnels, four international stations were constructed or expanded: St Pancras, Stratford, Ashford and Ebbsfleet.

A renovated and expanded St Pancras station was rebranded as St Pancras International to become a destination in its own right. This unlocked some 27 hectare of contaminated railway land and car breakers yards immediately to the north of St Pancras and King's Cross which was carefully master planned. When built out, this area will accommodate more than 1,900 homes, 50 new and refurbished office buildings, 47,000 sqm of shops and restaurants, 20 new streets and 10 major new public spaces. With a day time population of 50,000 people and many high tech users, this is an entirely new urban district and economic node.

Further east, a new station at Stratford formed an expanded high connectivity hub and major growth area. With the infrastructure in place, London was well placed to win the nomination to host the London 2012 Olympics which it duly did. At 74 hectares and £4 billion, Stratford City is now the largest single mixed-use urban regeneration project in Europe with over one million sqm of retail and leisure, hotels, commercial space and community facilities as well as 16,400 new homes. In terms of the 38,000 residents who will eventually live there, that is equivalent to building Kings Lynn from scratch.

And Ebbsfleet Garden City, adjacent to Ebbsfleet international, is a now a nationally important development, planned to provide 15,000 homes for 35,000 residents by 2035.

But this is only part of the story.

What we now see around Kings Cross with its nexus of transport connections and access to not just the Oxford and Cambridge triangle but also the rest of the UK, is a growing super

cluster exploiting the synergies between medical, life sciences and world leading data science and technology companies. The Francis Crick Institute, Wellcome Trust and University College Hospitals London are now in close proximity to Google, DeepMind and, soon, Merck's new Discovery Centre. This collaboration potential of highly productive activities does give the UK scope to start to rival other global clusters like Boston and Massachusetts and to develop our leading edge in discovery science.

So if that gives some examples of what has happened and what is happening, what does the future hold?

The £11 billion TransPennine Route Upgrade (TRU) of 70 miles of track, six miles of tunnels, 23 stations, 29 level crossings between Manchester and York will allow six fast trains an hour between Manchester and York arriving in just 41 minutes. The extra capacity that allows 15 more freight trains has the potential to remove 1,000 lorries from the roads each day when the main phase completes in 2033.

The £6.6 billion East West Rail scheme running from Oxford via Milton Keynes to Cambridge is central to unlocking growth in a corridor of world class research, innovation and technology which is constrained by a chronic under-provision of affordable housing with 30,000 homes required each year. More than many schemes, this has the potential to deliver expanded towns and new towns based around the principles of Transit Orientated Development at scale and with speed.

The proposed £1.2 billion DLR extension to Thamesmead has the potential to support the construction of up to 30,000 homes and the creation of 10,000 new jobs north and south of the Thames by the early 2030s building on the increasing success of the Royal Docks.

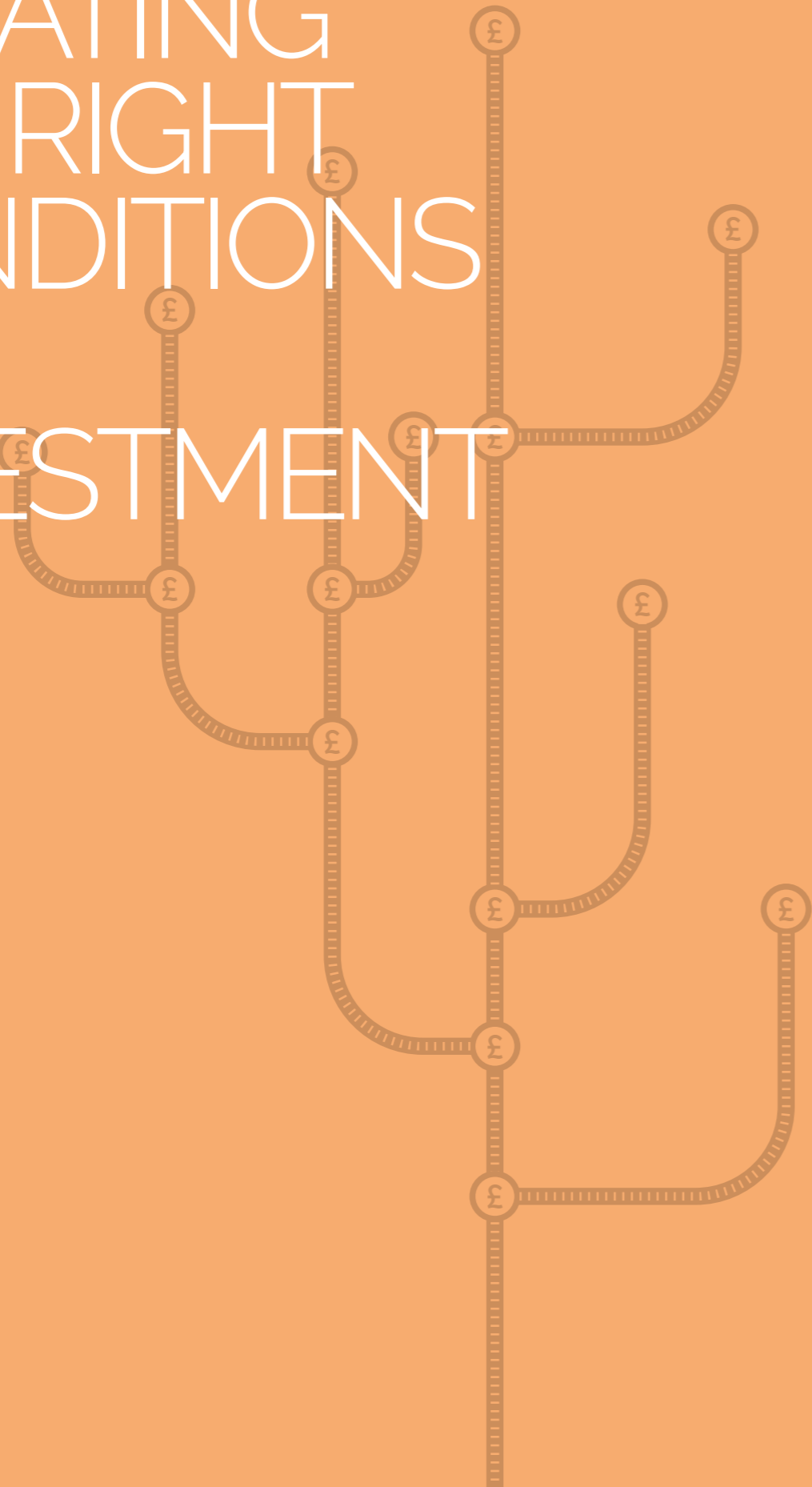
As well as new schemes within cities and between cities which the Eddington Report (2006) conclusively showed had the best value for money, we have the potential to add more services.



With 18.6 million passengers in 2023, the cross-channel rail operator Eurostar has plans to increase annual passenger numbers to 30 million and expand its train fleet by 30% by the early 2030s. At present, direct services operate to Paris, Lille, Brussels, Rotterdam and Amsterdam with connecting services into Germany from Brussels. Other operators such as SBB and Evolyn are actively exploring the potential for new direct routes to Basel, Frankfurt, Cologne, Zurich and Geneva.

So, any rail investment has to be considered beyond just the immediate return on investment. Rail systems can help reduce emissions, deliver energy efficiency, increase accessibility to support inclusion while assisting with regional integration and balancing growth across the nation. Rail investments have to be considered broadly and over many cycles of development and economic growth as part of societal progress. Entirely new opportunities are only possible by building on investments and decisions that were taken in the past. Rail investments become truly transformational by the very nature of their cumulative effects and act as powerful catalysts for long-term development. Rail is a strategic investment in the nation's future.

CREATING THE RIGHT CONDITIONS FOR INVESTMENT





Neil Henderson
High Speed Rail Director, Mott MacDonald

Neil is a senior director with Mott MacDonald—an employee-owned global engineering, management and development consultancy. He is also a Fellow of the Institution of Civil Engineers and has over 25 years' experience of delivering major infrastructure projects for a range of public and private sector clients. Projects include Wembley stadium, the 2012 Olympic games in London, Crossrail (now the Elizabeth line) and High Speed 2.

Neil played a key role on the Crossrail project from 2012 as Mott MacDonald's Programme Director and Key Account Director. He has also been involved in sharing the lessons learned on Crossrail more widely on major projects including the High Speed 2 and California High Speed Rail projects.

Creating a cost-efficient environment for investment

New rail infrastructure brings a multitude of benefits. Socially, it bridges communities, fostering inclusivity and accessibility to essential services. Economically, it spurs growth, creating jobs and stimulating investment. Environmentally, it offers a greener alternative, reducing carbon footprints and alleviating traffic congestion. By enhancing connectivity, rail networks unlock the potential for regional development, improve quality of life, and promote sustainable practices. The design, construction, operation, and maintenance of rail infrastructure also generates substantial local employment opportunities, and in many cases is the lifeblood of many small towns and cities.

Despite these well-known and widely accepted benefits, the UK is generally disconnected and poorly served by rail, particularly in northern England. While our friends across the Channel in France have built and opened approximately 480km of new high speed rail lines over the last decade, the UK has opened no new high speed rail lines since 2007. Recent expansions to the network in France have significantly cut travel times from Paris to southwestern France and Strasbourg and improved regional accessibility and connectivity within Brittany. These newer additions to the French rail network have already bolstered regional tourism, jobs and economic growth.

But these benefits are typically masked or completely ignored when high profile rail infrastructure projects are overspent and delayed. All too often this negativity dominates the narrative in the media and amongst politicians, leading to projects being curtailed, cancelled, or not being taken forward. This narrative and growing uncertainties in the

UK's infrastructure project pipeline are also discouraging people from choosing careers in the sector and encouraging experienced people to explore opportunities abroad.

As highlighted in Mott MacDonald's report '[How to kickstart a northern renaissance](#)', a new rail link between Leeds, Bradford and Manchester would more than double the size of the available labour market and unleash the productive economic potential of cities and towns along the route. But, if we are to make the case for investment in new rail networks across the UK as a catalyst for social and economic growth, we need to address the reasons for overspending and delay and clearly show how we can deliver future projects on time and on budget. Since many of these projects are publicly funded, the UK rail infrastructure industry needs to rebuild confidence in our ability to deliver value for taxpayers as well as articulating and demonstrating the long-term benefits these projects deliver for them.

We must focus on two overarching points:

1. How to deliver more pragmatic, realistic solutions with a minimum viable product (MVP) and functional mindset; and
2. How to rebuild confidence, so that we can get on delivering new rail infrastructure where it is most needed in the UK.

The recently published '[Blueprint for Growth](#)' highlighted key measures to boost the UK's growth and productivity. It has been produced by 12 tier one UK infrastructure and construction contractors and consultants and it



includes useful information on some of the key reasons why major UK infrastructure projects, including rail, lead to cost escalations, delays, and loss of public support. These include:

- Public infrastructure investment is often characterised by a stop-start funding approach, with responsibilities for infrastructure divided among various government departments, adding complexity to delivery.
- Many major infrastructure projects are given the green light for political reasons before their design has reached a sufficient level of maturity. This means that they begin with budgets that are unrealistic from the start.
- Current planning and consenting processes for UK infrastructure projects and local politics often contribute to delays in delivering major schemes, sometimes over minor issues that take considerable time to resolve.

There has also been some criticism that the UK rail industry has a tendency for "gold-plating". This often refers to the perception that projects are designed with excessive features or specifications that go beyond what is deemed necessary, leading to higher costs.

Examples of this are seen across the world, for example on high speed rail projects where very high design speeds (e.g. over 350km/h) are specified. In several projects this has led to increased costs for several reasons:

- Higher speeds require more precise engineering, including straighter and smoother tracks, which can be more expensive to construct, especially in densely populated or geographically challenging areas.
- Faster trains necessitate more advanced safety systems and infrastructure to manage the increased kinetic energy, which adds to the cost.

- Mitigating the environmental impact of high speed trains, such as noise pollution, requires additional investment in sound barriers and other protective measures.

- In some cases, trains need to integrate with an existing rail network, which is not designed for such speeds. This requires careful planning, engineering and integration to ensure compatibility and seamless operation.

- Higher speeds result in greater wear and tear on both the trains and the tracks, leading to higher maintenance costs over time.

The discussions around "gold-plated" designs also touch on broader issues of infrastructure investment in the UK, where significant funding is required to address mitigation issues required to comply with planning/consenting approvals.

I have also heard from several leaders in our industry that we like to build "iconic transport monuments" in the UK. Over the last few decades new rail schemes have been characterised by highly aesthetic station designs. In contrast new European rail stations tend to be more functional and a lot cheaper to design, build and maintain. Recent examples of European high speed rail stations that efficiently handle large volumes for passengers and easy transfers between different modes of transport but have also been designed and built with functionality and cost-effectiveness in mind are Madrid Atocha Station, Spain, Lille, France and Liège-Guillemins Station, Belgium.

MVP: meeting the users' needs without unnecessary features or complexity

Accurate pricing for major rail projects relies on a clear understanding of project outcomes, scope and constraints, reducing risks and fostering collaboration. And to help reduce costs and improve certainty in delivery, we should design with a minimum viable product and functional mindset.

This means ensuring that once the project outcomes and scope are clearly defined, the most basic version of the structure and/or system that would still provide value to the users and stakeholders, is identified and developed.

By applying this approach, projects can be more responsive to actual user needs and market demands, potentially saving time and resources while ensuring a better fit for the end product. Remember, this is not about delivering a sub-standard product; it's about smartly investing effort to create a product that meets the users' needs without unnecessary features or complexity.

Taking a modular approach to design can save significant time and cost

Modern Methods of Construction (MMC) also offer significant efficiency gains. For new rail infrastructure, elements like a bridge or tunnel and station/depot building components can be standardised and simplified into modular elements that can be manufactured, transported, and assembled in the same manner consistently. But, as mentioned below, this relies on detailed GI data to ensure designs match the actual ground conditions. Other elements can be standardised, for example signalling rooms, ventilation facilities and track beds to reduce complexities in supply, transport and installation.

A modular design approach offers advantages beyond scalability and standardisation. It has cost and time savings in design and erection on site, and offers a consistent and unifying aesthetic that can be locally adapted with a materiality that changes to reflect its location.

This approach would also direct us to more functional designs, particularly for stations, which will be cheaper to design, build and maintain.

More mature designs mean more mature decisions

Design must be sufficiently mature. Sufficient information (such as GI data) should be available to allow for better identification and management of risks and areas of complexity which may need more focussed attention, which can be factored into the contingency planning. This ensures that the project is prepared for unforeseen events and a mature design minimises the chances of scope creep, where the project expands beyond its original objectives, often leading to increased costs and delays.

Other strategies that can help improve the efficiency of rail project delivery, include:

- Make critical decisions early in the project lifecycle to avoid complications later on. Applying the same energy and rigor in the first third of a project that's traditionally applied in the last third can make the subsequent phases much smoother.
- Effective leadership is crucial for driving the project forward and facing up to difficult decisions early on, even when stakeholders have conflicting interests.
- Utilise digital technology and data in the design process to manage risk and cost. This can help in providing information about the decisions and using data to model outcomes.
- Commit to using building information management, from design to construction, to ultimately deliver a digital twin to operations.
- Focus on collaboration to deliver project objectives and reduce waste in the construction process. Recognise responsibilities and hold each other accountable.

- Ensure that consultants and contractors have high-quality resources and strengthen project-management and delivery capabilities.

We can only do this if there's future investment. Let's use our success stories to build confidence.

We also need to be better advocates for the long-term social and economic benefits of these projects and to help rebuild confidence in our ability to deliver value for taxpayers. And there are some great examples.

The High Speed One (HS1) project provides a case in point. HS1, and the services which make use of the high speed line, supports more than £427m of economic benefits to the UK and continental Europe every year. The Kent economy, London and key destinations in Europe also benefit from international services as HS1 contributes to over £400m of annual trade between the South East and Europe, unlocking foreign direct investment and supporting £2bn of tourist expenditure each year. HS1 has identified key lessons from assumptions made during planning, design and construction and how these improvements could have been made earlier in the scheme to improve project outcomes. These include location of infrastructure and rolling stock depots, engineering, train fleets and the operations and maintenance methodologies and technologies.

Take the Elizabeth line—it was late and over budget when it opened in May 2022. This was partly down to changes in the projects scope and failures on train specifications. However, it has delivered several significant achievements which help makes the case for new rail infrastructure as an investible proposition in the UK:

- Over 350 million journeys since opening
- It has added an estimated £42 billion to the UK economy
- The line has spurred the development of 55,000 new homes and is associated with the potential for 15,000 further new homes and 8,000 jobs

The current High Speed Two (HS2) project is under construction but is already yielding significant benefits to the UK economy. Highlights include:

- Over 30,000 jobs supporting the building of the railway
- Over 1,500 apprenticeships created
- Over 4,200 formerly unemployed people supported into work on HS2
- 3,300 UK businesses across every region have won work; over 70% small to medium enterprises (SMEs)
- 1 million trees successfully planted as part of HS2's green corridor
- £16 million of community funding awarded to support more than 280 community projects.

The UK rail infrastructure industry faces significant challenges, but also tremendous opportunities. Projects to date demonstrate the transformative potential of new rail infrastructure.

Industry and government must address issues of cost overruns, delays, and negative public perception and learn from past experiences.

By doing so, these projects can deliver value for taxpayers, meet the needs of users, and make new rail infrastructure an investible proposition in the UK. This will not only drive the industry forward but also contribute to the broader social and economic growth of the country.

It's down to all of us in our industry to embrace change but also express our confidence, putting rail back at the top of the agenda and creating a better and more connected future for the UK.

The future of rail in the UK is bright, and with the right approach, the industry can overcome current challenges and unlock its full potential.



Richard Thorp
Chief Operating Officer, HS1 Ltd

Richard is a Chartered Engineer, with over 25 years' experience in developing asset management capabilities for both UK main-line and high speed railways. Responsible for providing client leadership to HS1's supply chain, fulfilling the Asset Stewardship objectives in the concession agreement and ensuring that HS1 Ltd continues to deliver a world class asset for HS1's customers.

Richard has previously worked as an Infrastructure Maintenance Delivery Manager for Network Rail, as well as Head of Signalling Control and Communications Engineering, Route Asset Manager (Signals) and Route Asset Systems and Integration Manager at Network Rail. Richard was also a Director of the High Speed Rail Group between 2019-2023, promoting a world-class high speed rail network in the UK.

HS1: Leading the way for high speed rail in the UK

With a new government now in place, this time presents opportunity to reassess what the UK holds the ability to execute and what we should prioritise in a revised parliament. At High Speed 1 (HS1), we take pride in being the nation's sole high speed railway and an example of a successfully executed major infrastructure project that has delivered substantial dividends, unlocking the potential realm of benefits of modern rail infrastructure to drive economic growth, improve connectivity, and reduce environmental impacts.

The first section of HS1 opened in 2003 and the second section in 2007. Our line now stretches 109 kilometres from St Pancras International in London to the Channel Tunnel, serving as a critical link connecting London to Paris, Brussels, and Amsterdam, as well as providing services between London and Kent. We consider our current operators—Eurostar and Southeastern—to be at the forefront of modern British rail, enhancing international and domestic services and connectivity.

Much of HS1's success shows the value of private-public sector partnership in railway operation, with structures providing opportunities for effective private financing opportunities—and our financial and operational performance speaks for itself. We are proud to count our delays in seconds, not minutes, with average delays below twelve seconds per train and we've been able to provide our investors with a return for their substantial investment in HS1 for the concession period.

Major Infrastructure Projects as an Attractive Proposition for Investment

The success of our high speed line provides valuable lessons for future rail projects and shows that rail infrastructure can be an attractive proposition for investment.

The concession model, which involved the sale of a 30-year operating concession of HS1's stations and infrastructure to private investors, is critical to this offering as a long-term revenue stream. The model also aligns incentives between HS1 and the Department for Transport (DfT). We are incentivised to increase capacity on the line by running more trains, which in turn will lead to a more valuable asset when we hand it back to the department at the end of the concession in 2040 with wider social, economic and environmental benefits derived from the asset.

Initially, HS1 received significant government support through grants and guarantees for construction. Spearheaded by London and Continental Railways, this phase was funded through a mix of equity, commercial bank loans, and government support. Crucially, the concession was sold with a level of risk that could be understood and priced by the investment market, and with adequate risk provisions built in, such as the domestic underpin. This could only be done once the railway had been brought into service as the construction risk for major infrastructure projects is expensive and difficult to price for investors due to the high degree of uncertainty. The timing of the sale of the concession was also key as it was a new railway that had operated for two years prior, with teething problems ironed out.

The concession model not only ensures efficient management and maintenance but also attracts ongoing private investment, whilst also ensuring the government and others get a return on the original investment. In contrast to most of the UK's National Rail Network, which relies heavily on government subsidy, our concession framework allows HS1 to use a diversified funding model, combining track access charges from train operators, income from retail and commercial activities at stations, and property development around its route, along with other mechanisms like infrastructure levies, public-private partnerships, and rigorous risk management—all of which has contributed to our consistently strong financial performance over the years.

The transparent and structured nature of this approach, covering the entire lifecycle from construction to operation and improvement, acts as a significant incentive to provide investment for modern, high-quality infrastructure. Investors can see a clear pathway to revenue generation and cost recovery, with built-in mechanisms to handle various financial aspects of the project—ultimately creating an attractive and sustainable investment proposition.

Our Financial Success

There have of course been natural obstacles to the functionality of the funding model. The COVID-19 pandemic presented all parts of the HS1 system with substantial challenges, including long term changes in travel patterns, which we continue to adapt to. Whilst leisure travel has recovered, the pandemic brought about a fundamental change in commuting and business travel which the entire rail industry is adjusting to.

Having said this, the concession model has historically, and continues to, provide holistic economic benefits to DfT and government, including up-front payments. From Thatcher's government to Blair's, this provided crucial financial backing and guarantees, including bond issuances tied to future revenues from track access charges and commercial activities. This blend of private investment and public funding not only ensured the

project's completion but also paved the way for a profitable revenue model. In 2010, Brown's government recouped a significant portion of its investment by selling a 30-year concession to Borealis Infrastructure and the Ontario Teachers' Pension Plan for £2.1 billion. During the COVID-19 pandemic, despite associated challenges, HS1 did not require any government bailout whilst billions was pumped into keeping the rest of the UK's rail network afloat. There will be further opportunities for the government to recoup significant payments in the future due to DfT and HS1's partnership.

HS1 has demonstrated strong financial performance through strategic investments, cost reductions, and collaborative efforts. Through embracing enhanced modelling and innovative technology, HS1 has significantly improved asset intelligence and management, resulting in notable operational efficiencies.

Despite facing challenges over the past five years, HS1 has achieved substantial savings, including a £2.6 million annual reduction in electricity costs through a multistakeholder project introducing regenerative braking on the Southeastern fleet. Close collaboration with partners has also yielded cost savings, such as a 2.2% reduction from consolidating insurances. We're always looking for opportunities to improve this service further—plans are currently underway to increase R&D investment from £2.6 million to £4 million to leverage advancements in technology, such as AI-generated Autonomous Infrastructure Monitoring and innovative track deterioration models, to enhance asset management and fur.

HS1's Extensive Contribution to the UK

HS1 has acted as a catalyst for economic transformation on the road to sustainable transport promotion. A report published in 2020 shows our line supports more than £427m of economic benefits to the UK and continental Europe every year. Since the first section of HS1 opened in 2003,

cumulative benefits of £4.5bn have been delivered, and today's line is expected to provide at least £10bn of regeneration benefits over the next 50 years.

Looking to examples where the line has attributed to positive socio-economic transitions, HS1 has contributed to the population growth across Kent to London's employees gain from access to more affordable housing in Kent, with average property prices in the catchment area of HS1 almost half that of properties in the wider commuter catchment area to the southeast of London. The line has attracted a further 164,000 households, 63,000 highly skilled individuals, 18,000 commuters and 15,000 leisure visitors. This has contributed greatly to the local economy, particularly benefiting towns like Folkestone, Ashford and Maidstone due to improved connectivity and greater tourism appeal.

Future Opportunities for the UK's Rail Industry

One opportunity we would like to support the UK in grasping effectively is that of international service expansion—which can primarily be enabled by open access operations. We see ourselves as a key steward in providing additional international rail services between London and the Continent. This can be achieved through market liberalisation in the form of open access, making it more straightforward for private finance initiatives to make a strong case for investment. This in turn will allow additional operators to seize opportunities, work with stakeholders throughout the value chain, and begin operations as soon as possible.

We know this approach can provide better choice and value for passengers. We can observe the success of EU countries, including Spain, France and Italy, where market liberalisation has seen private sector stakeholders have opportunities to enter the market and rapidly expand passenger choice and high speed networks in recent years. Spain saw a 76% increase in high speed passengers in 2022 compared to the previous year, including 90% for medium-

distance journeys. Rail has also become a first choice in transport options, with almost 80% of those travelling between Madrid and Barcelona choosing the train. In Italy, the high speed rail market increased by 120% between 2011—the year before liberalisation—and 2019. This growth in competition is also being matched by increasing international passenger demand post-pandemic, with Eurostar among the European operators anticipating increased growth for this year.

At HS1, we believe that even greater potential can be unlocked by the UK's rail infrastructure. Looking ahead to a revised parliament, it is imperative that the government drives forward a transport policy that connects its transport assets together, and a network that enables these assets to work in conjunction with each other.



James Holmes
Rail Sector Director, Amey

James joined Amey in 2022 to lead the rail infrastructure operations business, which involves some of the most complex, challenging projects operating in the UK, including the Core Valley Lines in Wales and the TransPennine Route Upgrade. Along with large-scale, multi-disciplinary projects, James also leads a variety of rail systems and asset management teams, as well as the operations of light rail franchises through Docklands Light Railway and Manchester Metrolink.

His career spans over 20 years, working closely with the largest rail infrastructure providers. Witnessing first-hand the benefits of integrating complex railway systems, James is a supporter of greater connectivity in the rail sector, harnessing data and technology to influence the future of how railways operate in the UK and world-wide.

Reconsidering private finance to boost the investment appeal of UK infrastructure

It's widely accepted that investing in infrastructure drives economic growth and prosperity, providing communities with more jobs plus better facilities and environments. Securing the required investment is however increasingly challenging against stretched public sector finances.

The UK public sector financing approach typically derives from a combination of taxation and public borrowing. The former currently sits at its highest level since the 1960s, the level of the latter hasn't been surpassed since the end of World War II. This leaves little capacity for significant additional public financing, which is neither publicly supported or economically sustainable.

There's an element of catch-22 here. Improving public finances requires stronger economic growth and unlocking this growth relies on the delivery of new and upgraded critical infrastructure across all sectors. Which, of course, needs financing.

Given this situation—which is likely to persist without intervention—there is widespread acknowledgement that the UK must reconsider how it embraces private sector finance, with sustainable 'green' investment at the forefront. Creating new public-private partnership models is a key step towards supporting the vital renewal and enhancement of UK infrastructure. Luckily there are plenty of deep-pocketed investors across the globe actively seeking financing opportunities, so it should be relatively straightforward to connect this all together?

At this point we need to highlight that although the terms financing and funding are often used interchangeably, they are not the same. Financing is the upfront payment mechanism required to secure

the land, materials and services involved in the delivery of infrastructure, whereas funding is concerned with how the infrastructure is ultimately paid for over its lifetime, typically through a combination of user charges, taxes and windfall gains.

Clear funding arrangements are critical as they have a significant impact on the availability and cost of financing—especially where private sector finance is being sought—as investors need confidence the money used to finance the infrastructure will be repaid. The utilities and energy sectors lend themselves to being funded through relatively predictable user charges, and this clarity and reassurance means the majority of infrastructure is already privately financed. When finance and funding models connect, it can quite simply, work.

Other than toll roads though—which are not common in the UK—transport infrastructure tends to be funded through taxation and almost wholly publicly financed.

Shifting financing to the private sector here is more challenging. For private sector financing to be considered off balance sheet and not simply additional government borrowing, a meaningful level of risk needs to be transferred to the private sector.

But if a private finance investor looks back at the last few decades, it would see the UK rail sector as unpredictable, organisationally complex, inefficient and poorly performing, which makes delivering the strategic vision challenging. Unsurprisingly, it is naturally reluctant to adopt the level of risk required and seeks preferential opportunities in other sectors and geographies.

So, how could the UK rail sector become a more attractive place for private finance?

For a sector often affected by misaligned objectives and short-term decision-making, first and foremost a long-term overarching national transport strategy is required. It is therefore vital that Great British Railways is given the remit to deliver an integrated long-term plan. This is a necessity to provide the clarity, reassurance and compelling vision needed to give investors greater confidence in the long-term future.

Secondly, we need to move away—where it is sensible to do so—from the universally applied vertically-separated industry model created at privatisation in 1994 (where responsibility for infrastructure and operations were split between different organisations with different objectives). This provides opportunity to apply a whole-systems approach to change how industry players interact and engage with each other, reducing fragmentation, enabling clearer allocation of risk and driving alignment in terms of outcomes for end users. Additionally, it encourages innovation and new delivery models which suit the demographics and geographies of the communities served.

Amey's partnership with Transport for Wales to design and deliver a £1 billion transformation of the Core Valley Lines is a great example of how applying an integrated systems approach can be incredibly effective. As an organisation who has delivered nearly 20 privately financed schemes across a range of sectors, Amey understands the challenges of all stakeholders involved to conceive and deliver workable and cost-effective infrastructure solutions.

The UK's rail infrastructure must be seen as an attractive opportunity for investors, so we call on the government to provide targeted investment to enhance the UK's critical rail infrastructure, with clear policy and spending commitments to enable the private sector to have the right capabilities and resources to deliver these. These must be supported by a pipeline of future projects to provide certainty and transparency, alongside dedicated sponsors focused on developing more effective public-private partnership models.

The public sector finance landscape will take time to re-balance itself. In the meantime, building partnerships where the public sector creates the right strategies, structures, conditions and funding opportunities for the private sector to confidently finance is vital to deliver investment-led economic growth, benefitting communities across the UK.





Richard Catterson

Head of Strategic Marketing, Hitachi Rail

Richard is the head of UK Transport Strategy and Marketing for Hitachi Rail (GTS), a global player in the urban and mainline markets, providing leading edge signalling and telecommunications systems which deliver safer, greener and lower cost railways. In his role he is responsible for working with global product lines to deliver these world class next generation solutions and know-how into the UK transport sector, working closely with Hitachi customers to redefine their operations.

With prior experience in developing projects in the energy sector, Richard has a keen understanding of the challenges of finance in both the transport and energy sector and advocates for the need for greater collaboration and understanding between the government and the private sector in order to increase the attractiveness of rail as an investment option for both UK and international investors.

Lessons learnt from the funding successes of the renewable energy sector

The UK's renewable energy sector stands as a testament to the role that private investment can play when harnessed effectively. As the electricity sector was being privatised in 1990, renewable energy accounted for less than 2% of total electricity generation. Today, that number is nearer to 50% and growth is not expected to slow driven by ongoing government support and attractive investment conditions.

To highlight, the new Labour government announced plans in July to leverage up to £60bn of private investment for renewables through a partnership between the new public, clean energy organisation Great British Energy and the Crown Estate to build more offshore wind farms and carbon capture utilisation and storage (CCUS).

In stark contrast, the rail industry, despite its critical role in the nation's infrastructure and economy, has struggled to attract anything like comparable levels of private capital, with the overall funding landscape dominated by public expenditure other than rolling stock. This reliance on government funding is a lost opportunity that constrains the industry's ability to innovate, expand, and improve services at the pace demanded by a growing and increasingly environmentally conscious population.

So what can be learned from the Renewables sector?

The importance of a stable and attractive investment environment

The Importance of a stable and attractive investment environment

A key lesson lies in the creation of a stable and attractive investment environment. The renewable energy sector benefited from long-term policy frameworks, such as the Renewable Obligation Certificates (ROCs) and Feed-in Tariffs (FITs), which provided investors with clear and predictable returns. More recently the government has moved to Contract for Difference (CfD) which allows renewable assets to sell their electricity at a fixed price for 15 years, with the fixed price guaranteed by the government and inflation every year in line with CPI. This kind of government back support to de-risk projects is key in attracting capital from pension funds and other major investors.

The rail industry should work with the government and finance experts to explore similar mechanisms, such as long-term contracts for key services or infrastructure projects, to unlock the private sector by reducing investment risk to manageable levels.

Technology and innovation

The renewable energy sector has successfully leveraged technological advancements to drive down costs, reduce risk and increase efficiency. In the wind industry, for example, advancements in turbine technology have created highly reliable low maintenance machines while costs of installation and maintenance have been reduced which have helped to make the sector more attractive to investors seeking strong returns.



The rail industry must also prioritise innovation and technological adoption to improve operational efficiency, reduce costs, and enhance passenger experience. For example, investments in digital technologies, such as advanced signalling and predictive maintenance, can improve service reliability and attract private capital.

Collaboration

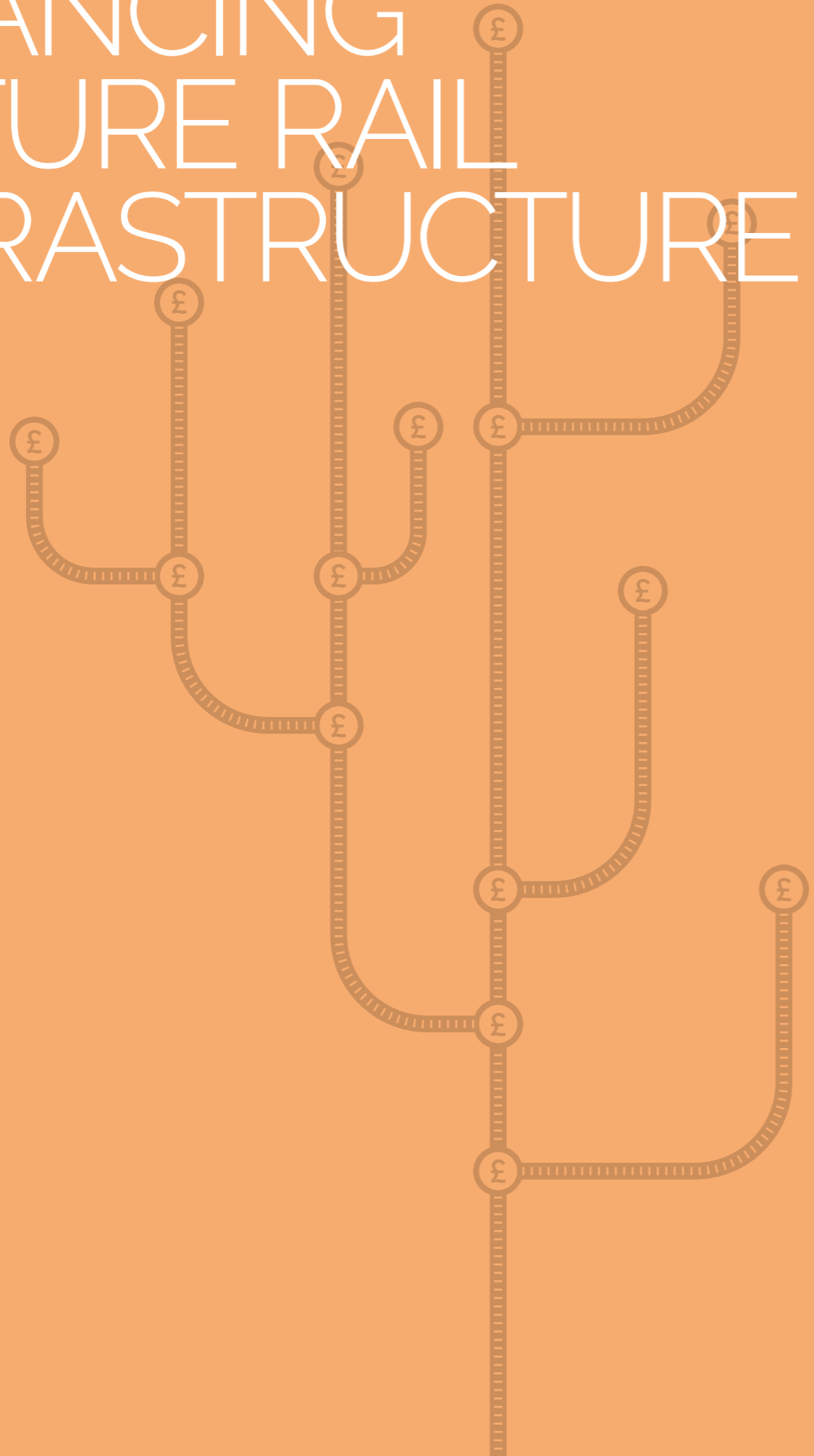
Finally, the renewable energy sector has fostered strong partnerships between government, industry, and investors. This collaborative approach has been essential in overcoming challenges and creating a supportive ecosystem for investment. The rail industry can benefit from similar partnerships to identify investment opportunities, share risks, and develop innovative solutions.

Summary

By learning from the renewable energy sector, the rail industry can create a more compelling investment proposition. By implementing policies that reduce risk, encourage innovation, and foster collaboration, the rail sector can unlock the potential of private capital to drive modernisation, improve services, and contribute to a sustainable future.

While the challenges facing the rail industry are significant, the rewards of attracting private investment are substantial. By adopting a strategic and proactive approach, the rail sector can embark on a journey of transformation, mirroring the success of the renewable energy industry and delivering benefits for passengers, freight customers, and the economy as a whole.

FINANCING FUTURE RAIL INFRASTRUCTURE





Aarti Gupta

Rail BD & Investments Lead, Costain

Aarti is a corporate financier with over 15 years of experience in infrastructure and project finance across investment and corporate institutions. She has worked on the origination and execution of several high-profile infrastructure projects including the M25 widening PFI, HS1, Schools BSFs, Hospital PPPs and energy projects at Barclays and Dexia Banking Groups. At Costain, Aarti's passion for infrastructure investment has continued to drive a specialism in structuring public-private investment models—most recently collaborating with HS2 and DfT on the Hybrid Public Private Investment Fund for innovative construction technologies. She also shaped a £52m innovation and R&D programme including establishing a venture builder programme launching 20+ start-ups in rail, water, and energy markets and is currently focussed on leveraging her skills to foster collaboration between public funding and private expertise to grow rail and infrastructure markets at Costain.

Seizing the moment: a call for closer public-private collaboration

Rail infrastructure has long struggled to attract significant private investment, relying primarily on public sector funding. The highly competitive nature of public financing, coupled with the complex and capital-intensive nature of rail projects, has made securing private sector participation a challenge. However, with public finances now under strain, private capital is critical to delivering infrastructure that supports economic growth, improves regional connectivity, and meets pressing environmental goals.

Historically, the UK rail sector has not developed the financial tools necessary to draw in large-scale private investment. In industry, there is now a recognition that a "menu of options" approach—adapting lessons from other sectors and leveraging successful precedents—can open new avenues for funding high speed rail and integrated transport projects. Drawing on proven financing mechanisms like the Regulated Asset Base (RAB) model and public-private partnerships (PPPs), there is ample scope to reshape how infrastructure is funded, with the right frameworks in place to balance risks and rewards.

Shifting Policy and Investment Narratives

The changing geopolitical, environmental, and infrastructure landscape has fundamentally altered the rail market. With the devolution of power to regional authorities, the centre of gravity for infrastructure decision-making has shifted away from Westminster. This realignment means that the narrative around investment in infrastructure is increasingly focused on regional outcomes—placemaking, connectivity, and community regeneration.

In this context, it is not enough to talk about investment purely in terms of large-scale national projects. The case for private finance must now be framed around regional objectives, such as connecting communities, accelerating housing development, and regenerating local economies. These are the outcomes that resonate with the public and provide a compelling case for why private investment in infrastructure matters—not just for investors, but for people whose lives will be improved by better connectivity and services.

At the same time, the deteriorating state of the UK's existing rail assets, coupled with high-profile project cancellations like HS2 Phase 2, has eroded confidence in the government's ability to maintain a steady pipeline of investible projects. The stop-start nature of funding commitments and shifting policy directions have compounded the challenge of attracting private capital.

The Role of Private Finance

The UK is at a critical juncture in its infrastructure journey. Inconsistent and insufficient investment has led to ageing rail assets that are ill-equipped to meet modern societal demands, such as the need for climate resilience, increased capacity, and regional connectivity. The new Labour government has acknowledged that the public purse alone cannot finance the country's infrastructure needs. According to the latest National Infrastructure Commission report, sustained access to private capital, to the tune of £40 to £50 billion per year over the next 30 years, is essential to meet national infrastructure objectives.

To secure this investment, a fresh approach is needed. The future of infrastructure funding lies in partnerships between the public and private sectors, where early engagement and holistic decision-making are prioritised. Aligned incentives and a focus on outcomes—tangible benefits for the end-user—must be central to any financing strategy.

Despite the UK's track record of sophisticated financial models, barriers to private investment remain. Unclear government policies, inconsistent project pipelines, and a highly complex planning system have made the UK less attractive to investors. These challenges must be addressed if the UK is to unlock the full potential of private finance for infrastructure.

Building Investor Confidence

Investors have expressed a strong willingness to engage in conversations about lessons learned from previous financing models. There is widespread acceptance that the UK does not need entirely new models but should instead focus on refining and improving existing frameworks, like the RAB model used in projects such as Heathrow Terminal 5 and Tideway.

However, private investment is contingent on several key factors. First, the government must create the right conditions for investment by providing clarity around long-term project pipelines, which are essential for building investor confidence. A clear, 10-year infrastructure pipeline, which the government has committed to, will signal to the private sector that the UK is serious about delivering a consistent stream of projects, backed by stable funding and policy commitments.

Second, earlier and more transparent engagement with the private sector is crucial to aligning affordability, risk management, and end-outcomes for specific projects. This collaborative approach will enable both sectors to work together to develop financial models tailored to the unique needs of each project, rather than relying on a one-size-fits-all solution.

Barriers to Investment

While there is growing private sector interest in financing UK infrastructure, significant barriers remain. Investors, developers, and policymakers alike have highlighted the need for a more streamlined approach to procurement, greater certainty around project timescales, and more efficient delivery models. Clear communication of project timelines and procurement routes is vital to retaining talent and capability within the supply chain, especially in an industry facing acute skills shortages.

High-profile government support, combined with the establishment of a centralised centre of expertise for infrastructure finance, would also help bridge the gap between public sector objectives and private sector expertise. This centre could consolidate best practices and align policies across government departments, making it easier for the private sector to navigate the complexities of infrastructure investment in the UK.

Additionally, resetting decision-making practices to ensure more accurate and aligned cost-benefit estimates, as well as integrating best practices from initiatives like the Construction Playbook and Modern Methods of Construction (MMC), could drive significant efficiency gains. These steps would not only reduce costs but also make UK infrastructure projects more attractive to private investors by enhancing delivery certainty.

Addressing the Failings of Past Models

Private investors are keen to move past the failings of earlier public-private finance models, such as the Private Finance Initiative (PFI) and PPP. While these models did deliver significant infrastructure, they were often criticised for being too rigid and complex, particularly when it came to managing contractual relationships over long concession periods.

Key criticisms included a lack of flexibility, the complexity of contract management, and the uneven distribution of benefits between the public and private sectors. Investors have indicated a willingness to address these issues by adopting more flexible and collaborative financing models, which better balance risk and reward and deliver more consistent returns over time.

Increasingly, investors are structuring innovative financing models that deliver not only financial returns but also 'greener' and socially impactful outcomes. This shift reflects a growing recognition that public perception and social legitimacy are important drivers of investment decisions, particularly in the infrastructure sector.

Opportunities for Collaboration

There are significant opportunities for deploying private capital into the UK rail sector, particularly in areas that align with broader social, environmental, and economic goals. The decarbonisation of the railway, for example, presents a major investment opportunity. With around 60% of the UK's diesel fleet still in operation, there is enormous potential to transition to electric and low-carbon alternatives, creating jobs, enhancing skills, and boosting supply chain innovation in the process.

Stations, long seen as "prime real estate" for private investors, offer further potential for regeneration and community development. By developing station portfolios as part of a broader placemaking agenda, the rail industry can attract private capital to enhance connectivity, foster local growth, and stimulate leisure and travel.

Other potential areas for private finance include the development of new rail lines—such as East West Rail or Heathrow Southern Rail Access—freight line extensions, and adjacent property developments that leverage land value capture mechanisms. Concession agreements, already proven in tram and light rail schemes like Nottingham and Croydon, could be expanded to larger rail infrastructure projects.

A Programmatic Approach

The infrastructure industry is increasingly adopting a programmatic approach to delivering projects, which offers significant benefits in terms of value for money. By taking a program-level view of infrastructure delivery, the public sector can drive efficiencies through economies of scale, enhanced supply chain capacity, and accelerated offsite manufacturing. This approach also facilitates the deployment of innovative technologies and processes, helping to solve common problems across multiple projects.

The opportunity now is for the public sector to work closely with private investors to build a stable, continuous infrastructure pipeline that provides certainty and confidence to the market. In return, private investors must engage earlier and more closely with public bodies to ensure that projects are affordable, offer value for money, and align with broader social and environmental goals.

Seizing the Moment

The findings of this report clearly demonstrate the need for closer public-private collaboration to shape the future of infrastructure investment. Building on existing financing models, such as those deployed by the UK Infrastructure Bank, and exploring innovative hybrid models, like the Department for Transport's Hybrid Innovation Investment Fund, will be essential to de-risking upfront capital and unlocking private finance for regional projects.

Now is the time to seize the momentum generated by this dialogue and create the conditions necessary to attract private capital into the rail sector. By fostering a culture of collaboration, aligning incentives, and ensuring a stable pipeline of investible projects, the UK can secure the private investment needed to deliver the infrastructure of the future—one that supports regional growth, enhances connectivity, and addresses the challenges of climate change.



John Downer

Board Director, The High Speed Rail Group

John has been a Board Director of the High Speed Rail Group since 2017, with responsibility for climate, biodiversity and sustainability issues.

As an environmental scientist who has spent 20 years at Jacobs, John has spent the last ten years focused on decarbonising the rail industry, with latter roles including Rail Market Director (UK & Ireland), Transportation Growth Director (Europe), and Head of Operations for Transportation (Europe).

John founded ESG33 in 2024 to advise business on how to connect environmental, social and governance to create energised sustainable growth; turning the ESG corporate overhead into a profiting with purpose revenue generator.

Resetting investment to meet the UK's rail ambitions

The High Speed Rail Group is comprised of diverse representatives from across the global high speed rail supply chain. We are pragmatic about what is necessary to deliver the capacity improvements urgently needed in the UK rail network. As the UK enters a new era with fresh leadership, the future of our rail infrastructure presents a pivotal opportunity to boost national prosperity, enhance regional connectivity, and solidify the UK's standing as a leader in modern railways.

The new government has the opportunity to leverage rail development as a cornerstone of its "national mission" to drive sustained economic growth through strategic investment in the nation's infrastructure. With the right decisions, this transformative rail network will not only deliver substantial financial returns but also act as a catalyst for regional growth and long-term prosperity.

Maximising Financial and Economic Benefits

The potential of better-connected new rail infrastructure goes beyond its immediate costs. Through strategic concessioning, the government could recover a substantial portion of HS2's capital investment, potentially amounting to as much as one-third of the project's overall cost. This return would come from revenue generated by track access fees, which will increase in value with the number and length of train paths available.

However, unlocking these financial benefits requires the completion of key sections of the rail network, particularly between Old Oak Common and Euston, as well as north from Birmingham to Crewe and beyond. These segments are essential

to maximising both capacity and the long-term value of the UK rail network. Without their completion, overall returns to Treasury could be significantly reduced.

We must be pragmatic about the challenges that the government faces, both financially and politically, to set out a way forward following the curtailment of HS2 by the previous government. The recent contributions from the National Infrastructure Commission, Institution of Civil Engineers, National Audit Office, and Juergen Maier all determine the current situation following the cancellation of HS2's northern leg as unsustainable. We are clear that investment needs to be reset, with delivery accelerated and a pragmatic focus on overcoming existing (and well known) connectivity deficits of the current rail network. In this spirit, we are clear that there are certain elements of the HS2 project that remain essential to any future network improvements, specifically:

- **Phase 1 (London–West Midlands):** The route from London to Birmingham, extending to Handsacre near Lichfield, where the new line meets the existing West Coast Main Line, is currently under construction. The crucial section of tunnelling between Old Oak Common and central London is currently paused, awaiting government approval.
- **Phase 2a (West Midlands–Crewe):** This section, which has received Parliamentary approval, runs from the end of Phase 1 near Lichfield to Crewe, where it re-connects with the existing network. Much of the land required has already been secured by HS2 Ltd and the vast majority of the early environmental mitigation works have already been completed on 2A.

- **Phase 2b (Crewe–Wigan/Manchester):** Originally designed to connect with Phase 1 and provide critical routes northward, this section would pass through Crewe and extend to Manchester and Wigan, connecting with the West Coast Main Line. While the Golborne link was removed from the plans in 2022, the broader northern extensions remain vital for enhancing UK-wide connectivity.

These elements of the original HS2 scheme remain key to delivering the capacity upgrades necessary for the UK's future rail network. We believe that the current momentum and investment in these sections should be maintained, while also exploring alternative paths forward for the broader rail infrastructure strategy.

Scenario Analysis: The Path Forward

The new government faces two potential scenarios:

Scenario 1: The rail network is truncated at Old Oak Common, with no extension to Euston and no new line to Crewe.

Scenario 2: The recommended approach, which extends the network into central London and includes new rail lines between Birmingham and Crewe.

In Scenario 1, the network's capacity would be severely constrained, with only six trains per hour operating less than half of what the system is designed to handle. In contrast, Scenario 2 would double the capacity to 12 trains per hour, with ten of those services connecting directly to central London. This scenario would significantly increase the value, with estimated financial returns between £15–20 billion.

The economic and operational benefits of Scenario 2 vastly outweigh the costs. If completed without further delay, the project could generate substantial financial returns for the Treasury within the next decade, providing a much-needed boost to public finances.

Recommendations for Driving Growth

A well-connected efficient rail network can be a catalyst for national growth and development. It will reduce travel times, relieve congestion, and create economic opportunities for regions across the UK. However, these benefits hinge on completing the critical extensions into central London and northern England. To realise the full potential of better-connected rail infrastructure, the government should prioritise the following steps:

- **Approve the Euston Tunnelling and Crewe Extensions**

Immediate approval of the tunnelling between Old Oak Common and Euston, and the extension north to Crewe, is essential for maximising capacity and financial returns. These sections will ensure the network's ability to deliver long-term benefits, both in terms of economic growth and return on investment.

- **Retain current HS2 landholdings between Birmingham and Crewe**

It is imperative that the government retains the existing HS2 landholdings until long-term decisions have been reached. Premature disposal of these assets would significantly reduce the flexibility available to future infrastructure developments and increase the timescales for improving the network. Holding onto these assets will also allow for strategic decisions on land use that align with broader economic and transport objectives, ultimately enhancing the financial return to the public sector.

- **Engage with the Infrastructure Investment Community**

By exploring funding options like public-private partnerships and long-term concessions, the government can reduce pressure on public finances. Active engagement with private investors will bring essential expertise and innovation to the project, helping to ensure its successful delivery. Recognising that

it is not 'all-or-nothing' with some assets, such as rolling stock and stations, lending themselves more easily to private finance than others, such as core civil engineering

- **Develop a Comprehensive Strategy for North-South and East-West Travel**

The future of UK rail infrastructure should be integrated into a broader strategy that addresses both North-South and East-West travel. A cohesive vision will attract investment, boost regional economies, and ensure that future expansions and improvements align with national infrastructure goals.

Conclusion: A Vision for the Future

The new government has a golden opportunity to deliver better connected new rail infrastructure that will drive economic growth, enhance regional connectivity, and generate substantial long-term financial returns to Treasury.

Truncating the network at Old Oak Common and cancelling northern extensions will limit capacity, increase congestion, and sacrifice long-term economic benefits that far outweigh any short-term savings. The risks of bottlenecks, reduced connectivity, and lost opportunities for national growth are too significant to ignore. We are of the view that extending the network to Euston and Crewe, as outlined in Scenario 2, is the most fiscally responsible and strategically sound path forward.

Resetting the UK's ambitions on rail is crucial to secure the UK's economic and environmental benefits for decades to come. The expertise, innovation, and high-value jobs created by the HS2 supply chain in the last decade are not just national assets but also globally competitive, positioning the UK to lead in the future of sustainable transport. By building on this foundation, and investing in the rail network, this government will not only meet the UK's future capacity requirements but also generate a lasting financial boost for the country, laying the groundwork for a stronger, more connected nation.

The High Speed Rail Group stands ready to offer informed and practical support to ensure that the UK's rail infrastructure supports economic growth, regional connectivity, and environmental sustainability.



Ian Clarke

Transport Team, Infrastructure
Advisory Group, KPMG LLP

Ian is a rail expert who has worked in KPMG's Infrastructure Advisory Group for 20 years. He has advised TfL and TfGM, as well as other clients, on the funding and financing of major rail schemes, including the Northern Line Extension to Battersea, the Metrolink expansion programme, Crossrail 2, extensions of Crossrail and the Bakerloo line and a land value capture study. He has also worked with most owning groups on bids for rail operating contracts, advised Network Rail, DfT and GBRTT on rail reform and operating contract design and worked with rail freight operators to assess productivity benefits.

Securing funding to unlock infrastructure financing

It has been extensively documented that the new government has inherited a very constrained fiscal environment. The rail sector also still requires a large subsidy, for committed investments and because both volume and real yield¹ remain lower than pre-Covid. The publicly funded HS2 programme is significantly over budget, with phase 2 cancelled by the previous government. The new government is reviewing DfT's capital spend portfolio.

One of the 'missions' of the new government is to secure the highest sustained growth in the G7, which it recognises it needs to work with the private sector to deliver. In part that's because government knows that public investment alone won't deliver the scale of growth required. But it will be interesting to see whether the cost overruns on HS2 result in the pendulum swinging back towards private financing of schemes where real risk can be transferred and managed. This may seem a little at odds with expectations for an incoming Labour government, so it will be interesting to see how it plays out.

What is needed to unlock rail investment?

When thinking about investment in rail schemes, it's helpful to differentiate between:

1. **Funding**—i.e., how we are ultimately going to pay for the scheme, given net revenue increases generally aren't available upfront and aren't sufficient. Funding can include Exchequer grants (as is generally the case for HS2) and/or levies on resident, property developer or business beneficiaries, e.g., the Mayoral CIL and business rate supplement contributions to Crossrail.

1. E.g., revenue per franchised passenger journey, adjusted for cumulative CPI.

2. **Financing**—i.e., how to bridge the gap between the timing of construction costs and the timing of funding availability, where the two aren't the same.

Clearly if a scheme has no route to being funded then there can be no scheme to finance. So, the first part of the answer to the question about barriers to rail investment is the availability of funding. And that isn't easy in the current fiscal climate for the reasons set out above.

Two potentially helpful reference points are the Northern Line Extension to Battersea ('NLE') and TfL's 2017 Land Value Capture Study. These were both focussed on opportunities to dramatically reduce the funding burden on the taxpayer. Indeed, the then Mayor of London said of the NLE in 2009: "I have made clear that TfL has no funds of its own to invest in this project following the publication of the TfL Business Plan." They are also both about providing incentives to maximise commercial and residential development and are therefore highly relevant to the new government's growth agenda.

The NLE was a c.£1bn extension to London Underground's Northern line, from Kennington to Battersea Power Station, with an intermediate station at Nine Elms. It supported plans to develop 16,000 homes and space for 25,000 jobs across the 'VNEB Opportunity Area'. This included £9bn of private investment in an ambitious masterplan to bring the long-derelict power station back into use and an array of other high-density developments in the surrounding area, which includes the new US embassy. To deliver the NLE, TfL and the Greater London Authority needed to identify sufficient funding to service and repay c.£1bn of borrowings.



The “privately funded—publicly financed” funding package recognised that the power station could not be developed at the density required for it to be viable unless there was a mass transit solution like the NLE. The package included:

- £266m of developer contributions in the form of ‘Section 106’ and Borough Community Infrastructure Levy receipts, of which c.£200m related to the power station development; and
- 25-year retention by the GLA of incremental business rates at the power station and other surrounding sites.

While business rates represented the majority of the funding package, they represent only a small proportion of the tax base, so it represented a good deal for the Exchequer, which made available a UK Guarantee until business rate receipts matured. With the funding package in place, powers for the NLE were secured and it was constructed and then opened in September 2021. The previous government referenced the model as a success story in its 2023 ‘Network North’ plan.

TfL’s 2017 *Land Value Capture Study* looked at the potential impact on land values of eight major transport schemes costing a total of £36bn. It found that the schemes might produce value uplifts of up to £87bn. Some of this would crystallise as improved development viability, with the majority as increases in the value of existing commercial and residential property. The study categorised each station/location based on what was there already and the development opportunity, and then estimated the potential uplift in local land values that the schemes would deliver by referring to precedents like the Jubilee Line Extension and the investment and incorporation into the Overground network of the North London Line.

The study then identified that existing mechanisms to tap into these uplifts (business rates, stamp duty, oversite development and the community infrastructure levy) only extracted a small proportion of the windfall uplifts in land values, were poorly targeted and were ad hoc in nature. It called for further exploration of new mechanisms to capture a larger share of transport-induced value uplift, in a more systematic way—e.g., a form of ‘transport premium charge’.

There would clearly be political choices and challenges when taxing windfall gains in this way, particularly where they accrue on existing property stock before it changes hands. However, given the fiscal position, there may well be no easy routes to the levels of growth government is seeking. For there to be any chance that people will accept giving up a share of a windfall, it has to be the case that schemes won’t go ahead—and therefore they won’t receive any windfall at all—unless a larger, but still minority, share of those windfall gains are given up.

Both the NLE and the TfL Land Value Capture Study were about raising funding to reduce the burden of scheme capital costs on taxpayers, so that scarce public sector investment could support more economic infrastructure schemes, and thereby promote more growth.

However we choose to fund and finance rail schemes in the coming years, it’s clear that the new government’s growth agenda raises a challenge to the traditional approach to prioritising economic infrastructure projects, which has predominantly been based on maximising time savings to existing users. The NLE and LVC approaches provide strong incentives to maximise commercial and residential development and are therefore consistent with an increasing emphasis on maximising economic growth.



Sébastien Vecchiato

Technical Director, High Speed Rail, SYSTRA

Sébastien Vecchiato is a Technical Director within SYSTRA specialising in design, construction, testing and operation of high speed rail systems. He has 16 years of experience in the railway industry with significant involvements in recent successful HSR deliveries such as HSR SEA Tours-Bordeaux and Nimes-Montpellier bypass in France. Since he moved to the UK, he has been providing technical expertise and system integration services for rail systems as well as testing and commissioning to several stakeholders of the UK high speed rail industry such as HS2, HS1 and Network Rail High Speed. He brings knowledge, lessons learned and best practice from his former experiences in France.

France's delivery of public-private partnership financing for high speed rail

With one of the largest networks in Europe, and still growing, France has been leading the way in high speed rail for more than 40 years. We often ask ourselves in the UK, how do the French do it, how can they afford it and how do they deliver it so effectively?

One of the factors of France's successes with limited and controlled public investment is the use of public-private partnership (PPP) financing models, which ensure benefits and certainty for financial sponsors on both sides, and ultimately for passengers and communities.

Three French high speed rail projects delivered simultaneously under a PPP scheme in the last decade are:

- HSR SEA Tours-Bordeaux;
- HSR Bretagne Pays de la Loire (BPL) between Rennes and Le Mans; and
- Nimes-Montpellier bypass.

The models used in these projects clearly demonstrate how a PPP financing and delivery model can allow the public authority to control costs and ensure certainty for on-time and on-programme delivery.

About French railway PPP schemes

Two types of PPP schemes have been experienced in France over the last decade. Réseau Ferré de France (RFF), acting as national infrastructure manager, issued the PPP tenders and awarded the following contracts in 2011, before being reunited with SNCF in 2014:

- 25-year-long Design, Build, Operate and Maintain (DBOM) contracts for HSR BPL in 2011 and Nimes-Montpellier bypass in 2012, with an entry into revenue service in 2017 for both. The associated business case relies on the payment of a fixed rent to the PPP contractor by SNCF acting as national infrastructure manager after completion of the works and during the 20 year-long operations and management (O&M) period. SNCF keeps managing train paths sales with related commercial relationships and risk with train operators.
- A 50-year long concession contract for HSR SEA Tours-Bordeaux in 2011, with entry into revenue service in 2017. The associated business case is close to DBOM with the PPP contractor getting its income during the 44 year-long O&M period directly from the sale of train paths, meaning that the associated financial risks and commercial opportunities are supported by the PPP contractor.

From a public authority perspective, both PPP schemes offered significant advantages in terms of cost control as well as on-time and on-programme delivery.

Firstly, they allowed an increased transfer of responsibilities to the PPP contractors involving strong incentives in terms of coordination and global optimisation over all the project phases, including O&M. Secondly,

they permitted strong commitment by the PPP contractors for on-time delivery, as their payments and incomes, whatever the scheme was, were relying on it, which led to schedule-driven management approaches for delivering these projects.

It is also worth noting that RFF included in the HSR SEA Tours-Bordeaux PPP contract an €100,000 penalty fee per day late beyond the date for entry into revenue, which was subject to the final safety case approval by the French National Safety Body (EPSF) and the compliance assessment to the overall contractual programme by SNCF. Implementing this level of financial pressure on the PPP contractor ensured respect to all its commitments while giving the public authority and financial sponsors certainty of on-time and on-programme delivery. Long-term financial control and stability of the projects were also ensured as no additional cost on the fixed-price PPP contracts was possible or allowed from the public side.

Focus on HSR SEA Tours-Bordeaux

HSR SEA Tours-Bordeaux is the largest PPP railway scheme in Europe and involved the design and build of a 302km-long high speed line operated at 320km/h with 40km of junctions to the SNCF conventional network, aiming to cut the journey time between Paris and Bordeaux to 2 hours from 3 hours 30 mins. It also aimed to improve significantly the quality of railway services on the western Atlantic corridor and the southwest region beyond Bordeaux.

In addition to all civil engineering and rail systems fields, the PPP contract scope included land acquisition and property (only 25% of acquisitions had been achieved by RFF before contract award date), public consultation, environmental compensatory measures, and full responsibility for design and delivery of interfaces with third parties, including regulatory approvals by all local public authorities as well as interfaces

with SNCF itself as infrastructure manager of the conventional network. It also strongly incentivised the PPP contractor to rely on proven solutions, processes and technologies provided they met the performance requirements (mainly journey times, line capacity and maintenance KPIs), unless some innovations could lead to significant benefits in construction schedule, sustainability and/or O&M costs.

The financing scheme for the associated fixed price €7.8bn PPP contract was:

- 50% of funds provided by the public authority (RFF then SNCF), based on a funding scheme split between grants from European Union, French State, regional councils, local councils and RFF-owned public debt.
- 50% of funds provided by the PPP contractor, based on a funding scheme split between bank debts, savings fund managed by Caisse des Dépôts, European Investment Bank credits and owned funds of PPP contractor shareholders.

Until works completion and entry into revenue service, payments to the PPP contractor coming from the public funds took place only at the completion of certain major milestones, allowing the public authority to spread the raising of its funding scheme over the 6-year design and build period, whereas payments from the private funds were provided on a regular basis based on measured progress evidence.

Benefits of PPP schemes for the public authority

Compared to usual French 100% public-funded railway project schemes of similar scale, the French Association of Independent Rail Infrastructure Managers (AGIFI) assessed in 2023¹ that the global financial cost for a PPP scheme had driven up to 2.8% more CAPEX but had been largely compensated by the operational performance of the projects and the associated level of budget control, leading to up to 8.4% of savings on CAPEX after works completion and 17.3% savings on the works delivery schedule.

These savings also related to the project management and delivery organisation, due to the global coverage of the PPP contract in terms of scope and responsibilities, allowing better interface management, better control on schedule delivery and associated investment costs with no extension of deadlines and budgets, and benefiting from a positive pressure regarding stakeholder expectations and commitments with financial sponsors.

The analysis of financial costs and respect of budgets for these three HSR deliveries led the AGIFI to conclude that PPP schemes, even if they appeared more expensive at the first glance due to higher funding costs, had allowed a global saving on project costs of up to 6.3% of CAPEX for the public authority, in addition to the successful delivery of promises to all stakeholders.

A number of factors contributed to the successful delivery of these schemes from which the UK can learn—the PPP schemes incentivised the delivery contractors to ensure on-budget, on-time delivery. The commitment to no change in the contract underpinned this and allowed the contractors to design and construct with certainty, protecting both their own interests and that of the public authority.

As we consider challenges such as the completion of an operationally viable HS2 route, or the further delivery of high speed or conventional rail expansion in the UK, the ability to introduce private finance could unlock the true value such schemes could offer. Strikingly, the French projects described were all line extensions, adding value and versatility to existing infrastructure—just what is needed here in the UK. What is clear, however, is that all parties require certainty to contract and deliver most efficiently. To paraphrase the carpenter's mantra, plan twice, build once.

1. The AGIFI report (in French) can be found here [2023-12-06-AGIFI-RapportEY.pdf](#)



Stephen Layburn
Managing Director, Centrus

Stephen Layburn has more than 25 years of experience in transportation, asset finance, leasing and securitisation. He co-owned the independent advisory firm, MDT, prior to its acquisition by Centrus in 2017. He is now leading the Centrus Transportation team as it focuses on the decarbonisation of transport.

Stephen is an expert in private finance of rolling stock and associated infrastructure, advising clients on individual leasing and asset finance transactions as well as portfolio sales and acquisitions in the UK and continental Europe. He has also been active in providing commercial advice to transport operators, whether those bidding for tendered contracts or start-up new entrants. In the M&A field, advising investors on business plans, financial projections, valuation and capital structure of target companies.

Shifting the focus from rolling stock to fixed infrastructure

Centrus Transportation team has been advising on rail industry projects in the UK and continental Europe since the privatisation of the UK rail market in the late 1990s. Throughout that period, we have seen the interest in the sector increase and it is now a core part of many equity and debt portfolios in the infrastructure sector. However, the significant focus of these investments has been on rolling stock, and there are limited examples of private finance being used for fixed infrastructure projects in rail. This is an unusual position given that most infrastructure projects are based on fixed installations and the moveable nature of rolling stock was originally seen as outside the scope for core infrastructure assets. Equity investors (other than traditional ROSCOs) only started to develop serious appetite for investment in UK passenger rolling stock when the regulatory framework under the Railways Act 1993 had been tested following private operator defaults.

Centrus has been at the forefront of development of private financing opportunities in the rail sector, and although we have been involved in some successful maintenance depot schemes, these have proved difficult to deliver in practice. The private financing market for rail infrastructure beyond depots has suggested potential for investment in rail infrastructure assets other than depots but the potential is yet to be realised. In February 2019, Centrus wrote a paper entitled '[Privately Financing Rail Infrastructure](#)' that set out the key considerations and obstacles to private finance of rail infrastructure. Since we wrote that paper, the need for private finance is arguably greater and the proposed reforms to the industry by the new government may offer some routes to deliver this that were not

available at that time. However, the position is currently unclear as to whether the new regime being introduced by the Labour government will unlock such opportunities.

It is clear from the strong interest from private finance in rolling stock leasing companies that there is a clear demand for rail related projects, and it is likely that it would be greater for well-structured fixed infrastructure projects were these to be tendered to the market. To make infrastructure projects investible a number of key criteria need to be met. These include:

- The project needs to have a commercial imperative such that it will continue to receive funding throughout the project's life once it is successfully delivered.
- If finance is to cover the construction of the project assets, the risk of construction needs to be managed and the financiers given sufficient protections to allow them to invest. This risk sharing can be delivered by the delivery contractor or the procuring authority, and the contractual structure of the project's construction period will impact the cost of finance during that period.
- The revenues for the project need to be clearly identified with sufficient certainty to satisfy investors. Revenue can be fixed where the asset is delivered and is fit for purpose throughout the project, or some or all the revenue can be based on demand for the project asset, but with less direct risk to the financier from availability. The mix of revenue can be determined by type of asset being financed and by determining how investors are able to assess demand for any particular asset.

- The cost of delivering the project needs to be fixed (or capped) for the financier, and this can be achieved through working with strong construction partners and ensuring the terms of the construction contract provide the necessary protections in the form of guarantees and late delivery penalties. It is also critical that investors have confidence that the relevant authority(ies) is committed to the project and will support the provision of planning permissions and other licences and approvals that may be required during the construction period.
- Operating costs of the project also need to be controlled as these will usually have a direct effect on the returns of the equity investor. Other than the train maintenance, which tends to be separately contracted and paid by the operator, rolling stock leasing businesses tend to have low operating costs relative to the value of the trains, but for other assets this could be very different, and so investors will need to work with experienced operators to give confidence the operating costs will not increase. This includes the costs related to maintaining the assets and so the link back to the construction contract is also critical to keeping operating costs under control.

One reason why it has been possible to utilise private finance for maintenance depots is that they are relatively easy to separate from the main network for the purpose of carving out the project assets. This is generally the case for assets off the live network and these should be easier to finance through the development of schemes suitable for private finance. Such assets include:

- Maintenance depots and stabling facilities
- Stations, and associated assets (excluding the tracks)
- Passenger service systems, e.g. CCTV, WiFi
- Systems for railway operations, e.g. train management systems

Where the projects are on the live network it is much harder to define the parameters of what is to be financed. It is also more difficult for the project company to take on the risk of maintaining the assets given their interdependence to the rest of the network. Such assets include:

- Upgrades/renewals of existing track, including bridges, tunnels and conventional signalling
- Track enhancements, e.g. new junctions, flyovers, sidings
- Electrification schemes (although these are potentially separable for financing purposes)
- New digital lineside signalling

One of the issues that adds to the risk profile for private finance of fixed infrastructure is in circumstances where the contracted revenue period is less than is needed to repay the investment. This occurs in most rolling stock finance which is based on short-term operating leases (typically 5–15 years), for assets with a useful life in excess of 35 years. Rolling stock owners usually get comfortable with this situation by assuming the assets are "sticky" to the initial use (applies to large core fleets used in passenger concessions) or through the ability to redeploy the assets to other users on other parts of the network (the basis of most freight locomotive and wagon leasing businesses). The current government's plan to bring all previously franchised passenger operations under public ownership may well remove the need for short-term contract periods and allow the contracts to more closely match the life of the asset, or the financing term optimal to raise private finance. For fixed infrastructure this can be achieved through long-term availability contracts based on design, build, finance, operate and maintain contracts. Operation and maintenance can be separated where this makes sense, or the government prefers to keep this in-house. As an alternative, and this applies to more complex or expensive projects, the construction can be undertaken by the public sector and the assets can then

be placed in a concession for an upfront fee which is repaid over the concession period through concession payments. Two examples of where this formulation has been used are, HS1 which was sold as a concession post construction, and the rolling stock for the Elizabeth line that was originally funded by TfL and then financed through a sale and leaseback with TfL maintaining control of the trains through the commercial terms of the leaseback arrangements.

The Treasury has asked DfT to review all investment projects with a view to finding savings and some projects have been cancelled or delayed. Some of these projects could be financed by the private sector to relieve the pressure on the current year budget. Alternatively, it could be possible to raise funds from putting infrastructure into concessions along the lines of HS1. By taking on the principles set out in this paper, projects such as East West Rail, line upgrades to link HS2 to Northern Power House Rail and relieve existing bottlenecks, the HS2 link from Old Oak Common to Euston and the redevelopment of Euston station could all be accelerated by involving the private sector.

In summary, we see that there are real opportunities for the public and private sectors to work together to leverage the power of the state and its long-term commitment to the rail sector. We urge the new government to engage positively with those of us that are active in rail sector finance and infrastructure project finance to overcome the barriers to implementing such schemes in a way that works for private finance but is fair to the taxpayer. If we can do this, it will attract more private finance to accelerate the delivery of upgrading and growing the rail network and ultimately supporting the delivery of enhanced economic growth.

The Infrastructure Forum

The Infrastructure Forum brings together the key players in infrastructure, whether investors, operators, contractors, economic regulators or professional advisors. It has become the meeting place for confidential and constructive discussion about ways to promote the development of infrastructure networks in the UK and to broaden the range of options available to policymakers and regulators.

The Forum is cross party and independent, attracting engagement from policymakers in government and opposition. It has worked to promote long termism in the development of infrastructure policy, the joining up of the various parts of government dealing with infrastructure and the establishment of bodies like the National Infrastructure Commission and Infrastructure & Projects Authority, which can take a long-term view on infrastructure development.

Understanding the Regulated Asset Base (RAB) model and its potential to finance future infrastructure development

Infrastructure projects play a central role in modernising cities and enabling economic growth at both a regional and national level. However, these projects often face challenges, such as budget overruns and delays. Innovative financing models, including the RAB model, can help alleviate some of these challenges and historically, private sector investment has proven beneficial in enabling these infrastructure schemes to go ahead.

This explainer explores the Regulated Asset Base (RAB) model, which has been successfully applied to major infrastructure projects in the UK, including large-scale sewage project, the Thames Tideway Tunnel.

This model treats the project's asset base, in this case the rail infrastructure being built, as a regulated asset, with costs recovered through charges to users or customers over time, as set by a regulatory body. Establishing a regulated framework means that the necessary investment is raised and managed efficiently, while also providing stable returns to investors and protecting public interest by controlling prices.

In practice, the RAB model includes three key features:

- **Regulated Returns:** Investors earn returns based on the regulated asset base, which is monitored and adjusted by a regulator.
- **Shared Risks:** Risks during construction and operation are shared between investors, contractors, and sometimes the government.

- **government Support:** For high-risk scenarios, a government Support Package (GSP) can provide additional safety nets, helping to manage unforeseen challenges and ensuring project completion.

This model has a number of advantages. Most importantly, it guarantees consistent funding, ensuring that these large-scale infrastructure projects remain financially viable over their entire lifespan and are seen through to completion. It also addresses issues such as inflexibility and complex contracts often associated with alternative private finance models and it introduces a more adaptable and transparent approach to risk management, helping to reduce financing risks.

For investors, it provides stability by guaranteeing a stable return on their investment—a critical factor when trying to attract private capital for these projects and reduce dependency on public funding. And finally, having a regulatory body oversee the project ensures that pricing remains fair and provides a level of customer protection.

RAB in practice: The Thames Tideway Tunnel

The Thames Tideway Tunnel is notable for being the first major project to use a stand-alone RAB structure and has proven significant for several reasons. Firstly, despite challenges such as the disruptions caused by the pandemic, the project is on track to be completed on schedule and under budget. Secondly, the RAB model has transformed what could have been a high-risk undertaking into a lower-risk investment, thereby making it more appealing to private investors and facilitating the attraction of necessary funding.

The model's success in the Thames Tideway Tunnel has led to its consideration for other major projects, including transport projects like Lower Thames Crossing, as well as carbon capture, power transmission and renewable energy projects, and social infrastructure projects.

The RAB model represents a significant advancement in infrastructure financing, offering a balanced approach that benefits both investors and the public. By ensuring fair returns and effective risk management, it provides a viable pathway for funding essential projects, including large scale rail infrastructure projects, that drive economic growth and public well-being. As more projects adopt this model, we can expect to see continued improvements in its delivery and efficiency.

Overall, the successful application of the RAB model in projects like the Thames Tideway Tunnel signals promising potential for its future use in UK rail infrastructure. As the government seeks to modernise and expand the nation's rail network, adopting the RAB model could ensure that future inter-city rail projects and other major rail upgrades secure the necessary investment while minimising financial risks.

Adapted from "An Introduction to the regulated asset base model (RAB) adopted by the Thames Tideway Tunnel and its wider application"—The Infrastructure Forum, June 2024





Victoria Whitehead

Managing Director, Head of Infrastructure & Transport at Lloyds

Victoria joined Lloyds in 2001 as a graduate before moving into infrastructure and project finance in 2004. For approximately 17 years Victoria focused on the execution of infrastructure projects including several high profile transactions within the UK transport sector in a lead capacity. Transactions included M25 Road Widening, Mersey Gateway, Intercity Express Program (West & East), HS1 and Airtanker—to name a few. Victoria became the Managing Director of Infrastructure and Transport sector team in 2021 and continues to support UK infrastructure and transport clients within inter alia the bus, rail, road, airport port, construction and automotive sectors. She is also heavily focused on transport decarbonisation—both developing and delivering the wider Transport ESG strategy for the Bank.

Unlocking investment potential through an integrated approach to rail

Lloyds has a rich history in the rail sector since the privatisation of the UK rail market in the late 1990s. Initially as a rolling stock owner, Lloyds has been at the forefront of financing the rail sector throughout this period. This has included different funding models for example lending to ROSCOs, Concessions, PPP/PFI, SPV Single Fleet financings as well as supporting the sector access the DCM and USPP markets.

The UK's rail infrastructure sector has experienced significant growth and transformation over the past decade and a half, with private sector investment playing a pivotal role in its development. As the industry has evolved, the rolling stock market in particular has emerged as a stable and resilient asset class, attracting significant interest from investors. However, over the past few years, several challenges have emerged that have complicated investment into the rail sector.

As an industry, when we talk about challenges in rail, we often tend to focus on delays (and cancellations), timetabling issues, rail strikes, delay in procurement decisions (leaving the UK to endure ageing rolling stock), delays to train manufacturing, delivery and acceptance, the stop-start nature of infrastructure planning and high profile government U-turns. The presence of such issues will likely shake investor confidence in rail and large-scale projects in UK. However, as a result, we may overlook some less obvious challenges.

For example, take the effective removal of guarantees under Section 54, of the Railways Act 1993. This previously provided a level of security to investors by guaranteeing continuity of usage of rolling stock under a lease, irrespective of franchise expiry and handover. Through Section 54 the leased rolling stock

would be protected from the risk of non-renewal or underutilisation. This assurance significantly reduced the risk for investors and allowed for favourable financing terms as well as strong appetite and market capacity.

Despite the absence of guarantees under Section 54 for new rolling stock we saw continued investment in the sector pre COVID-19. Positively, new competitors entered the ROSCO market supported by innovative funding structures, new pools of long dated capital and favourable market conditions. Investors recognised the highly 'sticky' nature of rolling stock to a specific network as a key mitigant to releasing risk.

We are now entering a (delayed) phase of significant rail investment. A potential question surrounds market capacity to fund the required levels of capital expenditure and sequencing of procurements will also be key. Whilst it looks like passenger numbers are rebounding post COVID-19, exposure to re-leasing risk, consistent manufacturing delays and less favourable market conditions may result in some future challenges for rail asset financing.

The interface with Network Rail and the introduction of Great British Railways (GBR) has also added further complexity to the rail landscape by raising questions about future stakeholder responsibilities, governance, operational integration, funding, and regulatory changes. Important questions have been raised about how these bodies will manage the existing rail network as well as addressing long standing issues, including fragmentation in operations, decision-making, and investment strategies.

That being said, the establishment of GBR presents a clear opportunity to streamline processes and ultimately deliver a better rail network and passenger experience. Positioned to serve as a centralised body for both infrastructure and services, GBR has the potential to consolidate governance and foster a more cohesive framework for decision-making, particularly when it comes to decisions on future investment. Investors and stakeholders will be watching closely to see if GBR can deliver on its promise to create a more streamlined, reliable, and transparent system that encourages long-term investment and sustainable growth. If it succeeds, GBR could bring the certainty and holistic view that has been lacking in the rail sector, making it a more viable and attractive option for private investment.

We should also keep in view that this is an exciting time for Rail against a backdrop of the UK's legally binding commitment of Net Zero by 2050. Transport is the UK's largest sector in terms of emissions at c.16% and continues to face challenges to decarbonise. Rail, as the greenest form of travel, is in a great position to benefit. The government's desire for 'modal shift' from road and air to rail in both Passenger and Freight will lead to further investment and opportunities for the network as well as rolling stock.

Building on this, maintaining a transparent and reliable project pipeline is essential for fostering investor confidence and appetite. Investors need to understand not only the current state of projects but also the expected future infrastructure projects and government priorities. A well-defined and consistently communicated pipeline allows potential investors to assess opportunities more effectively, mitigating uncertainty and associated risk. By offering clear timelines, anticipated returns, and a transparent overview of potential challenges, government, industry and investors can collaborate more effectively, strengthening their case for future investment into rail infrastructure.

The factors and stakeholders that influence rail infrastructure are far reaching—from planning and policy through to financing and operational integration. Each element plays its own role in shaping investor appetite. Therefore, as the UK navigates an evolving rail sector, achieving synergy, particularly between the public and private sector, will significantly enhance the attractiveness of rail as an investment opportunity. Additionally, adopting an approach to rail investment that encompasses the entire rail ecosystem will be key to driving future private investment and ensuring the long-term success of rail infrastructure projects going forward



Harnessing future opportunities: Our call for next steps

For the UK to achieve sustained economic growth and meet growing demand for enhanced connectivity and capacity across the rail network, a robust, long term rail infrastructure strategy is essential. This strategy must prioritise comprehensive engagement not only between government and industry but also the investment community, to explore how we can effectively leverage private capital to fund future projects.

As all the contributions in this report have demonstrated, exploring and implementing a range of funding models will help to ensure that large-scale infrastructure projects going forward, including inter-urban rail, are cost-effective, maximise the benefits of rail, and are delivered on time from conception right the way through to completion.

Rail investment needs to be seen as more than just a short term expenditure, as Andy Ruffitt in his chapter rightly acknowledges in his contribution. Unlocking private capital and supercharging rail investment will alleviate pressure on public finances at a time when budgets are increasingly stretch. It will also create tangible benefits to taxpayers in the form of enhanced, modernised and connected rail services.

Investment into rail will further support the government's ambition to boost (inter)national investment and economic growth in the UK, while providing opportunities for meaningful engagement with leading businesses and investors. All of these long-term benefits are further transformative due to their cumulative impact, acting as a powerful catalyst for sustained socio-economic growth.

Each model explored in this report presents a different and varied opportunity for investment, drawing on lessons learnt from within and beyond the sector:

- As exemplified by Richard Thorp's chapter on HS1 and Sébastien Vecchiato's article on high speed rail delivery in France, Public-private partnerships (PPP) offer a proven route to harnessing private capital. This model transfers construction and operational risks to private entities, ensuring efficient financing and delivery. The PPP model also allows the government to spread its financial commitments over the project's lifecycle while providing private investors with clear revenue streams from track access charges and related activities.
- Similarly, presented by The Infrastructure Forum, the Regulated Asset Base (RAB) model—used to finance the Thames Tunnel— provides an avenue for predictable, long-term returns, helping reduce reliance on government borrowing while maintaining stable investment flows.
- Finally, the Land Value Capture Study, as presented by KPMG, demonstrated that raising funds can help alleviate the burden of capital costs on taxpayers. This approach allows for more efficient use of limited public sector investments, enabling support for additional economic infrastructure schemes and ultimately promoting greater socio-economic growth.

We can take forward valuable lessons from these models. They all offer investors reliable returns and manageable risks, which as Stephen Layburn highlights in his chapter, are all essential to making fixed infrastructure projects more investible. However, to ensure success, this must go hand in hand with a stable and transparent policy landscape, led by government, as well as renewed approach to delivering more pragmatic, realistic solutions, as noted by Neil Henderson in his chapter. For this reason, industry, government, and the private sector must work together to build confidence in the sector and encourage future investment into rail infrastructure.

Creating a viable financing framework will be crucial in securing the capital necessary for the long-term growth and modernisation of the UK's rail infrastructure. With a comprehensive approach, the UK can achieve the progress needed for a more efficient, connected, and resilient rail network.

Drawing on the insights from the report, the High Speed Rail Group calls on the government to act on the following:

1. **Develop and stick to a comprehensive long-term strategy** for both North-South and East-West travel, prioritising the link from Birmingham to the North West, and the route across the north of England from Liverpool to Hull. Providing clarity, transparency, and consistency in decision-making is key.
2. **Engage with the infrastructure investment community to explore all funding options.** It does not have to be an 'all-or-nothing' approach, with some assets, such as rolling stock and stations, lending themselves more easily to private finance than others.
3. **Adopt a whole systems approach** to rail infrastructure, looking at planning, funding, and delivery from a whole country perspective.

Bringing together the voices of this report has demonstrated that there is substantial appetite among industry and investors alike to collaborate on future large scale infrastructure projects. We need to harness this collective momentum to deliver on a national infrastructure strategy that takes private investment seriously and serves the entirety of the UK, from North-South and East-West. Going forward, we need to act now to rebuild industry confidence, unlock rail infrastructures many benefits, and decisively shift our infrastructure landscape to meet the long term growth ambitions of the UK.



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