

Britain's Transport Infrastructure

Strategic Rail Freight Network: The Longer Term Vision



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Photo acknowledgements

Front cover: First GBRf and Freightliner Limited

Pages 6,8,10,16: DB Schenker Rail UK

Page 12: First GBRf

Page 17: Freightliner Limited

Page 14: Stobart Group

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DfT Publications

Tel: 0300 123 1102

E-mail: dftinf@capita.co.uk

ISBN 978-1-84864-034-4

75% recycled

This is printed on
75% recycled paper

Printed in Great Britain. September 2009.

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Executive summary

1. Rail freight plays a key role in a delivering a sustainable distribution system, contributing to the achievement of the United Kingdom's economic and environmental objectives.
2. The Strategic Rail Freight Network (SFN) is designed to optimise the freight performance of our intensively utilised mixed-traffic rail network, allowing the efficient operation of more, longer and selectively larger freight trains.
3. Interventions will be required to:
 - optimise freight trunk routeings to minimise passenger/freight conflicts;
 - make the network available 24-hours a day, all year round;
 - eliminate pinch points; and
 - upgrade network capability.
4. SFN investment in Rail Control Period 4 (2009-10 to 2013-14) is focused on loading gauge enhancement to W10/12 and train lengthening.
5. Longer-term action and investment in the SFN will be required to deliver the following key elements:
 - longer and heavier trains;
 - efficient operating characteristics;
 - seven-day/24-hour capability;
 - W12 loading gauge on all strategic container routes;
 - European (UIC GB+) loading gauge from High Speed 1 (HS1) to the Midlands;
 - increased freight capacity;
 - electrification of freight routes;
 - development of strategic rail freight interchanges and terminals; and
 - protection of strategic freight capacity.
6. Network Rail studies have been commissioned to identify the future preferred freight routes between the London and the South-East and the Midlands and North of England; and, in conjunction with that, an optimal cross-London freight strategy.

Introduction

7. Efficient and sustainable freight transport is increasingly important both to the UK's economy and to the achievement of our environmental goals. Rail transport generally has a less negative impact on society than road transport and so has a crucial role to play in delivering significant reductions in pollution and congestion. For this reason, the 2007 Rail White Paper announced the Government's intention to develop a Strategic Rail Freight Network (SFN) to facilitate the continued growth of rail freight services.
8. The 2007 High Level Output Specification (HLOS) committed £200 million to take forward the development of the SFN in Control Period 4 (CP4: 2009-10 to 2013-14), and provided funding for major infrastructure works at Reading and on the East Coast corridor, both of which will significantly enhance freight operations. This investment builds on the programme to increase the loading gauge and capacity of key freight routes serving major ports, announced under the Productivity Transport Innovation Fund scheme.
9. This paper looks to the future, beyond CP4, and sets out ways in which we envisage that further development of the SFN and enhancement of freight operations will enable UK's intensively utilised mixed-traffic network to accommodate rail freight growth forecast to 2030.



European logistics – steel exports via the Channel Tunnel

Context

10. We need to make the fullest use of the UK's predominantly mixed-traffic rail network. Conflicts occur between passenger and freight requirements (and between different types of passenger services) at numerous points on the railway, eroding network capacity and reliability. At present the network is almost nowhere optimised for freight, which reduces the efficiency of the UK's rail distribution logistics.
11. The SFN is intended to provide a framework for targeting investment and network management better to meet freight requirements and to resolve such conflicts. This should both improve the logistical efficiency of the railway and secure network capacity and reliability gains to the benefit of all users. The SFN is therefore a key element in making the best use of existing and future rail resources.
12. Network Rail (NR) is working with the industry and the Department to agree robust freight forecasts for 2030. The maps at *Annex A* provide: a picture of the proposed SFN; key freight/passenger network interaction; coal traffic flows for the electricity supply industry in 2006 and 2030; and the main flows of intermodal traffic anticipated in 2030. Analysis to date indicates growth of up to 75 per cent, concentrated on the deep sea intermodal sector but offset somewhat by a 20 per cent decline in coal traffic. Further information on the maps used in *Annex A*, the 2030 forecasts and NR's work on the SFN is available on the NR website (www.networkrail.co.uk).



International trade – maritime containers to and from UK ports

Definition of the Strategic Rail Freight Network

13. The 2007 Rail White Paper defined the SFN as: “a core network of trunk freight routes, capable of accommodating more and longer freight trains, with a selective ability to handle wagons with higher axle loads and greater loading gauge, integrated with and complementing the UK’s existing mixed traffic network.”
14. An ideal freight network would accommodate optimum sized freight trains travelling at appropriate line speed, without checks, over optimum routeing to commercially preferred timings. In practical terms this suggests that the SFN should:
 - optimise the pattern of freight trunk routeing to minimise passenger/ freight conflicts. This may lead to fewer, higher capacity trunk routes/ diversionary routes but also to the definition of ‘new’ trunk routes. This would provide potential gains in reliability, environmental performance and operating cost savings;
 - develop appropriate diversionary routes and implement a standard network-wide possessions regime, with general use of single line working (SLW), to provide 24-hour/365-day network availability;
 - upgrade an optimised pattern of freight trunk routes to eliminate traffic conflict and pinch points. This may require construction or reinstatement of chords, avoiding lines, investment in grade separated junctions etc; and
 - upgrade trunk freight routes to meet the requirements of traffic, which may include any (or all) of the following: measures to increase the number of freight train paths; provision for increased train length; increased loading gauge (including the longer term objective of securing a European gauge route from High Speed1 (HS1) to the North); increased axle-load; and infill electrification.
15. The SFN will continue to evolve over time to reflect emerging national and international logistics and freight network requirements. We should therefore consider safeguarding strategic disused freight alignments, etc.



Premium logistics – Royal Mail letters

Strategic Rail Freight Network Development: Control Period 4 (2009-10 to 2013-14)

- 16.** The 2007 Rail White Paper stated that the Government would work with the industry to develop and facilitate the delivery of the SFN, but would not specify freight requirements. Responsibility for producing a SFN delivery plan rests with NR, acting in its industry leadership role, within the context of the Department's freight policy and the wider strategic requirement to optimise overall railway capacity, reliability and availability for all users. NR is required by the Office of Rail Regulation (ORR) to publish SFN proposals in its Strategic Business Plan.
- 17.** NR set up a SFN Working Group comprising key stakeholders, including DfT, to identify and evaluate potential SFN schemes. Proposals have been evaluated against various criteria including a set of freight-based measures (whether the scheme provides for enhanced loading gauge¹, capacity, train lengthening, axle weight increases or better use of assets), and wider network benefits, principally route optimisation (including greater separation of passenger and freight flows) and additional benefits to passenger services. NR has assessed the Benefit/Cost Ratio of each scheme, where possible drawing on work already carried out through Route Utilisation Strategies, or previously funded by the Strategic Rail Authority. A list of proposed SFN schemes for CP4 has been published by NR in its CP4 Delivery Plan and is shown in Annex B.
- 18.** The SFN CP4 schemes will be complemented by CP4 High Level Output Specification (HLOS) schemes which deliver additional freight capacity and capability alongside that for passenger services. These include the upgrade of the East Coast Main Line (ECML) capacity-relieving 'Joint Line' via Spalding, Lincoln and Gainsborough; Shaftholme junction re-modelling; and Reading area re-development.

¹ A diagram of the various rail loading gauges is attached at Annex E



Powering UK industry – coal for electricity generation

Strategic Rail Freight Network: longer-term development

19. The SFN schemes for Control Period 5 (CP5: 2014-15 to 2018-19) and beyond will be developed as an integral part of the network planning process which will underpin the next HLOS and the emerging strategies for dealing with future passenger demand on the main line routes.
20. The nine principles set out below define the key requirements for the longer-term development of the SFN.

20.1 *Longer and heavier trains*

- To optimise path utilisation, the future ‘standard’ inter-modal train length should be 775 metres (755m plus locomotive²). As an early priority, key intermodal routes should be upgraded to accommodate trains up to 775m in length. Where appropriate, similar provision should also be made on bulk routes and consideration should be given to the use of less steeply-graded routes to improve train haulage efficiency.
- 775 metre train length should be the design standard for new freight terminal developments and enhancement of existing terminals.
- Selective ‘super-length’ route capability should be provided where there is a business case for running trains longer than 775 metres.
- Selective route capability should be provided, where there is a business case, for operating trains at 32 tonne axle loading.

20.2 *Freight and network-efficient operating characteristics*

- As an operating principle, NR should aim to achieve through running of freight trains, seeking timetabling and signalling solutions in preference to the use of passing loops. This has the potential to deliver significant environmental, operating and economic efficiencies, particularly if delivered alongside existing plans to reduce the level of delay to freight trains.

² Equivalent to 118 Standard Length Units of 6.4 metres

- Freight should be regarded as the leading rail sector for locomotive early fitment programmes for the roll-out of the Global System for Mobile Communications for Railways (GSM-R) and the European Railways Traffic Management System (ERTMS)³. This recognises both the freight industry's operational 'go-anywhere' requirement and its commercial 'can-do' capability.

20.3 *Seven-day/24-hour capability*

- Distribution customers are increasingly requiring a 7 day/24 hour capability from their suppliers, including inter-modal rail operators. This requires the 'seven day railway' to support freight as well as passenger services. This will require single line working (SLW) as a standard engineering possession practice and/or diversionary routes with appropriate capability, for each strategic freight route.
- Recognising that many freight routes are long-distance cross-country routes incorporating more than one NR region or strategic route, the achievement of seven-day/24 hour capability for freight also requires coordinated national planning of engineering possessions.



UK logistics – sustainable distribution

20.4 *W12 loading gauge*

- W12 should be implemented as the standard loading gauge for all strategic container routes including diversionary routes (except by specific route derogation) because it caters both for standard short sea

³ ERTMS: The European Union system for cab based signalling and control

and deep sea containers – unlike W10 which only accommodates deep sea containers. (See Annex E: Rail Freight Loading Gauges).

- Small scale ‘infill’ gauge clearance schemes should be progressed as opportunity and funding allows.

20.5 *European freight link (UIC GB+ Gauge⁴)*

- A European loading gauge freight link has been secured as far as Barking through Channel Tunnel access liberalisation and tariff reductions, and HS1 agreement to provide viable off-peak freight paths.
- Electrification of the Midland Main Line (MML) would provide an exceptional opportunity to create a UIC GB+ gauge cleared route to the Midlands. As a minimum first step, UIC GB+ height clearance should be safeguarded in any MML electrification programme.
- A UIC GB+ cleared link should be identified and created between HS1 and the MML on the basis of a case developed in the SFN funded Freight Routeing Studies (see paragraph 21 below).
- As a general principle, the rail network should be ‘future-proofed’ by ensuring that work to renew or enhance the network makes at least passive provision for UIC GB+ gauge, wherever this is practicable.

20.6 *New freight capacity*

- New SFN capacity, particularly on key intermodal routes, will be required to meet industry growth forecasts if this additional traffic is not to be forced onto the congested road network.
- Routes for consideration for early capacity enhancement are likely to include:
 - Ipswich to Nuneaton (CP4 and CP5);
 - the ‘Joint Line’ (to be upgraded in CP4 as the ECML Peterborough to Doncaster via Spalding freight line, with possible further capacity enhancement in CP5);
 - East-West Line (Oxford-Bedford with upgraded links to the West Coast Main Line (WCML) and MML);
 - MML 4-tracking;
 - Stourbridge to Walsall and subsequently Walsall to Lichfield restitution;
 - Southampton to WCML – possibly with upgrades to routes and/or examination of alternative routeing options to provide capacity for growth;
 - Freight routes to Manchester Hub terminals including Trafford Park.
- SFN capacity should also be boosted by the safeguarding as ‘strategic freight capacity’ of part of any route capacity released on ‘classic’ lines in the event of the development of any new line(s) (see 20.9 below).

⁴ Also known as GB1 gauge



Powering the UK economy – delivering petroleum products

20.7 *Electrification of freight routes*

- To secure early diversionary and resilience benefits, and to provide incentives for the use of electric freight traction, the SFN should consider selective strategic and infill electrification. Candidate routes are likely to include:
 - Ipswich to Nuneaton;
 - Joint Line (Peterborough to Doncaster via Spalding);
 - small scale infill schemes.

20.8 *Strategic Rail Freight Interchanges and terminals*

- The development of Strategic Rail Freight Interchanges will be supported by the National Networks and the Ports National Policy Statements.
- The Department will seek to facilitate freight facility grant support applications for rail terminal works to handle trains 775m long and to accept electric traction.

20.9 *Freight paths: the Strategic Freight Capacity scheme*

- The Department has strongly supported the industry's initiative to develop a Strategic Freight Capacity (SFC) scheme to protect existing, released and newly created long distance strategic freight paths.
- Once the SFC scheme is operational, the Department will look to the industry to develop tighter, sector-specific, use-it-or-lose-it (UIOLI) criteria to optimise the use of existing freight paths and to facilitate competition.

Freight routeing studies

21. As a key element in developing the SFN, the Department has asked NR to undertake two freight routeing studies and recommend:
 - the preferred routes between London and the South-East, and the Midlands and North of England, and the enhancements necessary to accommodate rail freight activity forecast to 2030 (the 'Routes to the North' (RTN) study); and
 - an optimal cross-London freight strategy (CLFS).
22. The RTN study will include advice on accommodating UIC GB+ gauge freight vehicles whilst maintaining passenger and station capability, and the incremental cost of providing this. The CLFS is being taken forward as part of Network Rail's proposed London and South-East Route Utilisation Strategy (RUS).

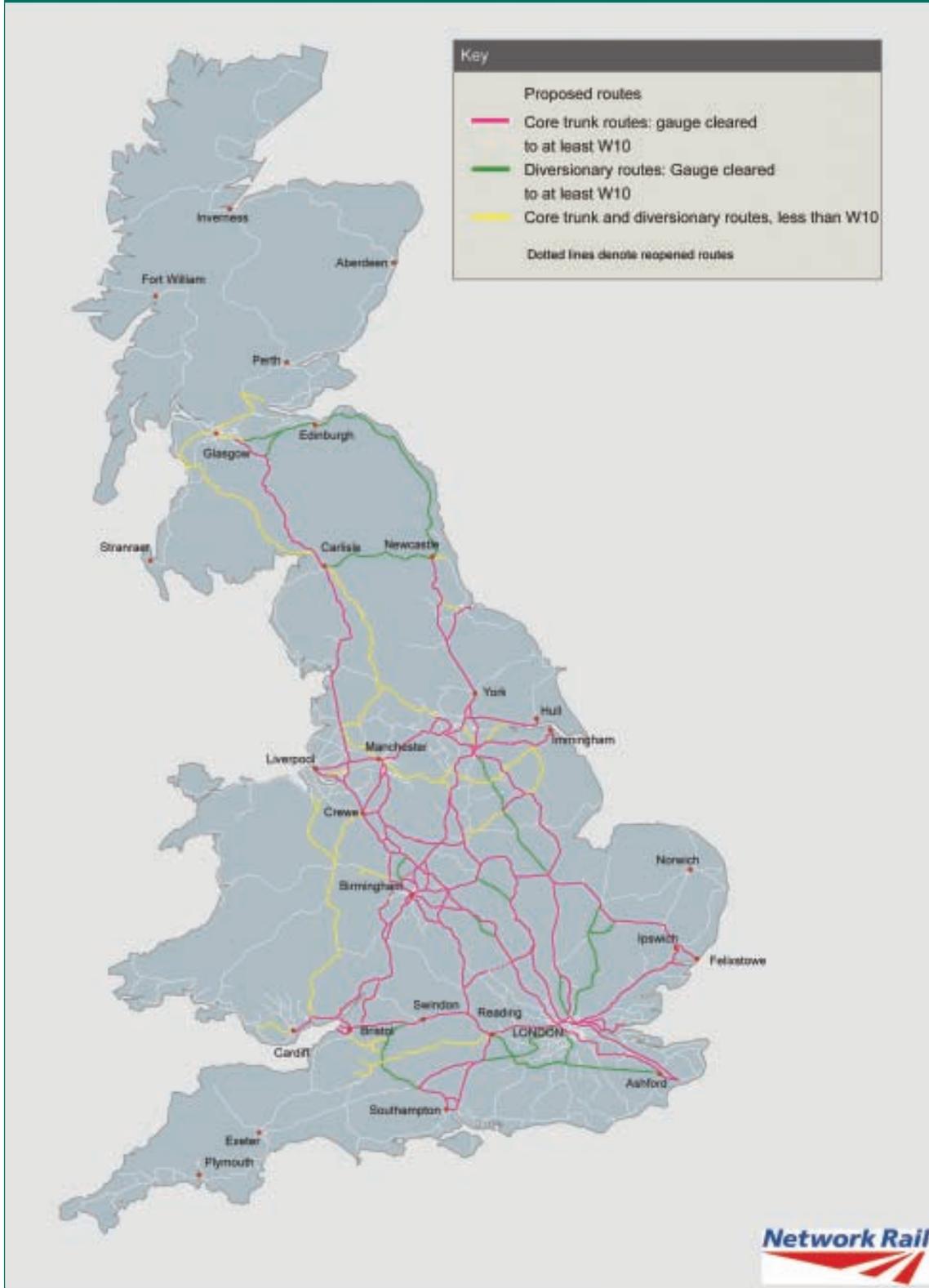


Delivering the goods – '24/7'

Annex A

Strategic Rail Freight Network maps

Map 1: The Proposed Strategic Rail Freight Network

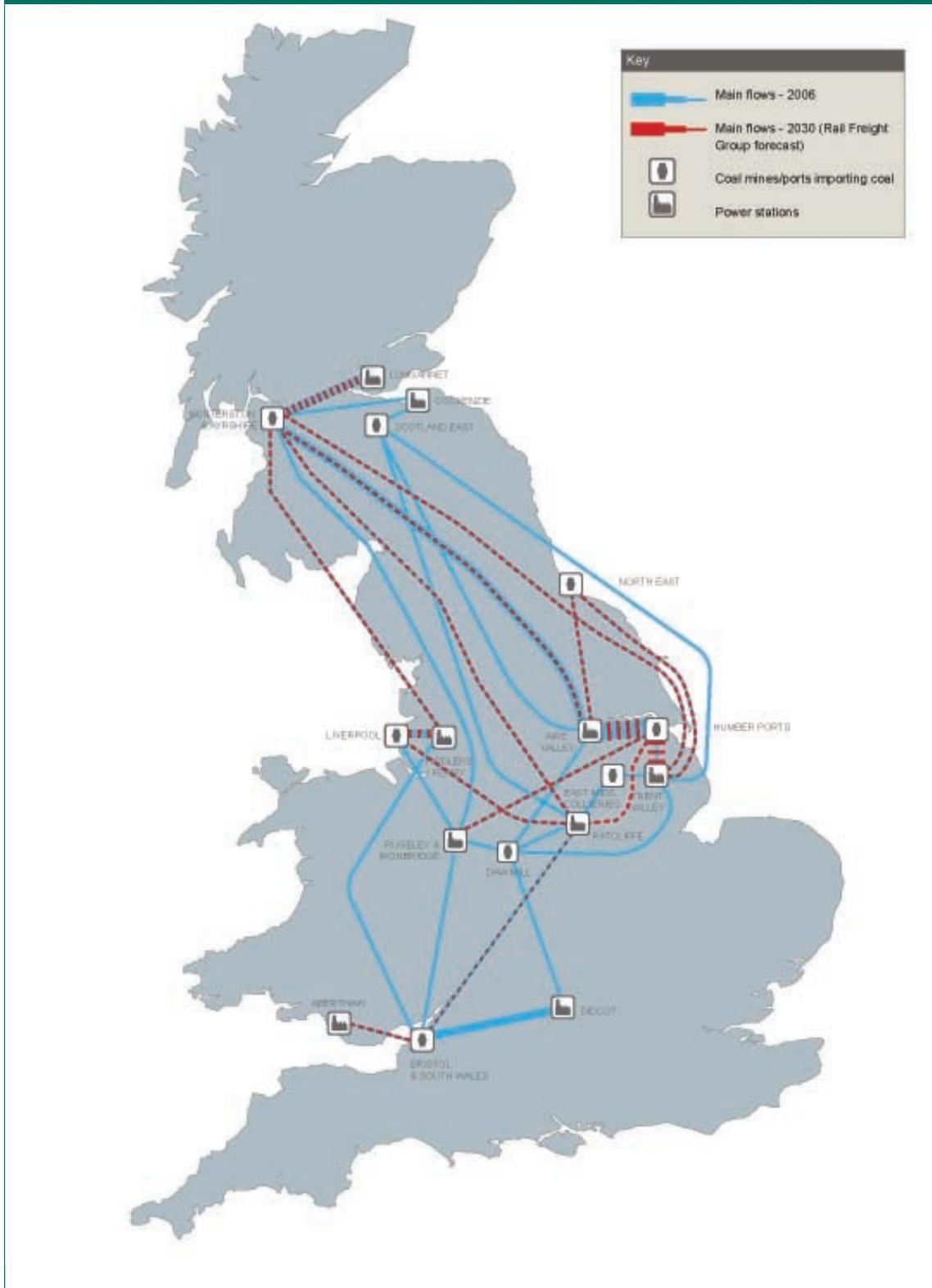


Map 2: Freight and Passenger Network Interaction



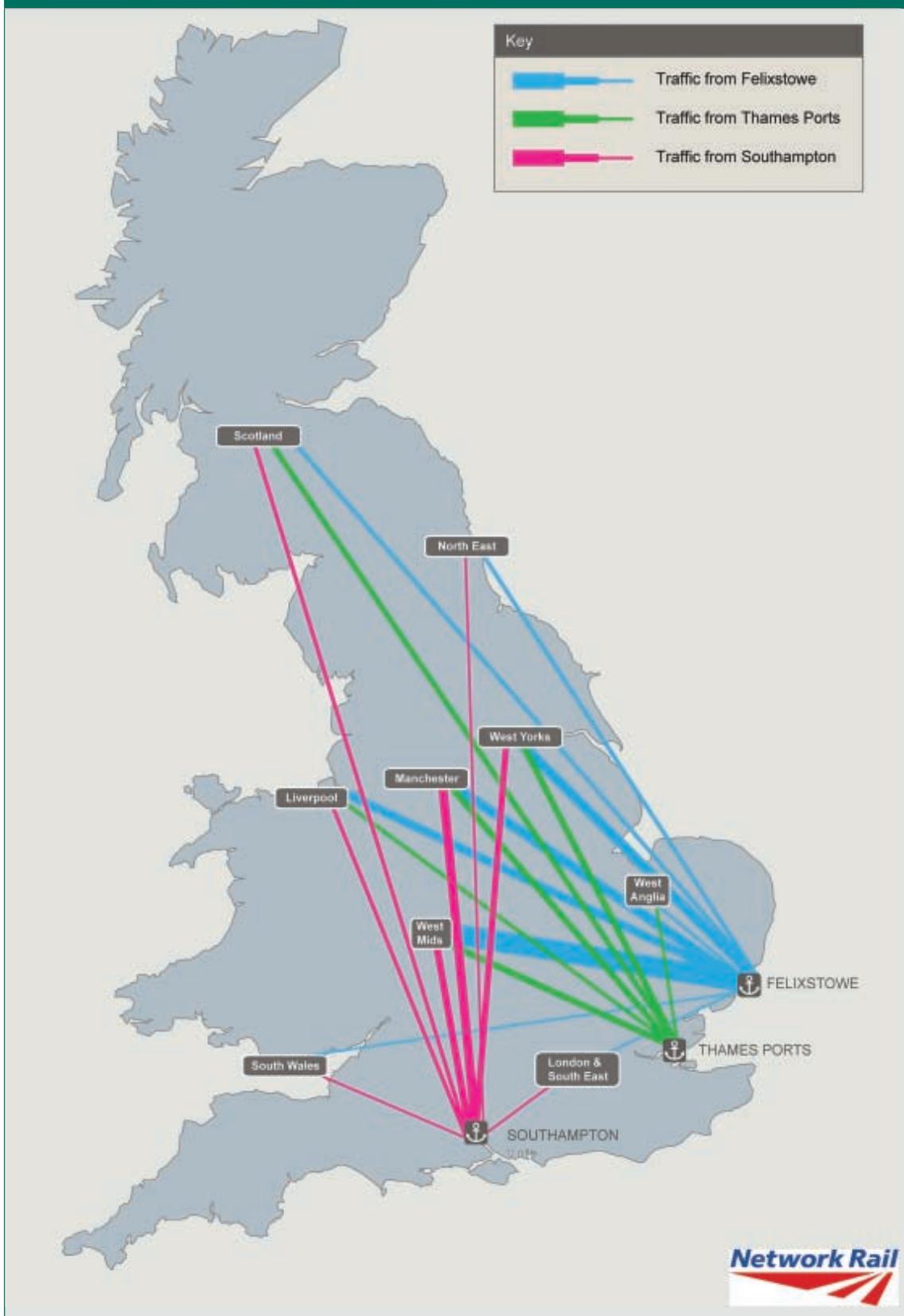
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Map 3: Electricity Supply Industry (ESI) Coal Flows 2006 & 2030



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Map 4: Intermodal Traffic: Main Flows in 2030



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Annex B

Strategic Rail Freight Network projects funded for delivery in Control Period 4 (2009-10 to 2013-14)

- **Ipswich to Nuneaton capacity enhancement:** £50 million for capacity and signalling enhancements – some planned for early CP5 to tie in with Leicester re-signalling.
- **W10 Gauge clearance:** £55 million for Southampton to Basingstoke diversionary route via Laverstock and Andover.
- **In-fill gauge schemes:** £40 million for schemes to be identified by the industry.
- **Train lengthening:** £40 million for schemes to be identified by the industry.
- **Channel Tunnel route:** £10 million for signalling modifications to allow trains hauled by Channel Tunnel electric freight locomotives to use the route to the south of London via Redhill.
- **Development studies:** £5 million for work to develop Strategic Rail Freight Network next stage investment proposals.

Annex C

Productivity Transport Innovation Fund projects for delivery in Control Period 4 (2009-10 to 2013-14)

- **Peterborough – Nuneaton route:** £80.0 million to enhance loading gauge and capacity, providing a crucial alternative to the busy rail routes via London.
- **Southampton – Nuneaton corridor:** £42.8 million to enhance the loading gauge to W10.
- **Humber Ports to the East Coast Main Line:** £8.0 million to increase capacity on the rail link with the port.
- **West Coast Main Line to Liverpool Docks:** £1.7 million to improve rail access to the port.
- **Gospel Oak to Barking line in London:** £18.5 million for gauge clearance and freight capacity work.
- **North London Line:** to increase freight capacity on this vital cross-London route.

Annex D

Strategic Rail Freight Interchange policy

A Strategic Rail Freight Interchange (SRFI) is a large multi-purpose rail freight interchange containing rail-connected warehousing and container handling facilities. The site may also contain manufacturing and processing activities.

The aim of an SRFI is to optimise the use of rail in the freight journey by minimising some elements of the secondary distribution leg by road through co-location of other distribution and freight activities. SRFIs are a key element in reducing the cost to users of moving freight by rail and therefore are important in facilitating the transfer of freight from road to rail.

The Government's *Strategy for Sustainable Distribution*, which seeks to maximise the economic, environmental and social benefits of transferring freight movements from road to rail, incorporates a strategy for major freight interchanges, including rail-intermodal terminals. SRFIs represent major gateways to the national rail network which allow businesses to move freight by rail for distances and in quantities appropriate to their operational and commercial priorities. They are therefore key features of national rail infrastructure.

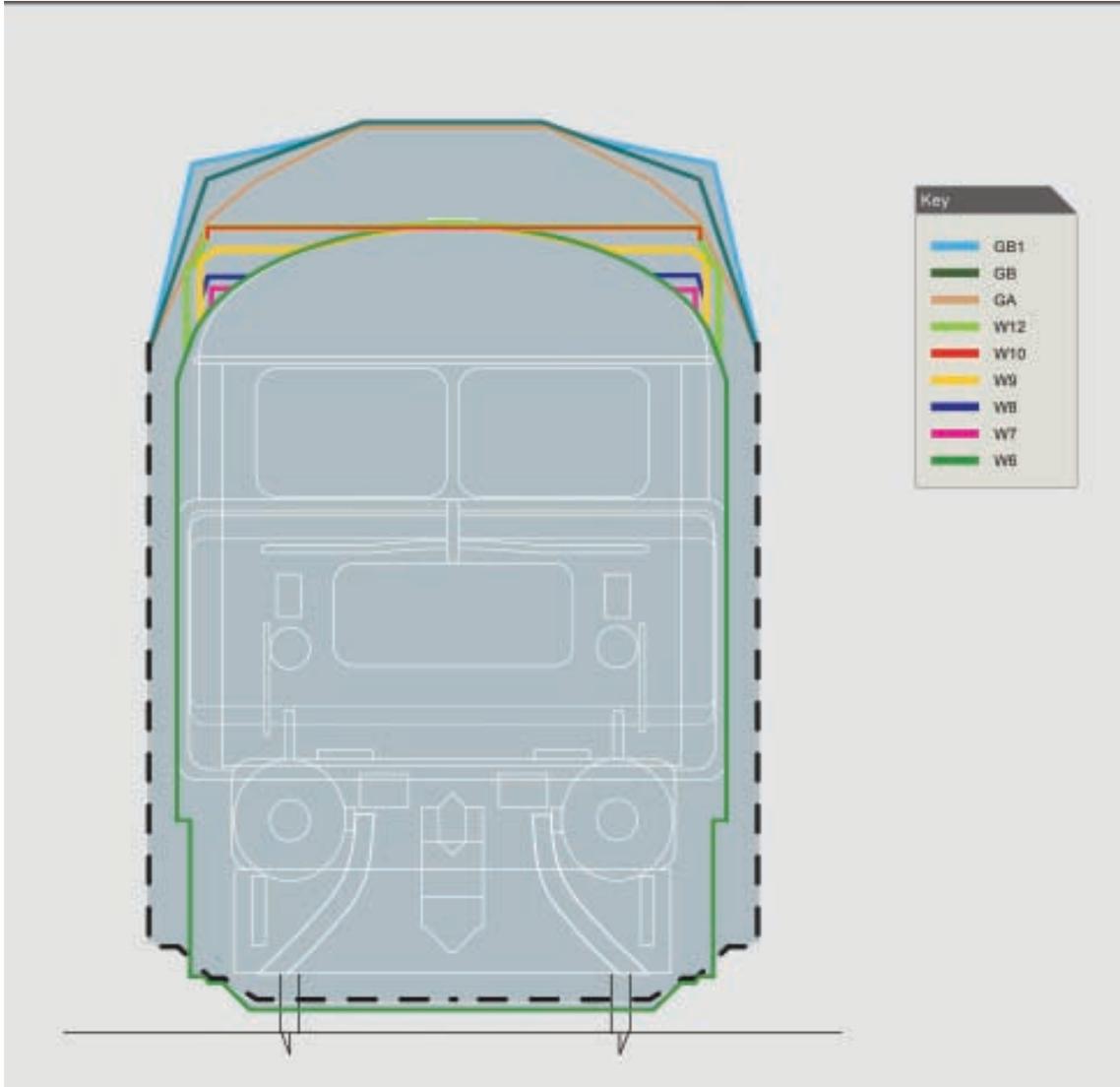
A network of SRFIs, complemented by other freight interchanges and terminals, is required to support longer-term development of efficient rail freight distribution logistics. Whilst SRFIs operate to serve regional and cross regional catchment areas, they are also key components in national and international networks. These networks are of strategic importance in facilitating links between UK regions and the EU.

It is important that SRFIs are located near the key business markets they will serve, which will largely focus on major urban centres, or groups of centres, and key supply chain routes. The need for effective connections for both rail and road means that the number of locations suitable as SRFIs will be limited.

It is essential that there is open access to such facilities to enable competitive rail haulage and customer choice. This means that the commercial structure controlling access at the site must ensure that all rail freight operators should be able to serve the SRFI without impediment.

Annex E

Rail freight loading gauges



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ISBN 978-1-84864-034-4



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