Freight friendly

RTS Innovating across Britain's railway

GOALS	WHY?	STATUS IN 2024	STEPPING STONES OVER THE NEXT 5 TO 8 YEARS	VISION FOR 2040
Increased network access for freight 1	The GB network is one of the most restrictive in the world due to its historic nature and legacy infrastructure. Easy and predictable access for heavier, longer, and larger freight trains is key to maintain and grow freight traffic. It also improves the efficiency of freight operations.	Current limits to freight train length, weight and size are based on empirical data. RSSB-led research recently developed a methodology to revise the limits that unlock longer train formations. These new limits are now being applied on the network on a case-by-case basis, in advance of systematic embedding in the NR Loads Book.	Develop a digitised platform to provide optimised route options for freight services based on train characteristics including length, weight and size, and infrastructure asset information. Improve industry visibility of current and future route availability for Heavy Axle Weight freight services to allow for better and more informed asset management. Develop robust engineering models that characterise the impact of maintenance costs associated with Heavy Axle Weight traffic. Review business case and incentives to unlock innovation in rolling stock technology which reduces the impact on infrastructure, such as track wear and cyclic top. Assess the case for targeted deployment of track design solutions to minimise the impact of freight traffic. Assess the business case for targeted interventions for gauge improvement to unlock route compatibility with maximum impact. Consider the holistic benefits to other service types (e.g. higher speeds for passenger trains). Embed and exploit changes to W10 and W12 definitions that accommodate more wagon/box combinations over greater parts of the network. Reduce effort required to complete vehicle compatibility process through improved data availability, systems and simulation tools.	Compliant routes and pathing options for freight journeys are automatically determined and are responsive to freight needs. All key routes for Heavy Axle Weight traffic are maintained and do not require special dispensation access rights. The introduction of new locomotives, wagons, and wagon / box combinations is efficient and streamlined.
Safer freight operations and better asset management 2	Better monitoring of freight assets allows failure prediction and timely proactive timely intervention. This can significantly reduce unplanned maintenance and incidents on the network, including derailment risk.	Nearly all safety inspections and train preparation for freight are manual tasks. This introduces human error and, over the last 5 years, has led to a significant number of safety events, including some with significant consequences. Recent trials have demonstrated options for improving loco and wagon connectivity enabling greater automation of asset monitoring.	Assess options for power provision to wagons, accounting for network and off-network requirements. Such wagons to be electrically inert in sidings and yards. Explore options for standardised RCM data protocol for locos and wagons, including how the data is transmitted, formatted and structured, and who has access to various components. Develop an understanding of the root causes of increased instances of wagon wheel flats experienced on the network, and what can be done to prevent them. Assess the feasibility of cameras, sensors and other technology in undertaking train safety checks within terminals, thus removing exposure to dangerous tasks. Obtain new insights from increased RCM data to improve the identification of precursors to failures and safety events and to produce better understanding of their root causes. Explore freight specific options and requirements for remote condition monitoring (RCM) solutions alongside wider industry RCM requirements. Assess the business case for tactical deployment.	Sudden asset failures and associated incidents on the network are regularly and successful prevented. Yards are significantly safer with workforce exposure to risk minimised.
Enable greater intermodality and access for freight customers 3	Rail freight is perceived as a difficult mode to start using by new customers. Growth opportunities can also be challenging for existing customers.	Connections to the network are very costly, and currently take over a year to be approved and built. This deters prospective and existing customers to develop new flows.	Develop options for dynamic aggregation of goods to facilitate the movement of smaller individual quantities which respond to customer supply chain needs. Explore growth opportunities using parts of the existing network by providing flexible and temporary loading sites, in addition to fixed terminal/yard infrastructure Assess modular and low-cost signalling systems to support quicker and cheaper connections to off-network locations. Develop industry systems to provide an easier understanding of how rail can serve their customers' logistics needs.	Existing and potential freight customers see rail as an attractive mode. Deployment of new connections to off-network locations is dynamic to customer demand and lower cost.
Greater asset utilisation and reduced freight journey times 4	Freight travels at lower average and maximum speeds than passenger services. This difference causes freight trains to be signalled into lineside loops or regulated at a junctions. Understanding the value of higher freight speeds and ways to increase these, is key to improving the attractiveness of rail and the utilisation of freight assets.	Due to the prioritisation of passenger services and allowed maximum speeds, the low average speed has negative time and cost consequences for freight journeys. It also significantly limits assets utilisation, ultimately reducing the commercial viability of rail freight and making it less competitive against road.	Identify opportunities for enhanced speed differentials on the network that fully accommodate the capability of the infrastructure. Explore options for the safe application of higher maximum permissible speeds to increase capacity and unlock new paths through reduced block occupation times. Agree and implement changes to the Network Code to support the deployment of freight friendly pathing that recognises the economic importance of freight services. Incorporate modelling capabilities which analyse timetable and performance data to optimise pathing options and opportunities. Increase capabilities of industry planning services systems (R2, TOPS) to provide the outputs required to realise the full capacity and pathing benefits offered by future ETCS roll-out. Evaluate options for self-powered wagons, including utilising regenerative braking technology, to improve acceleration capabilities that unlock new pathing options. [4,5] Develop path modelling capabilities that consider whole system impact and benefit to UK PLC, including economic and carbon impacts of rail freight. [4,5] Improve traffic management utilising C-DAS to enable better on-the-day regulation decisions that are underpinned by improved freight pathing algorithms. [4,5]	Full use of technical capabilities of freight trains combined with mechanisms to recognise the value of freight journeys results in significantly reduced journey times, and easier and better freight pathing.
Low carbon freight and on-track machines 5	There is currently no viable alternative to electrification or (bio)diesel to deliver the power necessary for the full range of freight journeys on the GB network. Electric traction offers capacity and operational benefits over diesel. Without action, rail freight risks being less favoured than other modes as they continue to decarbonise. This could cause long-term congestion and economic disbenefit if a lower proportion of freight is moved by rail.	Industry is currently introducing bi-/tri-mode locomotives which are envisaged to deliver significant last-mile benefits and operational flexibility. But traction electricity charges and spikes in electricity prices can make it more cost-effective to haul using diesel. Industry is looking into maximising the benefits of future electrification for freight, including freight infill.	Learn lessons from battery and multi-mode trains operating on the GB network and internationally. Assess freight power options based on the capabilities of the electrified network, plans for future traction energy, and freight-specific technology developments. Explore the feasibility of intelligent/dynamic freight consist arrangements to reduce aerodynamic drag. Explore optimised electrification designs and solutions for secondary freight-only routes. Assess actual performance of novel low-carbon fuels, and the feasibility and costs of associated engine changes. Explore options for integrated charging facilities for both road and rail at terminals. Assess low-cost electrification options at terminals.	There is a clear role and relevance for rail as part of an overall net-zero logistics chain.