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► **Modernisation to being fundamental shift in rail risk** - Meeting the demands of tomorrow's passengers and freight customers will require big changes in rail infrastructure and services, with implications for risk and insurance

Rail transport and risk



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The UK has one of the safest and most utilised rail services in Europe. However, big challenges lay ahead as the rail industry addresses growing demand, while at the same time anticipating wider trends, like the emergence of driverless cars or the growth of e-retailing.

The number of passenger rail journeys has doubled since 1997, while Britain has seen the biggest shift to rail of any country in Europe since 2009, according to Rail Delivery Group (RDG). This success, however, also means that the UK now has some of the most congested and intensively used railway lines in Europe, putting significant pressure on infrastructure.

Improving reliability and boosting capacity requires major investment – the government expects to invest around £47.9 billion in railways between 2019 and 2024. Along with flagship schemes like HS2, Crossrail and the Great North Rail Project, there are moves to make better use of technology to modernise rail infrastructure, upgrade stations and introduce new rolling stock. Some 7,000 modern trains and carriages will be added by 2020, according to RDG.

Express freight

Rail strategy and investment is also being shaped by wider changes in

Modernisation to bring fundamental shift in rail risk

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society and technology, such as new technologies, the growing economic importance of cities and the need to reduce carbon emissions.

According to the National Infrastructure Commission (NIC), future rail investment plans will need to reflect the impact of connected and autonomous vehicles and demographic changes. Autonomous vehicles are likely to impact demand for some local rail services, although NIC does not believe that road transport will supplant rail in its core markets, such as in cities and long distance travel.

The digital economy could also affect demand for rail services in other ways. For example, the shift towards e-retailing and the rise of e-commerce

firms like Amazon is likely to have a profound impact on logistics, including rail freight. According to a 2017 study by Network Rail, the growing 'express rail freight' market could offer a faster and more carbon efficient alternative than road or air for the delivery of parcels and retail goods.

Connected future

Like many other industries, the rail industry is embracing a range of new technology as it seeks to improve performance and improve customer service.

For example, the government has called for smart ticketing to be made available across the rail network by the end of 2018. The government has also committed to invest £450 million in digital technology to meet passenger demand for faster broadband connections as well as to help improve the running of the railway. Digitising the UK's rail network could save up to £770 million over the next eight years according to the NIC.

The benefits of developing technologies like the Internet of Things (IoT), robotics, artificial intelligence and Big Data are attractive. A 2017 NIC report concluded that artificial intelligence

The **secret** behind the booming **rail industry**:

How will infrastructure, performance and customer services keep up with demand?

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If **rail services** are to meet the demands of tomorrow, **seven big changes** are required.

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could save billions of pounds – digital signalling could enable trains to run closer together, potentially increasing capacity by 40% on some routes.

Train companies are also beginning to use more connected sensors for performance monitoring and predictive maintenance. Further down the line, trains are likely to become more automated. Train manufacturer Thales is developing autonomous train technology, which it believes could be used on high-speed lines as well as provide a lifeline for rural rail routes.

The need to cut carbon emissions is also a factor driving innovation and technology – the government has challenged the industry to end diesel powered passenger trains by 2040.

Electric vehicles are already replacing diesel, and there is a push for more 'bi-mode trains' that use more than one source of power – including batteries and hydrogen cells.

Changing risks

The modernisation of rail is likely to have important implications for risk. Better use of technology, more modern rolling stock and an improved operating model, for example, should result in increased safety. The UK's safety record is second only to Ireland in terms of accidents per distance travelled, according to RDG.

However, modern trains will mean higher values, while increased utilisation of rail infrastructure

could have implications for business interruption exposures. For example, increased utilisation could mean tighter windows of opportunity to inspect or repair track, while outages or overruns would impact a greater number of services.

Cyber threat

Technology will become a much greater driver for risk in the future transport sector. Electronic ticketing or the use of facial recognition software could increase exposures around privacy and data breaches, while potential security vulnerabilities in wifi on trains pose risks for customer data and train operating systems.

As rail companies increasingly rely on IT systems for ticketing and rail operations they will be exposed to the financial and reputational damage caused by outages, system upgrades or glitches. Perhaps of greatest concern is the threat posed by vulnerabilities in industrial control systems and industrial IoT, which could open the door to cyber related physical damage



"Extreme weather is one of the biggest insurance challenges for the rail sector."

Matt Roles - Director of Property

The rail industry faces major change.

Is this too big a job for the techies?

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and business interruption losses.

Rail companies are already reporting cyber incidents. In April 2018, Danish rail operator DSB was hit by a massive distributed denial-of-service (DDoS) attack that prevented customers using ticketing systems, as well as crippling the company's internal communications. Earlier in the year, Canadian train operator Metrolinx revealed that it had been infected with malware that is thought to have come from North Korea.

As transport services become more reliant on technology, rail operators and infrastructure providers will need to boost their resilience. Innovation and technology will bring new risks and exposures for train operators. As

operators identify these cyber hazards they will need a plan to mitigate the risks and work with their insurers to address potential gaps in cover.

Operational risk

Modernisation is also likely to result in big changes to the industry's franchise structure. Today, 28 train companies run services on infrastructure that is owned and maintained by Network Rail. The UK government is considering plans to devolve Network Rail into more autonomous route-based businesses, which could see more responsibility and risk transferred to rail operators.

"Changes to the rail franchise structure could result in a fundamental shift in the business

model and skill set for rail companies, with important implications for risk and insurance. This would require the insurance industry to adapt product offerings to meet the needs of new operating rules and exposure responsibilities," says Matt Roles, Director of Property at QBE European Operations.

Weather is already one of the largest property risks for the rail sector, creating large and complex property damage and business interruption claims. For example, storms that caused the collapse of a seawall in Dawlish, Devon, in 2014 caused massive disruption for rail operators. QBE worked with Network Rail at the time to help get the network back on track.

"Extreme weather is one of the biggest insurance challenges for the rail sector, with significant all-year-round exposures to storms and floods," Roles says. "It's about building resilience, although we can help rail companies mitigate the risks. Insurers have the skills, knowledge and modelling tools, and can work with



"Innovation and technology will bring new risks and exposures for train operators."

Matt Lacy - Director of Casualty

our clients to highlight risk hotspots and suggest potential remedies.”

Non-damage

While weather claims are one of the main causes of loss, no-damage triggers can also be a significant driver of loss for the rail industry. Under Basic Asset Protection Agreements (BAPAs), contractors and developers are typically liable for bodily injury, physical damage or the cost of ‘interference’ incurred by Network Rail as a result of any works carried out on, or in the vicinity of, rail infrastructure.

BAPAs create significant liabilities. While physical damage exposure is usually covered under third party liability insurance, these policies are not designed to pick up ‘non-damage’ related liabilities. For example, the contractor/developer would be liable under a BAPA for Network Rail’s costs related to an unexploded ordinance, a fire on site resulting in smoke obscuring signalling, or an unsafe structure, such as a construction crane or scaffold close to rail infrastructure.



“Changes to the rail franchise structure could result in a fundamental shift in the business model.”

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QBE has been working with a number of clients and their brokers to adapt third party liability policies and provide cover for certain non-damage exposures. This bespoke solution can be used to cover the cost of over-running works related to a non-damage incident, although it will not cover losses related to general operational issues, such as staffing problems or mismanagement.

There are many events that could foreseeably arise that could result in disruption with rail services – including some less obvious events, such as closure of a site due to an HSE or police investigation, weather related delay, damage to the works themselves, machinery failure or

breakdown. None of these scenarios would trigger the third party policy – unless the death on site was to a third party. These are insurable risks.

Modernisation

Modernisation is likely to bring about the biggest changes to risk for the rail sector in many a decade. Over the coming years, rail companies and insurers will have to work closely on building resilience to challenging risks, like cyber and extreme weather. While flexible and innovative underwriting, coupled with increased use of data analytics, will ensure that insurers like QBE are a willing and able partner to rail operators as they take on more responsibility and risk.

Rail infrastructure faces a major revamp.

To what extent can technology help?

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