London Rail

Rail Freight Strategy

August 2007

MAYOR OF LONDON

Transport for London

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Foreword

The UK rail freight industry is competitive and dynamic. Over the last year, encouraging progress has been made in planning how its future growth can be accommodated on the rail network. Network Rail's Freight Route Utilisation Strategy, published in March 2007, has helped set the agenda, while the Government has recognised the case for funding infrastructure enhancement schemes which benefit freight. In July 2007, the upgrade of the Barking – Gospel Oak line became the first project from the productivity part of the Transport Innovation Fund to gain funding. The provision for funding a Strategic Freight Network in the Railways White Paper (July 2007) is also welcome.

However, there are still significant challenges to face. Some parts of the rail freight industry have not shared in the general success, for example Channel Tunnel, and opportunities for modal switch are being missed because of a lack of suitable infrastructure and facilities.

Transport for London supports freight on rail because it helps deliver progress with a number of the Mayor's priorities. For example; per tonne carried, rail freight produces nearly 90% fewer emissions than HGVs and it is also considerably safer than road freight. In London during 2005, there were 1,040 road accident casualties associated with goods vehicles. There were no casualties caused by rail freight accidents in the whole UK.

The rail freight industry needs help to deliver the wider benefits of rail freight to Londoners and the UK. TfL's Rail Freight Strategy shows that there is a good business case for intervening to support the industry and presents a series of solutions that reflect both passenger and freight growth needs over the next ten years.

During the preparation of the Strategy, we undertook a number of engagement activities with stakeholders including rail industry partners, such as Network Rail. This close collaboration has ensured the development of realistic solutions, which are consistent with TfL's Transport 2025 initiative.

The Strategy, which forms part of London's forthcoming sustainable freight strategy (due to be released later in 2007), is published with a Planning Policy Toolkit, a Development Control Toolkit and a list of potential small to medium sized sites for rail freight development in London. Together they form a planning resource to assist the development of rail freight terminals in London. The sites list also serves as a companion to the GLA's 'Supplementary Planning Guidance – Land for Transport Functions'.

The strategy is intended to help drive forward the agenda for rail freight. It will inform TfL's input to industry planning processes and provide the basis for TfL's recommendations for investment in the Strategic Freight Network. We believe it demonstrates a commitment to growing the railways' contribution, passenger and freight, making London a more sustainable and liveable city.

Ian Brown
Managing Director, TfL London Rail

Section 2

Executive summary

2.1 This Rail Freight Strategy sets out how Transport for London (TfL) would like to see rail freight develop in London over the next 10 years. TfL believes it is important for rail freight to flourish alongside a developing passenger railway in London. Rail freight also makes an increasingly successful contribution to the economy and quality of life of Londoners and people throughout the UK.

2.2 TfL estimates that implementing the strategy will remove between 110 and 176 million lorry miles from the UK's roads each year, which will produce benefits of between £80 and £126 million a year.

2.3 Freight is a vital element of the nation's economy, but one associated with a number of negative impacts on the environment and quality of life. Generally, these impacts are much more limited in the case of rail – this is why the use of rail, rather than lorries, should be encouraged. Rail is associated with fewer accidents, lower emissions of greenhouse and other harmful gases, and it alleviates road congestion, although not all types of freight can realistically be transferred to rail.

2.4 Care is needed if the rail freight network, and facilities connected to it, are to be planned in a cost-effective, affordable way which also delivers strong benefits for the economy, the environment and society as a whole.

2.5 The rail system is currently enjoying growth in both passenger and freight demand. A balance of solutions will be needed if the 'problems of success' are to be addressed in ways which meet national and regional policies at an affordable cost.

2.6 The rail industry must strive to exploit existing capacity to the full before proposing the construction of expensive new infrastructure. The right balance of solutions will require the rigorous use of approved guidelines and stakeholder consultation.

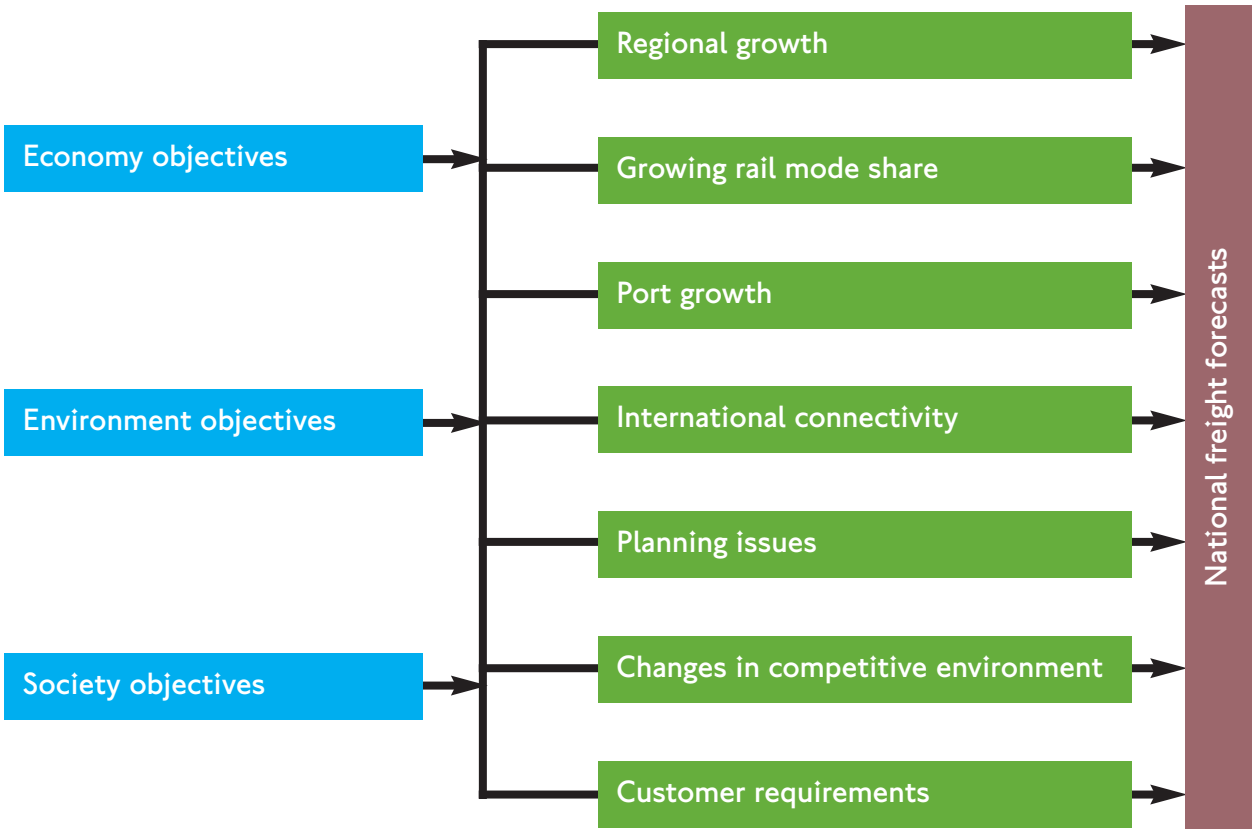
2.7 The purpose of this Strategy, a companion document to London's sustainable freight strategy, is to set out TfL's view of the rail freight challenges facing London over the next 10 years, together with the actions necessary to address them. The document outlines in detail how TfL aims to meet its obligations in the London Plan and Mayor's Transport Strategy for rail freight. It is intended to complement other industry planning processes, notably Network Rail's Cross London and Freight Route Utilisation Strategies (RUS), and the Department for Transport's (DfT's) Regional Planning Assessments (RPAs). It identifies a number of proposed solutions for central Government to consider. Following the Government's announcement that funding to develop a Strategic Freight Network will be available from 2010, this Strategy will form the basis of TfL's recommendations for taking this forward.

2.8 The vision for freight, which will inform London's sustainable freight strategy, is:

The safe, reliable and efficient movement of freight and servicing trips to, from, within and, where appropriate, through London to support London's economy, in balance with the needs of other transport users, London's environment and Londoners' quality of life.

2.9 From this vision, the sustainable freight strategy developed a number of objectives under the themes of Economy, Environment and Society, which have been used to identify a set of seven rail freight challenges for the strategy to address. These are also implicit in national rail freight forecasts, which TfL endorses.

Figure 2.1: London's Rail Freight Challenges



2.10 The main considerations for London are as follows:

- **Accommodating London's growth** and helping to deliver key projects such as the 2012 Olympic and Paralympic Games, Stratford City and the wider Thames Gateway. These are expected to increase the volume of rail freight traffic, notably aggregates, retail goods (including international flows from Continental Europe), and possibly some waste flows. There will be an associated increase in the volume of freight handling at terminals and also growth in passenger traffic, which will result in competition for track access
- By **increasing rail's mode share**, rail can make the transport system more sustainable by meeting reduction targets for CO_2 emissions, as set out in the Mayor's Climate Change Action Plan. This

will increase the demand for capacity on the rail network which serves London, and at terminals in and around the city

- Accommodating expected **growth in deep sea container traffic** between the Haven ports (Felixstowe and Bathside Bay) and North Thameside ports (Tilbury, London Gateway) and the rest of the country
- Improving London's international competitiveness by **improving connectivity with European rail freight networks**. This supports the Eddington Review by focusing on one of the key priorities where transport investment is most effective, ie International Gateways. In particular, there are opportunities for developing greater use of the Channel Tunnel for rail freight, notably the opening of HS1 in November 2007 and the progressive liberalisation of Continental rail freight markets
- **Improving planning procedure** to better balance strategic rail freight benefits and the local impacts of freight activities
- Responding to key **changes including in competetive environment**:
  - Accommodating expected growth in the high cube deep sea container market [1]
  - The impact of European legislation, such as the Working Time Directive on the competitiveness of the road haulage industry
  - The impact of national road user charging
  - UK Government grant support for rail freight facilities and flows
  - Possible changes in the structure and level of track access charges
- Accommodating **rail freight customers' requirements** with others' use of the network

In order to test possible interventions to encourage freight, a forecasting model was developed using industry forecasts of freight growth and a number of sensitivity checks to reflect housing growth scenarios in London, and the availability of strategic rail freight distribution facilities.

2.11 Potential interventions were grouped into five categories:

a. Capacity and capability schemes within London including:

- London Overground routes, encompassing an upgrade of the North London Line, the Willesden - Gospel Oak - Barking route to W9 and W10 standards, and some works on the West London Line. On 25 July 2007, the Government approved £18.5m of funding towards the capacity and gauge enhancement of the Willesden - Gospel Oak - Barking route, following an application from Network Rail and TfL through P-TIF[2]
- Lengthening of passenger services on other radial corridors to allow for growth in passenger numbers without impacting on freight
- The Crossrail project, which includes enhancements to protect freight capability while significantly increasing passenger services

b. Capacity and capability schemes outside London, in particular:

- A staged upgrade of the Felixstowe - Peterborough - Nuneaton route between the Haven Ports and the ECML and WCML
- Extension of electrification outside London

c. Promotion of measures to make more efficient use of the network.

- Longer freight trains including infrastructure works to support them on the network and at terminals
- Opportunities for more efficient possessions planning which can help increase the available capacity of the network
- Measures to improve the allocation and efficient use of train paths

[1] This refers to the new ISO international standard for container heights of 9'6" rather than 8'6".
[2] Productivity part of the Transport Innovation Fund

d. Initiatives to promote terminal development to:

- Increase the opportunities for using rail in logistics operations, by encouraging the development of large-scale rail connected distribution facilities in appropriate locations
- Identify and promote suitable sites in appropriate locations in London to support the construction and other industries that rail can serve
- Realise the potential of HS1 for reducing freight haulage costs and increasing rail's share of UK/Continent trade flows

e. Promotion of policies designed to improve the competitive advantage of rail freight over road freight, such as liberalisation of European rail freight market.

2.12 The Strategy identifies a 'Do Minimum' case and evaluates both a 'Do More' and a 'Do Most' package of solutions for TfL and others to undertake. The 'Do More' package has a BCR of 3.3:1 and the 'Do Most' package a BCR of 2.5:1.

2.13 The delivery programme shows that some key constraints can be addressed by 2013.

2.14 To enable and support the package of identified solutions, the following approach will be required:

- Joint business cases that capture benefits from enhancements to both freight and passenger users
- Ensuring that new freight facilities are included in London's strategic planning frameworks, and existing terminal sites safeguarded where appropriate
- Planning guidance for freight terminal sites to supplement Strategic Planning Guidance on 'Land for Transport functions'
- Investigating and supporting, where appropriate, innovative rail freight solutions such as rail freight consolidation centres, the use of Central London terminals for freight, etc
- Ensuring transport assessments consider rail options
- A fuller understanding of rail freight's contribution to sustainability and reducing CO_2 emissions

Three separate documents have been produced to accompany the Strategy:

- A Planning Policy Toolkit, aimed at assisting Borough planning officers in designating suitable sites for rail freight in Borough development plans
- A Development Control Toolkit, to assist Borough development control officers in reacting to rail freight planning applications
- A list of suitable sites for rail freight in London Boroughs

Section 3

Strategic background

Introduction and purpose of strategy

3.1 This Rail Freight Strategy outlines how TfL believes rail freight should develop in London over the next 10 years. TfL believes it is important for rail freight to flourish alongside a developing passenger railway in London, and that the industry makes an increasingly successful contribution to the economy and quality of life of Londoners and people throughout the UK.

3.2 TfL estimates that implementation of the Strategy will remove between 110 and 176 million lorry miles from the UK's roads each year, which will produce benefits in terms of the environment, congestion relief and road safety, worth between £80 and £126 million a year.

3.3 The background to this is a recognition that rail plays an important role in carrying the nation's freight and reducing the number of lorries on the roads. It is associated with fewer accidents, lower emissions of greenhouse and other harmful gases, and it alleviates road congestion. However, it is also important to understand what type of freight can realistically be transferred to rail.

3.4 Rail is particularly effective in some freight markets – generally where large, relatively standard volumes are travelling long distances, such as aggregates or deep sea containers. While, historically, rail has been far less able to compete in other markets, its ability to compete over shorter distances and in non-bulk markets is improving. Careful strategic analysis is therefore needed if the rail network and facilities connected to it are to be planned for freight in a cost-effective, affordable way which then delivers strong benefits for the economy, the environment and wider society.

3.5 Rail freight volumes have grown by 60% since 1995 and rail's market share has increased from 8.5% to 11.5%. The industry, led by Network Rail, forecasts continuing strong growth over the next 10 years. This will add to the challenges on the rail network from growing passenger demand. Nowhere is this pressure more acute than in London, due to the large and rapidly growing amount of containerised freight from ports, as well as very strong passenger demand.

3.6 A balance of solutions will be needed if the 'problems of success', which the rail industry now faces, are to be solved in ways which address national and regional policies at an affordable cost. While the solutions will include schemes to expand the capacity and capability of the rail infrastructure – both in and outside London – such schemes are expensive and take time to plan and deliver, so less costly, shorter-term solutions will also be needed.

3.7 TfL needs to be confident that the proposals made offer best value for money. Finding ways of using existing capacity more effectively should be explored before looking at the construction of expensive new infrastructure. Operators should be encouraged to treat the paths they use as a valuable resource. Ways of improving the use of existing infrastructure capacity include operating better loaded and longer freight trains (where this doesn't unduly compromise performance), and encouraging operators to make best use of the paths available over 24 hours. For example, there may be opportunities for encouraging more freight to travel at night, subject to operational

feasibility, including Network Rail engineering needs, and environmental acceptability (particularly in terms of noise).

3.8 The right balance of solutions is likely to include some compromise, and this calls for a mature approach by the various industry players. It involves acknowledging that the various users of the rail network have different needs. Fast, reliable 'turn up and go' services will be important for passengers in London. A higher priority for freight operators will be maintaining consistent service quality at minimum cost, and meeting their customers' requirements in the highly competitive logistics industry.

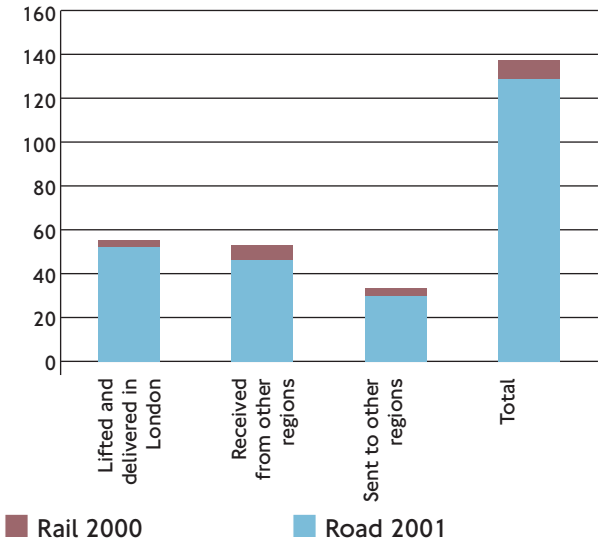
3.9 The strategy sits within an existing national and regional policy framework. This includes the 2007 Railways White Paper 'Delivering a Sustainable Railway', DfT's Sustainable Distribution Strategy, the Network Rail Eastern and Southern RPAs as well as the Cross London and Freight Route Utilisation Strategies. It is a companion document to London's sustainable freight strategy, which itself is rooted in the existing London Plan, published in February 2004, and the Mayor's Transport Strategy. It is also consistent with T2025, TfL's 20 year Transport Vision for London. The Strategy, like the London Plan, looks 10 years ahead, so covers the period up to 2016. Three separate documents have been produced to provide guidance on the development of rail freight terminals:

- Planning Policy Toolkit, aimed at assisting Borough planning officers in designating suitable sites for rail freight in Borough development plans
- Development Control Toolkit, to assist Borough development control officers in reacting to rail freight planning applications
- A list of suitable sites for rail freight in London Boroughs to accompany these documents

Overview of Rail freight in and around London

3.10 The relative scale of road and rail freight movements serving London is shown in Figure 3.1.

Figure 3.1: Estimated freight flows in London (million tonnes per annum)



Source: London Rail Freight Study, 2004

3.11 Of the total freight serving London, rail tonnage makes up approximately 6%. This suggests that rail plays only a marginal role in London. While it is true that rail may not be well suited to all freight markets in London, it plays a vital specialist role, which is likely to expand.

3.12 In particular, the construction industry in London is heavily reliant on rail for the distribution of building materials around the city. Approximately 60% of the quarried stone used in London is transported by rail and, overall, rail plays a role in the transport of 40% of all construction materials used in the Capital. In addition, 790kt[3], or 29%, of municipal solid waste was moved by rail to landfill sites in regions outside London in 2005.

3.13 However, this only tells part of the story. The majority of rail freight in London is travelling through the city and doesn't serve it directly. The largest element of this 'transit' freight is deep sea container flows between the major ports to the East of London and the rest of the country. Other flows include Channel Tunnel traffic and flows of nuclear waste for reprocessing between nuclear power stations in the East and South East of England and Cumbria.

3.14 This situation reflects London's position as the hub of the UK rail network. The railways were built as a series of radial routes serving the main London termini. The 'orbital' routes (North, West, South London Lines, Gospel Oak to Barking route, etc) allow freight to pass between these radial routes. This arrangement has worked well historically, but competing needs have emerged more recently due to the significant growth in both passenger and freight services.

3.15 TfL wishes to introduce step change improvements in the quality of orbital passenger rail services in the next few years. At the same time the volumes of freight transiting London – but not serving the city – are expected to continue growing at a faster rate than rail freight in general, mainly due to major port developments. Strategic solutions are required which recognise the orbital routes' new role as intensively used mixed railways. In this light a major task of this strategy is to set out TfL's view of which routes should be developed as part of the Strategic Freight Network.

3.16 Figures 3.2 and 3.3 provide an overview of the main existing and planned terminals / ports for rail freight in London and surrounding regions, together with the main flows in and around the Capital.

Structure of document

- Section 4 deals with the strategic policy context of the Strategy, setting out the framework of national and regional policies within which it sits.
- Section 5 identifies seven areas of rail freight challenges which the Strategy needs to address if its to meet its obligations
- Section 6 identifies possible solutions in five groups: capacity and capability schemes in London; capacity and capability schemes outside London; better use of the existing network; terminal development; and other policies to improve the competitive advantage of rail freight
- Section 7 sets out the appraisal methodology and groups the measures into 'Do More' and 'Do Most' packages. These are appraised against a 'Do Minimum'
- Section 8 provides an action plan which includes details of the envisaged partnerships which will be needed to bring about implementation and funding
- Section 9 outlines a brief set of next steps

[3] Source: Waste Recycling Group

Figure 3.2: Location of main freight generators and flows to and from London and the South East

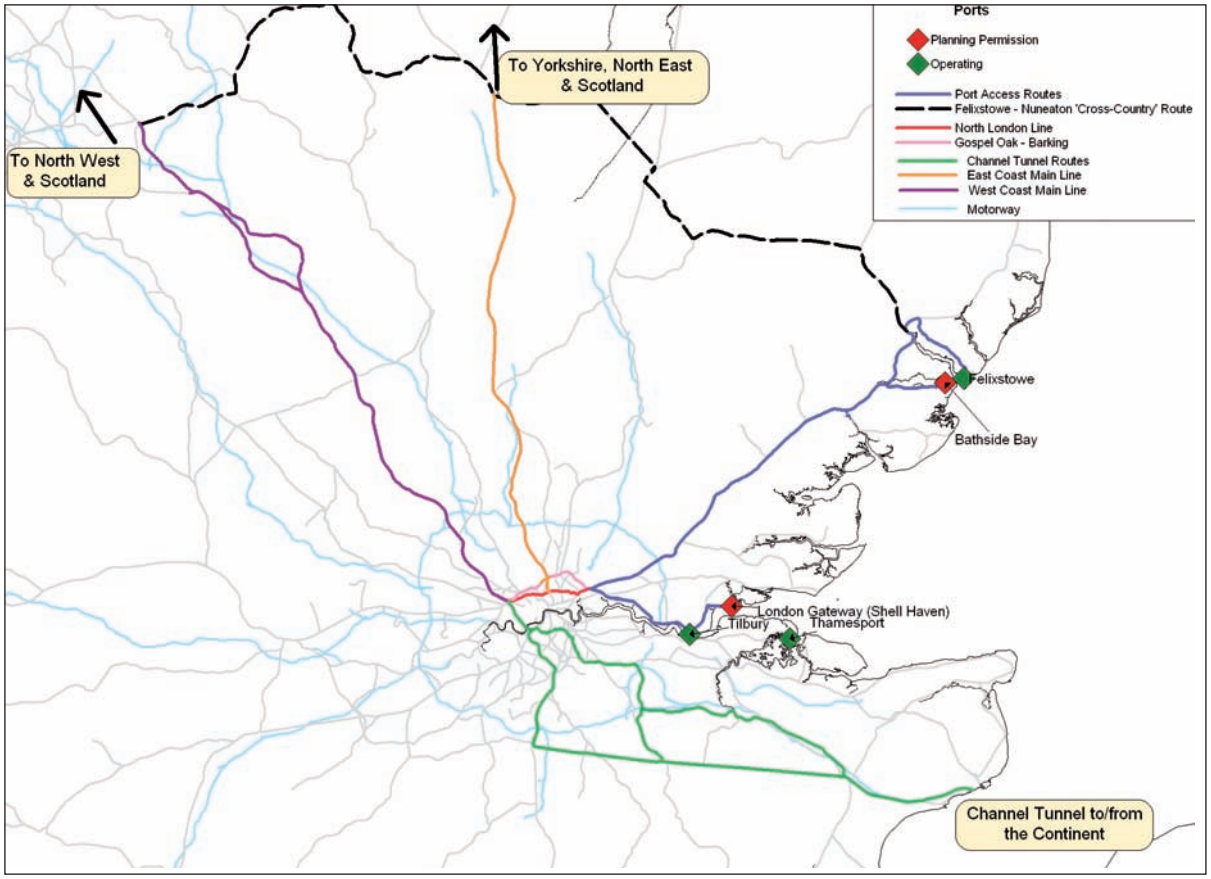
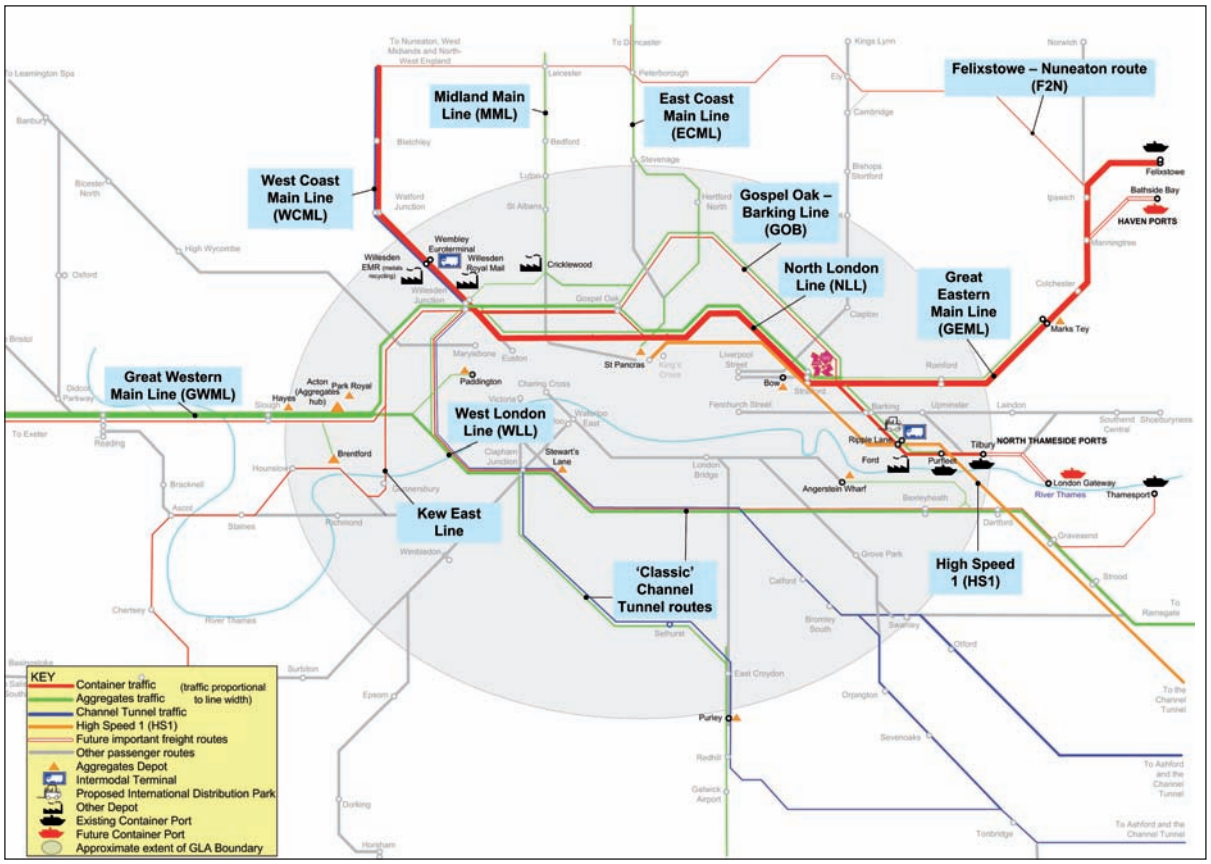


Figure 3.3: Location of key freight flows – schematic



Section 4

The strategic and policy context

TfL London Rail role

4.1 TfL London Rail is responsible for developing and implementing measures related to the national railways in London that address the Mayor of London's transport objectives, as set out in the London Plan and the Mayor's Transport Strategy. This is all set within policy on rail freight which is summarised below:

National Rail Freight Policy

4.2 The 2007 Government White Paper 'Delivering a Sustainable Railway' set out policies on freight, which are summarised below:

- Growth is expected over the next 10 years
- Rail freight operators should use railway capacity as efficiently as possible, using the principle of 'use it or lose it'
- A Strategic Freight Network will be created. £200 million will be available to begin this during the HLOS period
- Growth is to be encouraged to support "goods being moved in a sustainable way which maximises benefits to the economy and society"
- The aim of seeing freight travelling by rail instead of road, wherever this makes most sense, is to be delivered by a competitive and dynamic private sector rail freight industry – the Government does not intend to get involved in the freight operators' everyday business and operational issues
- The Government will ensure that policies and regulations do not create unnecessary obstacles to future growth. It will provide financial support where it is affordable and offers the greatest environmental, congestion and safety benefits

Eddington Transport Study

4.3 The Eddington report on the links between transport and the economy recognised the high economic value of shorter journey times for business and freight travel – a 5% reduction in journey time for such modes would deliver £2.5bn of economic benefit. One of three strategic priorities it identified was the UK's 'International Gateways'. The Eddington review presents a strong economic case for investing in infrastructure leading to key ports, making the point that some of these are suffering from issues of congestion and unreliability.

4.4 The Eddington study also emphasises the importance of efficient urban and inter-urban transport links. Since rail freight shares these links there is a clear connection between an efficient rail freight industry and an efficient overall transport sector.

London Plan policies

4.5 The Mayor's London Plan is committed to reducing the environmental impact of road freight movements where possible and improving safety on London's roads. To help address this it "aims to foster a progressive shift of freight from road to more sustainable modes such as rail" It supports finding new capacity by avoiding the most congested passenger routes and integrating new terminals within a routing policy. The following policies are relevant:

Policy 3C5: London's international, national and regional transport links

The Mayor will work with strategic partners to:

- Improve and expand London's national and international transport links for passengers and freight, to support London's development
- Achieve the spatial priorities of the plan, especially to support growth in the Thames Gateway, and to achieve regeneration benefits while mitigating adverse environmental impacts
- Seek improved access to airports, ports and international rail termini by public transport
- Develop proposals with neighbouring regions to allow long distance traffic, especially rail freight, to bypass London
- Improve links between London and surrounding regions

Policy 3C24: Freight strategy

The Mayor will promote the sustainable development of the full range of road, rail and waterborne freight facilities in London and seek to improve integration between modes and between major rail interchanges and the centres they serve. The development of a London rail freight bypass routes is supported. UDP policies should:

- Implement the spatial aspects of the freight element of the Mayor's Transport Strategy as developed by the London Sustainable Distribution Partnership
- Seek to locate developments that generate high levels of freight movement close to major transport routes
- Ensure that suitable sites and facilities are made available to enable the transfer of freight to rail and water through the protection of existing sites and the provision of new sites
- Ensure developments include appropriate servicing facilities, off road wherever practicable
- Ensure collections and deliveries can take place away from the main bus and tram routes

Policy 3C25: Strategic Rail Intermodal Freight Facilities

The Mayor will, and boroughs should, support the provision of strategic rail based intermodal freight facilities. Each proposal will be considered on its own merits and in the context of wider policies in this plan.

4.6 The Plan also required in policy 3C4 that Supplementary Planning Guidance (SPG) on Land for Transport should be prepared, and the GLA has completed this. The draft SPG for Industrial Land also encourages locating industrial development on rail connected sites. This guidance is used by the Mayor/GLA/TfL to ensure that development proposals do not result in a net loss of land identified as needed for transport purposes.

Climate Change Action Plan

4.7 An increasingly important area of policy influencing transport is climate change. The Mayor's Climate Change Action Plan sets the target of stabilising London's emissions at 60% below 1990 levels by 2025 and limiting total CO_2 emissions between now and then to 600m tonnes.

Regional Spatial Strategies

4.8 The East of England Regional Assembly prepared a Draft Regional Spatial Strategy (RSS) in 2004. This was subjected to an Examination in Public, and the Government Office for the East of England has now published its proposed alterations. It has the following policies relevant to rail freight:

Draft Policy T10: Strategic Freight Movement

'Priority should be given to the efficient and sustainable movement of freight and, in particular, seeking to increase the proportion of the region's freight carried on rail and by water where those are the most efficient modes

High priority will be given to measures to provide adequate rail freight capability and capacity on routes leading to the region's existing major ports of Tilbury and Felixstowe, and to Bathside Bay (Harwich) and London Gateway if and as approved development requires it

Provisions will be made for at least one strategic rail freight interchange within the East of England to serve London and the region, at a location with good access to the strategic rail routes and the strategic highway network

Existing well-located freight wharves and facilities for rail and water freight interchange should be safeguarded for future use, where there is a reasonable prospect of developing them for port operational uses and improved provision made at locations with good road and rail access to end users

Previously used rail accessible sites, including those owned by non-railway bodies, should be protected from demand by non rail-based uses where there is a reasonable prospect of developing them for rail freight use

Draft Further Policy T4: Ports and Water Transport states:

'Access to the region's ports should be managed and enhanced to support their development, and should be such as to enable them to contribute to national and regional objectives in relation to economic growth and regeneration. In accordance with Policy T10, a key priority will be to maximise the proportion of freight, particularly long distance freight, travelling to destinations beyond the region, by modes other than road, consistent with commercial viability.'

4.9 Among the supporting text to the policy is:

'Access to ports is an important factor in the definition of the network hierarchy. The investment and management required for the network to provide for existing and approved major ports (Felixstowe, Harwich including Bathside Bay, and Tilbury and London Gateway) needs to be considered in accordance with Policy T10. Port developers should contribute to the delivery of these improvements, and all development associated with the regions' ports should avoid any adverse impact on sites of European importance for wildlife.'

4.10 The South East England Regional Assembly published a Draft Regional Spatial Strategy in 2006. This was subjected to an Examination in Public and is not expected to become an official document until 2008. It has some policies that deal with rail freight, as below:

Draft Policy T12: Rail Freight

The railway system should be developed to carry an increasing share of freight movements. Priority should be given in other relevant regional strategies, Local Development Documents, and Local Transport Plans, providing enhanced capacity for the movement of freight by rail on the following corridors:

i Southampton to West Midlands

ii Dover / Channel Tunnel to / through and around London

iii Great Western Main Line

iv Portsmouth / Southampton to West Midlands.

Draft Policy T13: Intermodal Interchanges

The Regional Assembly should work jointly with DFT Rail and Network Rail, Network Rail, Highways Agency, Freight Transport Association and local authorities, to identify broad locations within the region for up to three intermodal interchange facilities. These facilities should be well related to:

i Rail and road corridors capable of accommodating the anticipated level of freight movements

ii The proposed markets

iii London.

Proposal 4E.8: TfL will work with the Strategic Rail Authority[4] to ensure:

- Additional network capacity for freight is provided to tackle existing pinch points and to ensure that the growth in rail freight does not impose limitations on existing or planned passenger services
- The development of freight bypass routes around London, wherever possible removing non-London traffic from dense residential areas and releasing capacity for expanded passenger services and London-based freight

[4] The Strategic Rail Authority's powers were transferred to DfT in July 2005, with responsibility for strategic planning transferred to Network Rail. This is carried out through the RUS process.

Mayor's Transport Strategy

4.11 The Mayor's Transport Strategy, published in 2001, contains a number of policies and proposals of relevance to rail freight (albeit subject to subsequent changes to industry structure).

Proposal 4K.5: TfL will work with (the Strategic Rail Authority) and the London boroughs to help ensure suitable sites and facilities are made available to enable the transfer of freight to rail, both through the development of existing sites and the provision of new ones.

Policy 4.L: London's international transport links for passengers and freight should be improved and expanded, subject to environmental constraints, and there should be efficient and sustainable public transport access to airports and international rail termini.

Transport 2025

4.12 In 2006 TfL published its vision for London's transport system up to 2025. It's vision is to create:

'A world class transport system that delivers the safe, reliable and efficient movement of people and goods that enhances London's economy, environment and social exclusion'

4.13 The analysis showed that in the longer term significant expansion in public transport capacity, especially rail, is needed to accommodate growth in London's population and employment. The Rail Freight Strategy supports both the vision and the more specific rail objectives within T2025.

London's sustainable freight strategy

4.14 The Mayor's Transport Strategy proposed the establishment of a London Sustainable Distribution Partnership (LSDP) to bring together the wide range of interests in freight in London to identify and implement solutions. The LSDP has taken key responsibility for the development and ownership of London's sustainable freight strategy, and this was consulted on during 2006.

4.15 The vision for freight, identified by a high level working group of the London Sustainable Distribution Partnership (LSDP), to inform London's sustainable freight strategy is:

The safe, reliable and efficient movement of freight and servicing trips to, from, within, and where appropriate, through London to support London's economy, in balance with the needs of other transport users, London's environment and Londoners' quality of life.

4.16 This vision drives the following objectives:

Economy objectives:

- Support London's growth in population and economic activity
- Improve the efficiency of freight distribution and servicing within London
- Balance the needs of freight and servicing with those of other transport users and demands for London's resources

Environment objectives:

- Improve air quality in London and contribution to climate change by reducing emissions of local air pollutants and CO_2 caused by freight and servicing
- Improve quality of life in London by minimising the impact of noise and vibration caused by freight and servicing

Society objectives:

- Improve health and safety in London by reducing the number of deaths and injuries associated with freight movement and servicing
- Improve quality of life in London by reducing the negative impacts of freight and servicing on communities

Section 5

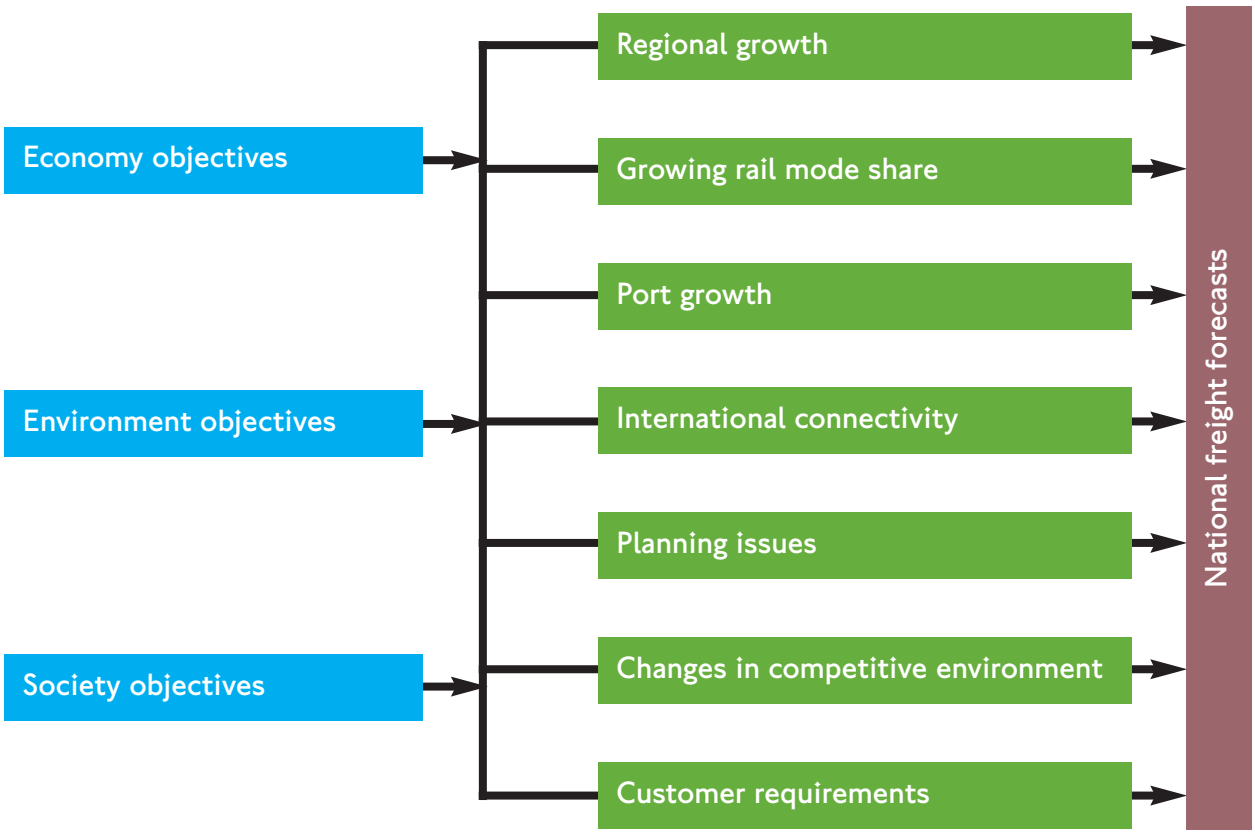
Key Challenges

Introduction

5.1 The rail freight industry has a competitive structure and services are not planned and specified as they are for passengers. Nevertheless, national, regional and local policies are important in determining how the industry grows and develops. In identifying the key challenges facing rail freight in London over the next 10 years, it is necessary to examine both forecast growth generated by competitive factors – including global and national economic forces – and issues which emerge from policy objectives (see Section 4).

5.2 This section identifies seven key challenges which face rail freight. These are informed by the Economy, Environment and Society objectives described in Section 4.16. This analysis is consistent with the National Rail freight forecasts contained in the Network Rail Freight RUS and Cross London RUS.

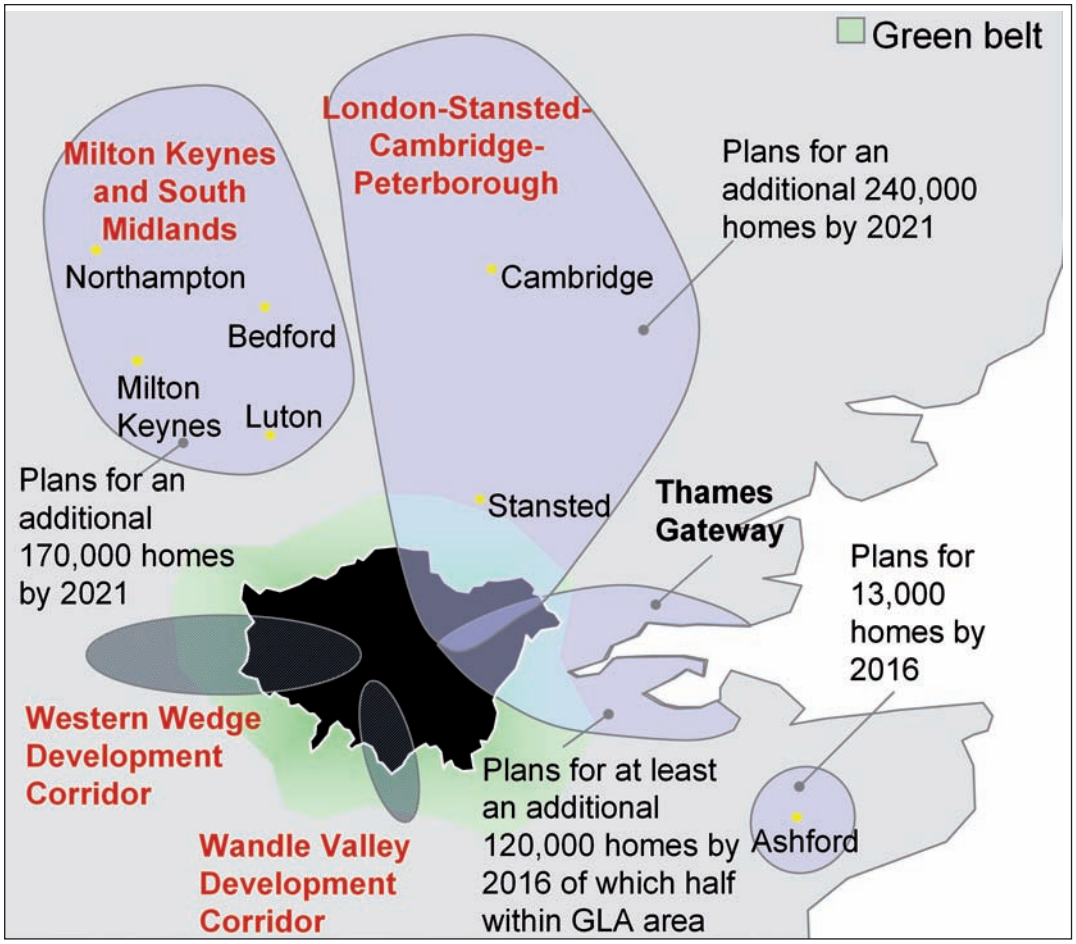
Figure 5.1: London's rail freight challenges



Regional Growth

5.3 London's population is expected to increase over the next ten years by around 500,000 people and employment by around 400,000 jobs. There will also be major population growth in the East and South East of England. The locations of the major housing development areas are shown in Figure 5.2. This will also have a large impact on London, through higher numbers of commuter trips, since there is a high degree of economic interdependence between London and its surrounding regions.

Figure 5.2: Major Development Areas in London, the South East and East of England



5.4 This growth presents a number of challenges and opportunities for rail freight

5.5 Higher rates of housing and employment construction will generate an increase in the demand for construction materials. Given that rail currently has a share in the market for delivering these in London of approximately 40%, it is likely that there will be a need for greater terminal capacity and a higher number of paths on the network.

5.6 Land for development will become scarcer and this could have an impact on the availability of land for rail freight facilities, if former industrial / railway land is sold off for residential and other uses.

5.7 The additional population will generate an increase in demand for goods which will increase the volume of freight trips to, from and within London, adding to congestion on the roads if rail cannot carry some of this freight. The London Plan forecasts that demand for goods and services to 2026 will increase by between 12% and 15%. Rail could help reduce this growing 'environmental footprint' of London by playing a greater role in the primary distribution of retail goods. This will require suitable modern facilities, which to date have had difficulties in gaining approval in the London area.

5.8 The population and employment growth will also lead to additional demand for passenger rail services. Without new capacity on the London rail network, there will be fewer paths available for new rail freight flows. This is a particular issue on the current orbital routes such as the North London Line and West London Line, where there is significant planned expansion in the frequency and scope of orbital passenger services, as well as growing freight demand. It will be important to ensure that adequate network capacity exists for passenger and freight needs, in the context of a growing London and South East region.

Growing rail freight modal share

5.9 The Mayor's policies support measures to increase rail's mode share, largely for sustainability reasons. The scope for this varies by type of commodity. TfL's view of the prospects in each of the main markets for rail freight in London are as follows:

- Construction: The construction industry in London is already a mature market for rail and it is unlikely that significant additional share of this market can be captured. Nevertheless, major projects, including the 2012 Olympics, present opportunities for rail.
- Retail Distribution: Rail currently has a low share of the market for the primary distribution of retail goods and lacks suitable facilities. Where rail is involved, there is usually a long final road leg from a remote rail terminal such as DIRFT[5]. If suitable facilities can be provided around London, there is an opportunity for rail to grow its share of this business substantially, helping to reduce London's environmental footprint. This will require a number of Strategic Rail Freight Interchanges to be developed. There may also be opportunities for supplying Central London retailers by rail through some of the major stations, such as Euston.

[5] Daventry International Rail Freight Terminal - this is a large rail connected distribution centre in the Midlands, adjacent to the M1. It has had success in attracting new types of traffic to rail, including international and domestic non-bulk traffic for major supermarket chains.

- International trade: UK trade has refocused towards the EU and towards greater unitisation in recent decades. The opening of the Channel Tunnel has presented a major opportunity for rail to capture a substantial part of this trade, but to date it has been largely unsuccessful. The reasons for this are mainly institutional. TfL believes they can be resolved. Eurotunnel has estimated that the market for rail based freight through the Channel Tunnel is between 6 and 14 million tonnes a year, which is equivalent to 200 to 500 trains per week (in 2006, the volume carried was estimated to be 1.6 million tonnes). The increased opportunities to move high gauge freight using HS1 offers a major opportunity for rail freight development in London.
- Waste: About 6.7 million tonnes of all London's waste [6] is taken to landfill sites that are located mainly outside the Capital. This is expected to decrease to 3.1 million tonnes by 2020 [7] as the Mayor's strategies to manage 85% of London's waste inside London take effect. Only a small portion of this is currently taken by the more sustainable modes of rail (0.8 million tonnes) and water (0.7 million tonnes) [8] and there are opportunities to move more of this waste in the future. There will also be increasing quantities of recyclates accumulated at waste management facilities across the Capital. It is essential that potential bulk loads are captured for transport by rail. Suitable bulk recyclate streams will include wastes from packaging, electrical and electronic goods and vehicles.

Port growth

5.10 Structural changes in the UK economy, which reflect global economic trends, have made the UK more reliant on imports of manufactured goods from Asia. As a result, the largest source of forecast rail freight growth over the next 10 years in London is through-traffic between the deep sea ports in the South East and East of England, and the Midlands, North and Scotland. Felixstowe is the largest container port in the UK and the Port of London the third largest. Between 1994 and 2004, container volumes passing through the Port of London grew by 74%; this trend is forecast to continue. The total market for containers is forecast to grow by 60% between 2004 and 2016 [9]. Almost 50% of the UK's container handling capacity is at Felixstowe and London Ports [10] so volumes there can be expected to grow substantially.

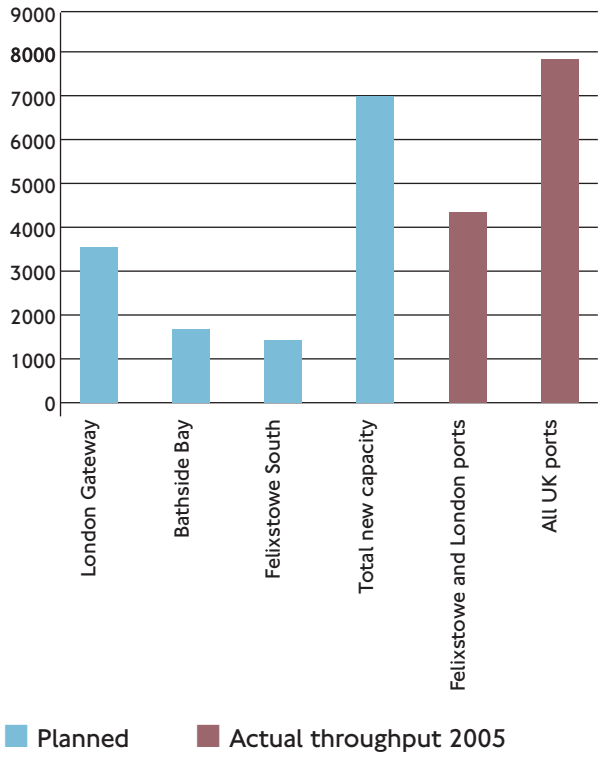
5.11 There is also planned major new port capacity at the following locations (all with planning consent):

- London Gateway, site of former Shell Haven refinery (North Thameside)
- Bathside Bay (Haven Ports)
- Felixstowe South (Haven Ports)

[6] All London's waste include municipal solid waste, commercial and industrial waste and construction and demolition waste
[7] The London Plan: Spatial Development Strategy for Greater London: Housing Provision Targets, Waste and Minerals Alterations, Greater London Authority, December 2006

5.12 The capacity of these new or expanded facilities is shown in Figure 5.3

Figure 5.3: Existing throughput and planned new port capacity in Haven Ports and North Thameside

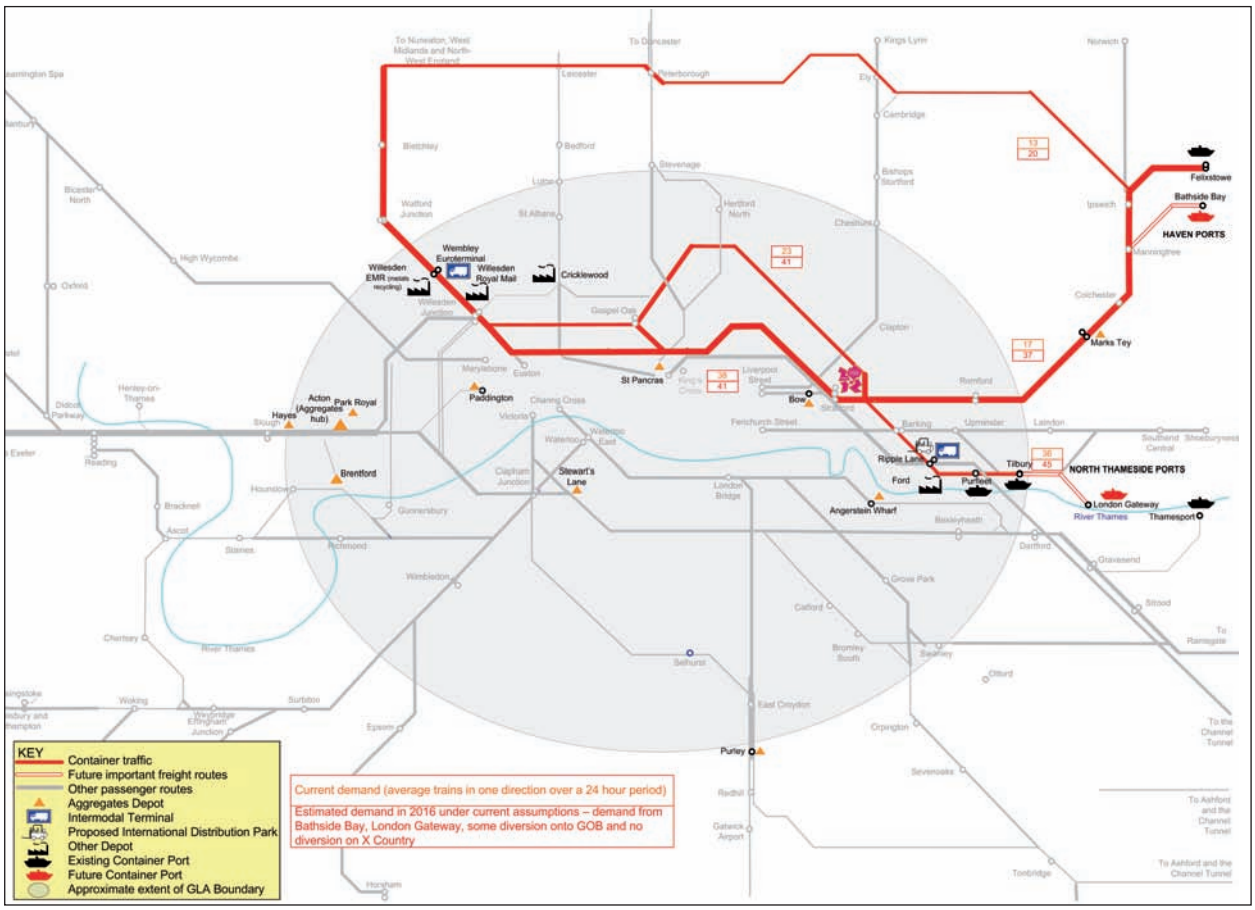


5.13 This shows that the total planned additional capacity in the Haven Ports and North Thameside ports roughly equates to total UK deep sea container throughput in 2005. Forecasts of freight flows in the Cross London, Freight and Anglia RUS predict the need for around 20 additional freight trains per day by 2014/15 on the route from the Haven Ports (Great Eastern Main Line - North London Line - West Coast Main Line). The London Gateway development is forecast to generate a further 10 to 15 trains on the North Thameside route.

[8] Figures obtained from Waste Recycling Group and Cory Environmental.
[9] UK Port Demand Forecasts to 2030 - MDS Transmodal for DfT
[10] Maritime Statistics 2005 – DfT

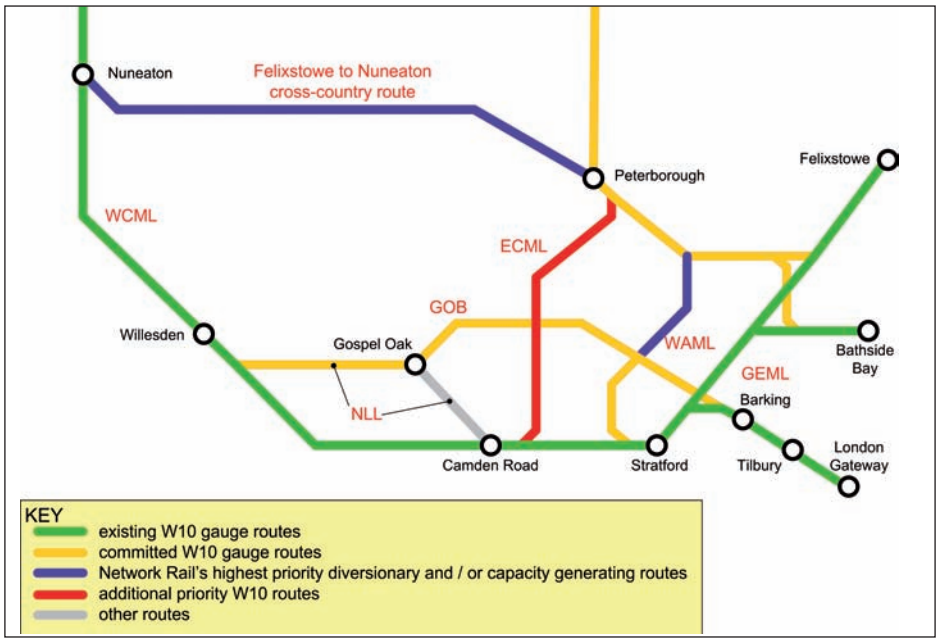
5.14 Figure 5.4 shows the expected increase in intermodal trains from the Haven ports and North Thameside ports. In the longer term there is forecast to be a capacity gap in the London area.

Figure 5.4: Increase in freight demand from ports and Channel Tunnel



5.15 The capacity challenge which this growth presents for the rail network brings with it a further challenge: the accommodation of the growing proportion of deep-sea traffic which is transported in high cube containers (the latest deep sea container standard is 9'6" height, as opposed to 8'6"). In 2002, the proportion of high cube containers was 28%. It was 31% in 2003, 35% in 2004, and it is forecast to reach 45% by 2010. These containers can only be transported on a limited number of rail routes (those with W10 gauge capability) using standard wagons. On other routes, where specialised wagons are required, fewer containers can operate per train path, so that rail is less able to compete with road. The current W10 routes between the South East and East of England ports, and the Midlands, North and Scotland are through London, as shown in Figure 5.5. Options for accommodating growth need to take gauging and electrification considerations into account.

Figure 5.5: Existing and Planned W10 Routes serving London



Planning issues

5.16 Sufficient quantities of suitable land will be required if rail freight is to play a greater role in serving London's needs. The planning system has a vital role to play in facilitating the provision of new freight services. The challenge for the planning system is weighing up the balance of local concerns against strategic benefits. There are a number of potential conflicts between the strategic needs of rail freight and local planning policy and development pressures. These include:

- 'Critical Mass': In order to accommodate freight trains and supporting facilities, large sites of 40 Ha upwards with nearby road and rail links and labour sources are required if rail is to develop new markets. There is a shortage of sites suitable for such Strategic Rail Freight Interchanges within and around London
- Higher value uses: Housing, employment and leisure often create higher value than rail freight facilities which puts existing and potential sites under development pressure for alternative uses
- Planning targets: Strategic housing and planning targets place increasing pressure for development on land which could be used for rail freight facilities
- Perception: Rail freight uses are not perceived as being 'neighbour-friendly'. Local authorities and residents are often keen for alternatives such as housing to be developed
- Employment creation: Rail freight/warehousing uses do not, in general, create as many jobs as other types of employment, for example, business parks, and the jobs are often perceived to be relatively unskilled

5.17 Furthermore, the planning process is perceived to be slow. Delays in reaching planning decisions raise costs and add uncertainty to the rail freight industry, with negative implications for London's economy and environment. For example, following the refusal of planning permission for a strategic rail freight interchange in West London at Colnbrook (LIFE) in 2002 no similiar alternatives have been delivered to date.

International connectivity

5.18 Rail freight gains competitive advantage over road as distance increases which suggests rail should be able to capture a relatively high share of the UK-Continent trade in goods, through the use of the Channel Tunnel. Transport investment in 'International Gateways' was also a priority for the Eddington Review. However, despite early success, Channel Tunnel rail freight has not managed to achieve a large share of cross-Channel freight. A number of barriers to the development of international rail freight services using the Channel Tunnel, and the integration of the UK into Continental rail freight networks remain, including:

- The loading gauge on the UK national rail network severely restricts the range of rail freight and intermodal services which can be operated in the UK. It reduces the pool of available wagons and units which can be used; this affects certain sectors such as, primary retail, household goods, and automotive components. It also prevents 'standard' piggyback services from being offered
- The slow implementation of European directives in some continental markets affects service quality
- The uncertainty of cross-Channel rail freight access charges after the withdrawal of UK Government subvention of existing charges, on 30 November 2006. There are now thought to be only 3 to 4 freight trains operating through the Channel Tunnel, according to the Rail Freight Group[11]

[11] RFG press release 26 January 2007 '24% hike in charges causes more Channel Tunnel rail freight services to close'
[12] UIC-GB+: This is the highest gauge currently available on mainland European railway systems

5.19 HS1, due to open in November 2007, will be the only rail line in the UK capable of handling the largest continental wagons. It is built to a continental loading gauge[12] and can therefore help integrate London more fully into a continental 'freight network'. It has capability for high gauge, high payload trains which can offer much higher productivity for certain commodities.

5.20 The large pool of high-gauge wagons which exists on the Continent would also be able to serve the UK for the first time, offering further opportunities for reducing freight business costs. However, there are issues to resolve if HS1 is to be used for freight including a lack of compatible electric traction, and a lack of approvals for traction and rolling stock on HS1.

With support from the European Commission through its 'Marco Polo' intermodal development programme, an outline offer of grant funding was made by the EC to EWS in Summer 2007. This shoud help establish the commercial case for freight on HS1.

5.21 If the full potential of HS1 is to be realised for freight, suitable facilities adjacent to the line in London will also be required. In future, HS1 may also provide access for high-gauge services to destinations to the north of London, if gauge-cleared routes with adequate capacity can be developed. This would allow a London HS1 freight terminal to develop a regional function in the long term, ie primarily serving London and the surrounding regions.

5.22 TfL supports the Government's plans to ensure that the British network can interface with the EU planned freight network. We have been working with the Rail Freight Group and local boroughs to explore scope for creating a phased development of a rail linked international distribution park in the Barking/Dagenham area, linked to HS1. TfL will also support efforts to ensure appropriate access and charging regimes are put in place on HS1, the Channel Tunnel and on Continental networks.

Changes in the competitive environment

5.23 A wide range of other factors in the competitive environment affect demand for rail freight services. There are a number of changes which can be expected over the period of the Strategy:

- European Directives: The road haulage and rail freight industries are subject to safety and other regulation. The rail industry has a significant safety advantage over road haulage. The European Working Time Directive is expected to significantly increase the costs facing the road haulage industry, and exacerbate an existing shortage of lorry drivers in the UK. Rail operators are expecting to gain competitive advantage from this
- Road User Charging: Access to the road infrastructure does not require prior planning as is the case for rail, although currently road freight is subject to a variety of schemes to regulate access in London[14]. On the railways, scarce capacity is rationed through planning, and there is independent regulation by the ORR of pricing and access. The Government plans to introduce a national road pricing scheme, which is expected to provide a more level playing field between road and rail. This issue was not considered in the quantitative analysis completed for the Strategy as no detail is available yet on the nature of the scheme. However, TfL plans to undertake research into the likely effects of RUC on rail freight in London
- Rail infrastructure charging: The conditions under which freight trains can access the network may change following the ORR's review of the track access regime in 2008. Any change is likely to lead to rail freight operators being incentivised to operate their trains at times when the network is less congested, although the impact of this on behaviour in practice remains uncertain

[14] Low Emission Zone, Lorry Control Scheme, Congestion Charge in Central London and a limited number of tolls for bridges etc.

- The industry is expected to reduce its dependence on Government grant support for facilities and flows over the period of the Strategy

Customer requirements

5.24 If rail is to meet the challenges and opportunities it faces, and deliver against its objectives, it must offer an attractive service to its customers and accommodate their needs. These can be summarised as:

- Quick journey times using reasonably direct routes: These are needed to keep fuel and crew costs down, and also to allow an efficient utilisation of freight operators' assets. There are sometimes cost 'thresholds' which operators will want to avoid reaching, eg when a change in journey time affects the number of round trips a locomotive and wagon set can complete within 24 hours
- Sufficient numbers of train paths to serve a customer's needs: For some commodities these needs are variable, in terms of locations served, timing of requirements or volume. Freight operators need to be able to respond to these variations in demand if they are to compete with road hauliers, who tend to offer high levels of flexibility to their customers
- A high level of reliability: Logistics providers need to be assured that their goods will arrive within whatever time window they expect them – there is some evidence that more work needs to be done to improve perceptions of reliability[15]. This is clearly more important for some commodities than others. For products involved in complex supply chain logistics, reliable delivery within a fairly constrained timeframe is likely to be important. For bulk products such as road stone, where the train often delivers to a stock pile, this may be less of an issue. Many supply chains are now 'lean' meaning that the storage of stock is kept to a minimum. This has implications for providing 'on demand' services
- A high level of security: Customers need their goods to arrive safely and in the condition they expect. Again the importance of this issue will depend on the commodity
- Commercial needs: Train paths should be capable of handling trains which meet customers' commercial needs. The capability of a route affects the way paths can be used and this has an impact on their viability. For certain types of traffic, improving the capability of the route, with a higher loading gauge, electrification or the ability to operate longer or heavier trains, improves the economics of a particular flow.

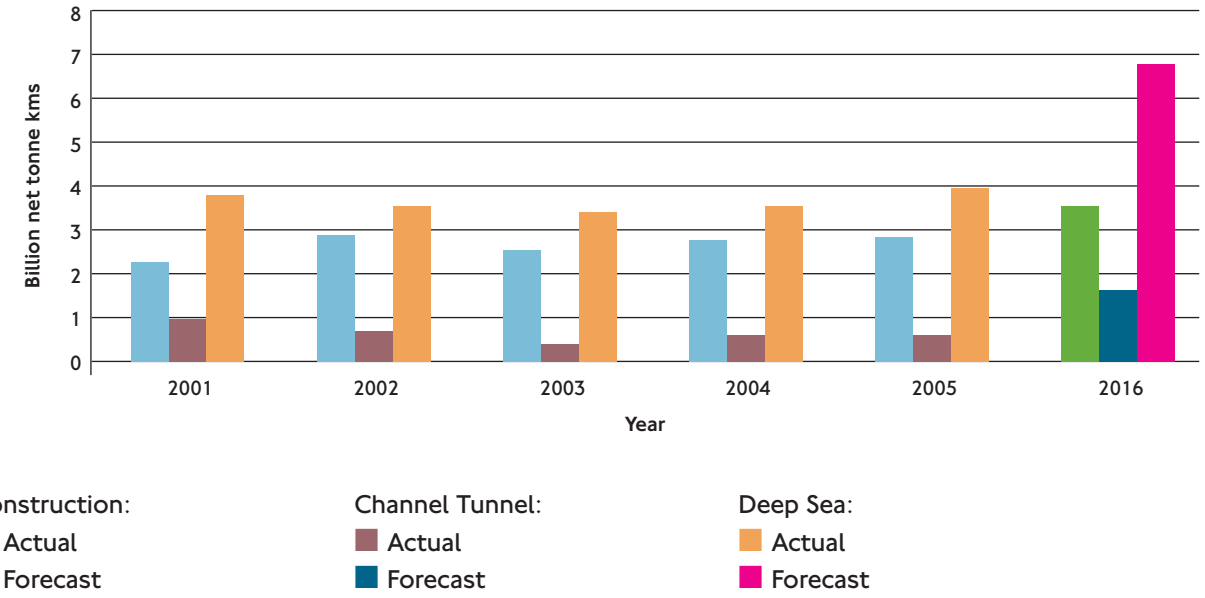
[15] Rail Freight Group - "The Value of Rail Freight"

Network Rail freight forecasts

5.25 Network Rail forecasts overall UK tonnage growth of 27 to 31% between 2006 and 2014/15. These forecasts are 'unconstrained' and generally assume current policies continue. TfL has developed a forecasting methodology which draws heavily on these forecasts but with a number of modifications to reflect particular strategic interventions. This is explained in Appendix B.

5.26 TfL has examined the implications of the forecasts for London. Estimates of tonne kilometres have been derived for three of the main categories of freight, which either serve London or pass through it. These predict a much higher growth rate in the Capital than for the UK overall. The reason for this is that the fastest growing sectors, such as intermodal and Channel Tunnel are important in London, whereas many of the slower growing (or declining) sectors such as coal, oil and minerals are much less important in London. Figure 5.6 shows national growth between 2001 and 2005 in deep sea containers, Channel Tunnel and construction, three rail freight sectors of particular importance in London, and forecast growth to 2016 (based on National Rail Freight RUS).

Figure 5.6: Recent and Forecast Growth in key rail freight sectors, 2001 - 2016



5.27 Network Rail published its Freight RUS in March 2007. This sets out the expected growth on the entire network used by freight, as well as a strategy for dealing with this increase. In terms of the London area, it predicts growth of over 15 trains per day on the North London Line, and over 15 trains per day on the South London and West London Lines (above 2004/05 levels). It also suggests growth of between 10 and 15 trains per day on the Barking to Gospel Oak line.

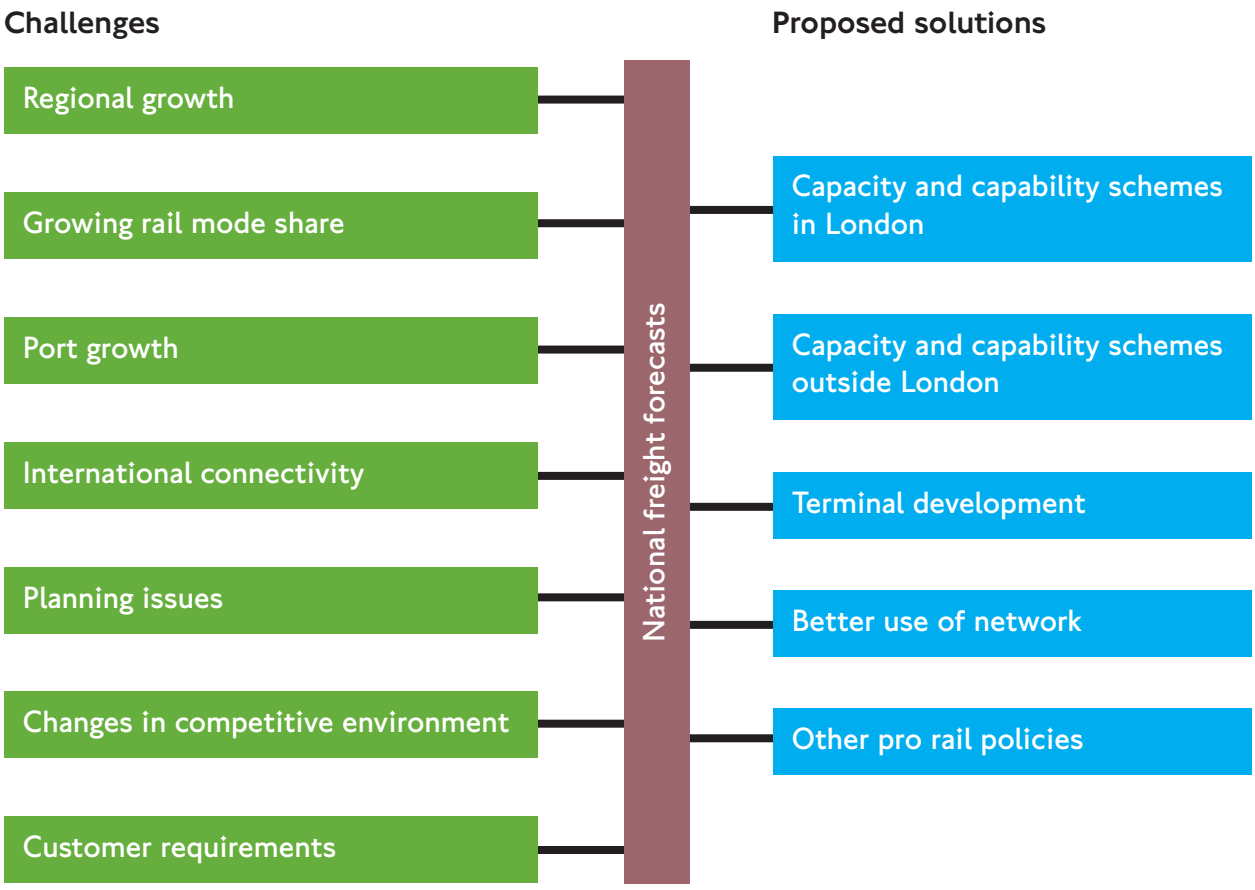
Section 6

Proposed solutions

Introduction

6.1 The five groups of proposed solutions are designed to address the seven key challenges identified in Section 4.

Figure 6.1: Challenges and proposed solutions



Capacity and capability schemes in London

6.2 The main radial freight routes are: WCML, GWML, GEML, ECML, MML[15] roughly in order of importance, together with the Channel Tunnel access routes through south London. These are linked by a series of orbital routes including the NLL, GOB, WLL, SLL and Kew East route.

6.3 Line capacity is in short supply on London's rail network, and in the short term will come under increased pressure from plans for additional off-peak passenger services especially on the NLL, GOB, WLL and Kew East orbital routes.

6.4 Gauge enhancement works will increase the route options available and therefore potentially improve the reliability of some rail freight services. They will also permit rail container flows to maintain and grow their market share.

6.5 The packages propose a number of targeted capacity and capability schemes within London, as below:

London Overground routes

6.6 TfL will take over responsibility for management of a number of orbital passenger routes on London's rail network in November 2007. These are shared with freight trains over substantial sections, including:

- NLL between Stratford and WCML (both routes via Primrose Hill and Gospel Oak)
- GOB line (route joins NLL at Gospel Oak)
- WLL between Willesden Junction and Clapham Junction;
- Kew East Line (Willesden Junction to South Acton)

6.6 Intensification of services, together with other improvements, is planned. The service will be known as 'London Overground'. Infrastructure works to enable passenger service improvements are taking freight needs into account.

6.7 These lines are examined below:

[15] See Appendix E for definition of acronyms.

North London Line

6.8 TfL, along with its partners Network Rail and the Olympic Delivery Authority, is planning and funding a major infrastructure investment project to support the introduction of London Overground services. Most of the required work is on the North London Line, and in particular, on the Stratford to Camden Road section. The infrastructure is being designed on the basis of providing capacity for broadly four freight paths per hour. Maintaining this freight capacity represents the majority of the investment TfL and its partners are undertaking within the project, including:

- Four-tracking sections west of Dalston
- A Channelsea avoiding Line
- Extension of the Angel Lane Loop

Willesden - Gospel Oak - Barking Line

6.9 TfL is working with Network Rail to provide a major phased upgrade to the Willesden - Gospel Oak - Barking corridor which will benefit both freight users and passengers. This involves:

- Strengthening/reconstruction of bridges and earthworks and track renewal on Barking to Gospel Oak route
- W9/W10 gauging to provide:
  - Diversionary capability during the planned blockades for the North London Line works in 2009 and 2010
  - Long term network resilience and capacity benefits. In particular, this route has the advantage of offering a grade separated crossing of the Great Eastern Main Line for North Thameside freight
- Additional signalled capacity allowing headway improvements on the Gospel Oak to Barking section to provide capacity for four passenger and four freight trains per hour
- In the long term, and subject to an adequate business case, electrification from Gospel Oak to South Tottenham west junction and from South Tottenham east junction to Woodgrange Park. This would facilitate improved environmental performance of freight services through the substitution of electric traction for diesel [16]

6.10 In July 2007, the DfT announced that the gauge and capacity enhancement for the Barking to Gospel Oak/Willesden route would be funded through P-TIF (the productivity element of the TIF scheme). By helping North Thameside freight avoid the GE Main Line and Stratford, this will facilitate future passenger service improvements as well as improve network resilience and capacity for freight.

West London Line

6.11 TfL wishes to see an increase in the passenger service on the West London line between Willesden Junction and Clapham Junction, to up to six trains per hour (four Overground and two services run by other operators). Additional stations will also open shortly to serve local developments, increasing the complexity of pathing trains along this route.

6.12 The interaction of freight and passenger services on the West London Line is subject to further investigation, to ensure sufficient capacity is provided in future. As part of the North London Railway Infrastructure Project, capacity enhancements are planned.

Kew East Line

6.13 This route will be used by London Overground services serving Richmond. No intensification of this service (four passenger trains per hour) is planned and no works to this route are envisaged as part of the North London Railway Infrastructure Project. However, TfL believes the route has potential to be developed in terms of both capability

[16] This would require the procurement of electric locomotives for freight services, which is not currently planned.

and capacity as a diversionary route for freight using the West London Line. This may be dependent on significant electrification, capacity, and signal immunisation works, including removing a flat junction at Barnes, and works on the District and Piccadilly Tube lines where the Kew East Line crosses them.

South London Line

6.14 The initial London Overground plans do not include services to Clapham Junction. However, a 4tph passenger service is envisaged as an extension of services. The South London Line has generally fewer constraints or growth pressures than the North London Line. However, in order to provide for TfL's passenger aspirations on this route and maintain sufficient freight capability, it is anticipated that some infrastructure works will be necessary. These are considered likely to involve the installation of bi-directional signalling on the section of the route near Clapham Junction, where future London Overground services may share tracks with freight services.

Crossrail line 1

6.15 The Crossrail project is being developed jointly by TfL and DfT. Although the scheme involves a significant intensification of passenger services on existing radial routes, particularly in the west, many of the enhancements being proposed are to permit freight to continue existing operations with some capacity for growth. A number of projects, such as the gauge enhancement and capacity scheme for the Barking to Gospel Oak/Willesden and Felixstowe to Nuneaton routes have a facilitating role for Crossrail.

Other passenger capacity enhancement schemes

6.16 TfL London Rail is promoting a range of schemes to increase rail capacity to meet London's needs by 2025. These are designed to minimise the impact on network capacity for other users, including freight. They include train lengthening schemes, which provide additional capacity without affecting the availability of paths on the network.

Capacity and capability schemes outside London

6.17 There are schemes outside London which TfL supports because of their beneficial impact within London. In particular, TfL supports the phased upgrade of the Felixstowe - Peterborough - Nuneaton route in order to enable more freight capacity from the Haven ports to the West Midlands and the North West, using a cross-country route from Ipswich to Nuneaton. This could eventually be used to divert some freight traffic away from busy cross-London routes, and creating additional capacity for passenger services. This proposal is supported by Network Rail in the Freight RUS and West Anglia RUS. The proposals will ensure that growth in rail freight flows, operating via the Haven ports is not hampered by capacity constraints on the GEML.

6.18 The means of achieving this are:

- Staged gauge clearance between Ipswich and Nuneaton, with Ipswich to Peterborough as a first stage to give access to the ECML, and then between Peterborough and Nuneaton to give access to the WCML
- Staged capacity enhancements between Ipswich and Peterborough and then between Peterborough and Nuneaton
- Train lengthening in the long term to provide extra capacity

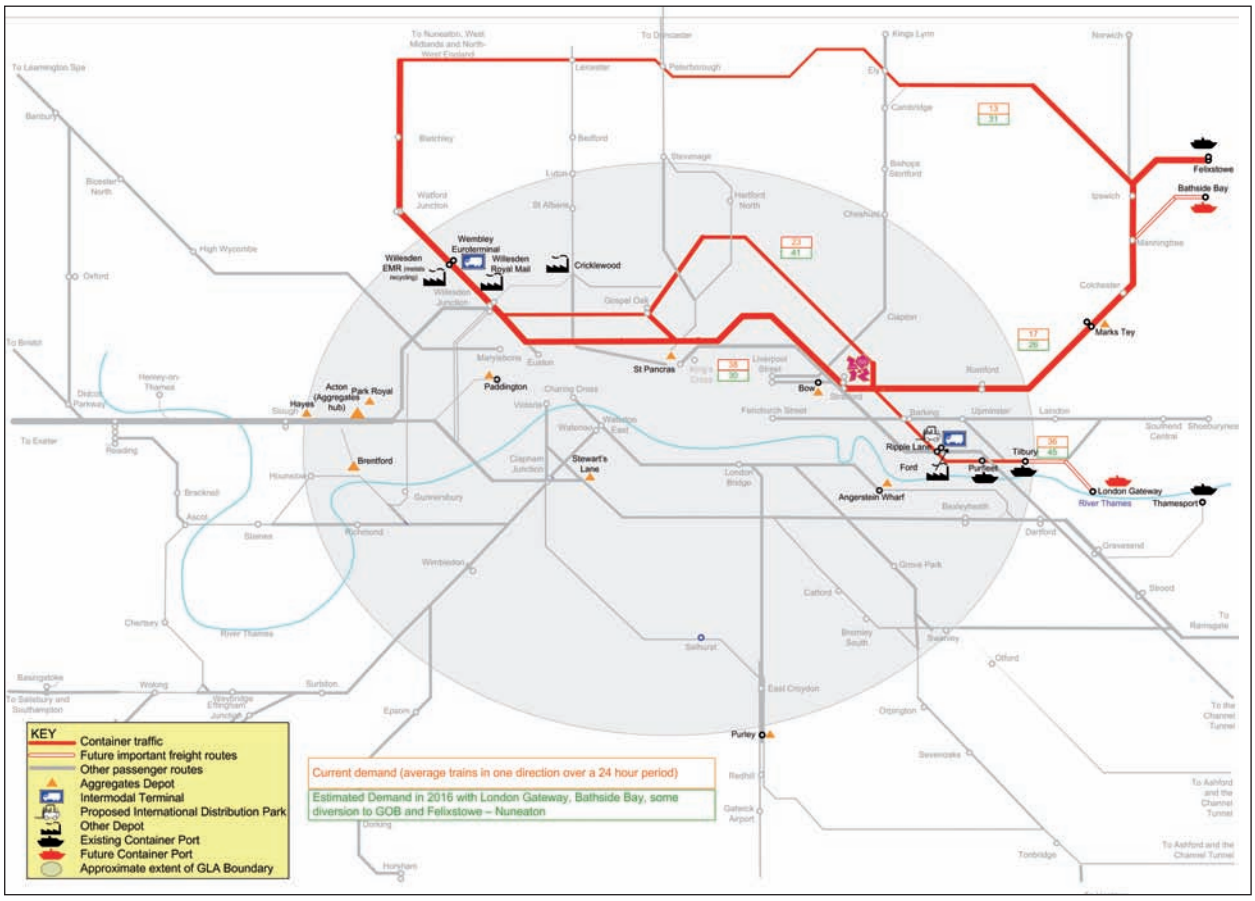
6.19 TfL supports Network Rail's application for Transport Innovation Funding from the DfT for gauge enhancements between Peterborough and Nuneaton. The DfT announced that this scheme was being taken forward to the next stage of assessment in December 2006. The gauge enhancement of the Felixstowe to Peterborough section is being funded through a Section 106 agreement with the developers of Bathside Bay/Felixstowe South ports. TfL supports the incorporation of this route into the Strategic Freight Network.

6.20 The map in Figure 6.1 shows there is sufficient capacity for all additional port growth if both the Felixstowe - Nuneaton and Gospel Oak - Barking routes are developed.

Encouraging more efficient use of the network

6.21 The analysis of supply and demand in Sections 4 and 5 presents a 'snapshot' of the pressures on the network in 2016. This enabled TfL to assess the requirements for passenger services in the long run. However, it does not capture the longer term impacts of the port developments, which will not be felt on the rail network until a number of years after 2016. A strategic approach to route development will therefore require a longer term view to be taken. This should include consideration of the full range of ways in which capacity can be delivered in addition to infrastructure works aimed at providing higher numbers of paths.

Figure 6.2: Rail demand and capacity on key port routes



The following opportunities should be considered:

Opportunities for more efficient possessions planning

6.22 The development of alternative parallel W10 gauge routes provides scope for improving the utilisation of the network in a way which may add capacity. In particular, a strategic gauging strategy (see figure 5.5) could facilitate a significantly improved engineering possessions regime. The availability of alternative routes at night allows the possibility of full line possessions to be exploited, which if properly coordinated would allow greater timetabled capacity at night. Inefficient single-line working could be eliminated, and longer possessions could be implemented.

Freight train lengthening

6.23 A way of increasing capacity for container trains is train lengthening. In the long term, train lengths could be increased from 540m to up to 775m, which in principle provides almost 40% additional capacity per path. For Haven Ports traffic, this would require a major reconfiguration of Ipswich Yard and the lengthening of a number of loops on the GEML. Inland terminal facilities would also have to be upgraded which could be done on an incremental basis. Longer trains would also require sufficiently powerful traction to make efficient use of the paths they use. This option should be carefully coordinated with proposals for electrification policy on the deep sea container routes, and is considered to be a medium to long-term measure.

Use and allocation of paths

6.24 The efficient operation of passenger and freight trains on the same lines is much more complicated than the operation of just one or the other. In the absence of the construction of new routes, this will have to continue on large parts of London's rail network. However, the efficient use of the network can be achieved by encouraging performance of passenger and freight trains to be as similar as possible (ie acceleration, running speed, braking, etc). This may require higher power to weight ratios for freight trains than would be implied by the operators' own needs.

6.25 TfL believes the structure of charges could be designed to encourage rail network users to make better overall use of the scarce capacity available. This does not imply that the overall level of charges should necessarily be higher.

6.26 TfL has done some analysis into the relative value of train paths. This shows that paths which are used for freight do not vary significantly by time of day, although in absolute terms they are often higher than the value of passenger paths. In contrast, the value of passenger paths varies significantly, with those in the peaks much more valuable than outside the peaks. This relativity suggests that the network can best be utilised by giving greater priority to passenger trains at peak times than freight. This happens through the current administrative system, but the merits of allocating capacity according to economic principles should be investigated.

6.27 As part of the 2008 Periodic Review, the Office of Rail Regulation is planning the implementation of some form of reservation charge in Control Period 4. The aim of this is to promote the efficient holding of slots/rights by operators by encouraging them to give up rights they do not use or value. This will provide an additional incentive based on pricing rather than administrative means.

6.28 The ORR also considered freight-specific fixed costs further in their Periodic Review 2008, including taking into account the Government's position that freight should pay the full costs of freight-only lines. This concluded that only the coal and nuclear markets could bear to pay the full costs of their use of freight-only lines.

6.29 TfL would like to see the proportion of fixed versus variable charge adjusted where necessary. This would reflect an accurate recovery of Network Rail's costs, correctly apportioned between users and based on route-specific circumstances.

6.30 ORR published Advice to Ministers and a Framework for Setting Access Charges document in February 2007. It decided that there was support in the industry for the reform of access charges, and is developing a more detailed proposal to introduce a reservation charge. It is also working on an alternative scheme which would tighten up existing administrative procedures to better reflect scarcity value.

Terminal development

6.31 Many of these issues can be addressed locally. TfL wants to work with London boroughs to give more emphasis to the positive aspects of rail freight, in particular the strategic benefits of encouraging more freight onto rail.

6.32 Transport assessments used to support planning applications for all types of major developments should prioritise more sustainable modes, such as rail, where this is appropriate in the construction and operational phases.

Guidance on development of rail freight terminals

6.33 Provision of new rail freight terminals and transhipment points is required in the London area to increase rail's market share of goods moved to the Capital. Although strategically vital, such terminals often generate significant local opposition. TfL wants to promote rail freight terminals in London by giving local authorities more information about potential sites, the rail freight aspects of planning for such developments, and the benefits of rail freight.

6.34 TfL wants to encourage the development of three types of sites in London over the period of the strategy. These are:

- Large, new, multimodal distribution centres on the periphery of London, adjacent to the M25 or motorways radiating out of London to allow rail to develop its role in the primary retail distribution market; TfL plans to work with other regional authorities to provide further guidance during 2007 about the development of Strategic Rail Freight Interchanges to serve London
- Facilities to support international freight using HS1 – see below; the main markets which could benefit are primary retail, automotive and white goods
- Smaller, single-user freight terminals, generally offering basic functions for bulk businesses, particularly in the construction and waste sectors, concentrating on local markets. These could be developed from freight terminals in current operation to take additional rail volumes where operationally and commercially feasible, and from the development of terminals that have fallen into disuse. There is an increasing need for temporary sites reflecting the growth in large construction sites served by rail

6.35 TfL has commissioned work to develop our understanding of potential sites, their facilities, associated planning constraints, road and rail access and capacity issues.

6.36 Alongside this strategy, TfL is providing three additional resources to support the development of smaller sites within London. These are:

- A list of potential sites (there is a separate note describing how this should be used)

- A Planning Policy Toolkit
- A Development Control Toolkit

6.37 These toolkits are designed to help planning agencies, in particular London's Boroughs, work better to deliver the freight facilities the city needs through their planning processes. They should also provide guidance to developers about the potential of rail, and how best to prepare planning applications.

6.38 An assessment of all London's waste transport movements is being undertaken by TfL in the Pan London Construction and Waste Transport Modelling project. This logistics model will help identify key locations for new rail-linked waste management sites.

HS1 freight terminal

6.39 The opening of HS1 provides a particular opportunity to deliver a major productivity enhancing project by connecting the UK to the high loading gauge continental rail network. High gauge European trains cannot currently access the UK and substantial works would be needed to provide penetration on the 'classic' network. The Ripple Lane/Renwick Road area of Barking, and the Ford site at Dagenham, form the only suitable location within the GLA area which is adjacent to HS1 and therefore capable of accommodating these trains without gauge clearance works.

6.40 There is now a charging regime for freight on HS1, but it imposes heavy performance penalties. This makes the most likely type of freight on HS1 time-sensitive, high value freight, as substantial investment in expensive high performance locomotives may be required. The majority of 'slow freight' will probably continue to use the existing lines through Kent.

6.41 TfL have identified the need for an extensive modern rail facility on the DIRFT model. This would allow international freight activities to agglomerate around the HS1 connection at Ripple Lane. English Partnerships have recently completed a Regeneration Framework Study of the A13 corridor which makes provision for such a facility. This could provide up to 200,000 square metres of floor space which is estimated to be capable of supporting between 1,400 and 2,500 jobs directly, and between 500 and 900 jobs indirectly.

6.42 TfL plans to continue to work with the borough and relevant agencies to gain support for the principle of rail-connected development on this site.

6.43 Figures 6.3 and 6.4 show the location of Barking and the connections possible via the North London Line and Gospel Oak to Barking line.

Figure 6.3: Location of Barking and rail routes to the Channel Tunnel.

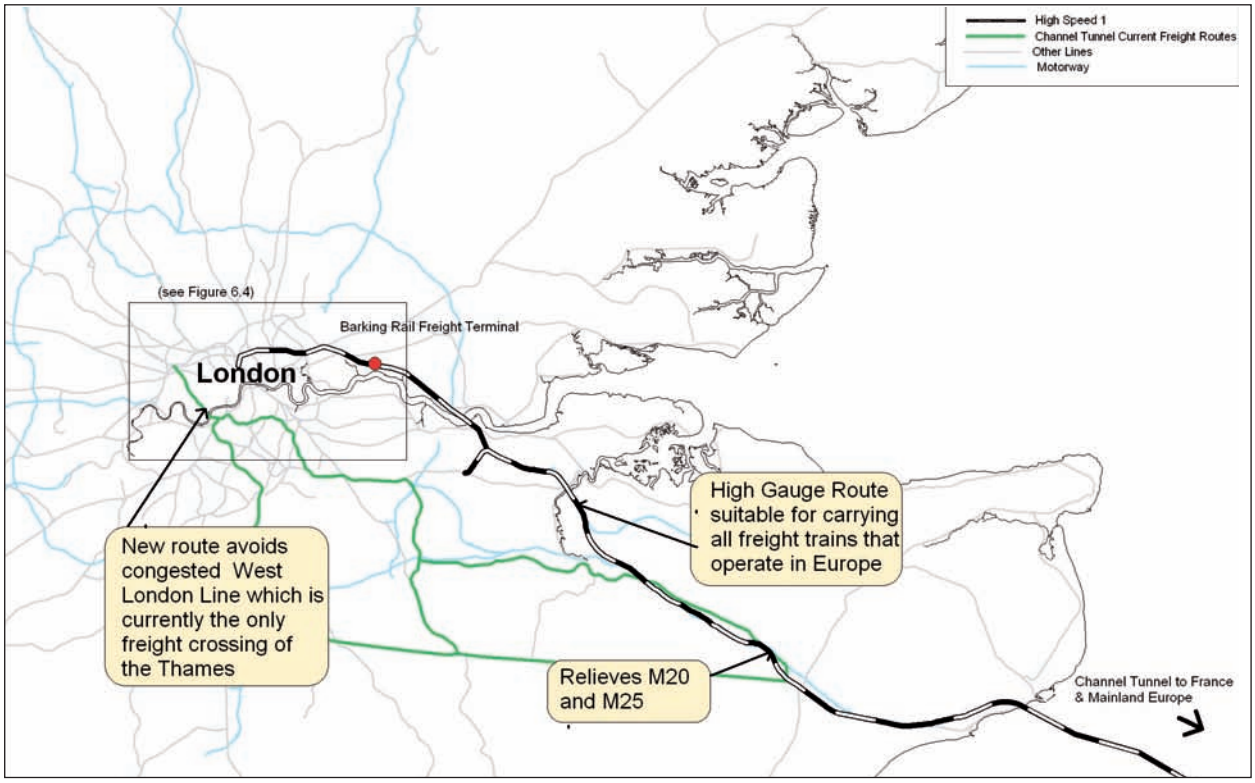
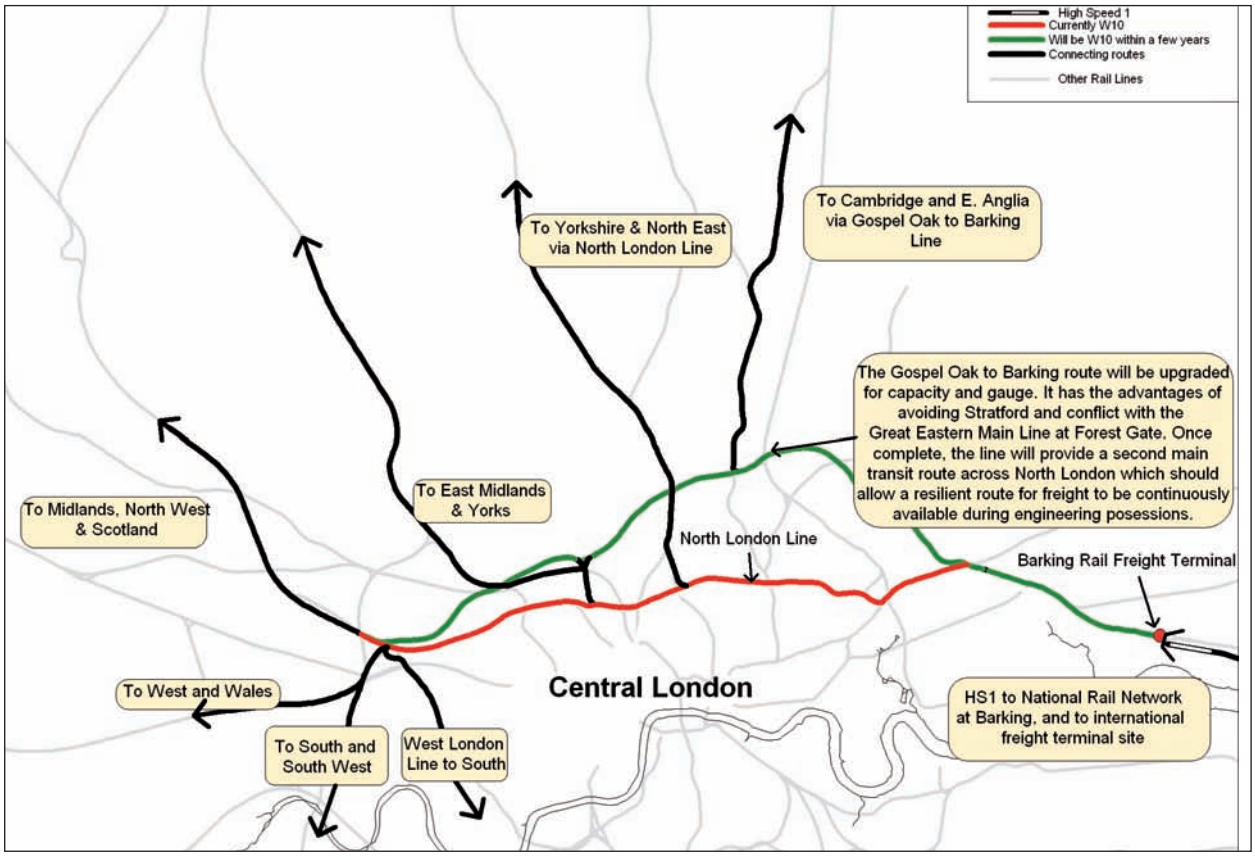


Figure 6.4: Connections from Barking through London to rest of UK



Other pro-rail policy initiatives

6.44 There is also a range of policy initiatives that could help to support the well established Government policy of encouraging modal shift from road freight to rail by making rail freight more competitive.

- Promotion of liberalisation of access to rail infrastructure in Continental Europe. This will promote environmental sustainability and rail freight's role in assisting London, and the UK, to meet its CO_2 reduction targets
- Introduction of a road pricing scheme – this will help to create a more level playing field in terms of payment for infrastructure at point of use. The impact of road user charges on rail forecasts is beyond the scope of this strategy, as there is no defined scheme and the effect of road pricing is likely only to be felt at the end of the strategy's planning horizon. The effect on the attractiveness of rail is not yet clear, as reduced road congestion could act to encourage freight to be transported by road. However, access to rail terminals, such as Willesden, could be improved, which would have a positive impact on rail freight's mode share. TfL plan to undertake research on the effects of RUC on freight in London.

Section 7

Appraisal

Appraisal and forecasting methodology

7.1 The appraisal takes into account:

- Rail's generally lower pollution and congestion costs. These values are incorporated in a measure called 'Sensitive Lorry Miles' (SLM), which represents the value to society of switching a lorry mile from road to its rail equivalent
- SLM values represent the environmental and social benefits of removing Heavy Goods Vehicle (HGV) journeys from the road network by switching the freight to a more sustainable mode, such as rail or water. This is quantified in terms of emission and noise costs of HGVs, congestion costs of HGVs by road type, and accident costs avoided
- Effects on government revenues and expenditure
- Capital costs of freight-related enhancements

7.2 The appraisal does not take into account the difference in freight haulier costs for transporting goods by rail rather than by road because no satisfactory differential could be established from analysis. Also, it does not account for any impact on rail passenger revenues, as it was considered that the impact of additional freight trains on the network would be broadly neutral to passenger services, as most growth would take place at off-peak times, or infrastructure would be upgraded to cope with the additional trains.

7.3 The appraisal took into account the following:

- Future market led demand, sourced from the Freight and Cross London RUS documents, and TfL's Anglia Rail Corridor Plan
- The provision of additional rail connected warehousing, sourced from estimates of additional traffic from site promoters
- Policy led interventions
  - Additional regulation of the road haulage industry
  - Measures to promote the liberalisation of the rail freight market in Europe

7.4 Additionally, the impact of a new HS1 rail freight terminal at Ripple Lane in Barking was considered using information contained with the Network Rail Cross London RUS. This would receive freight trains from Europe, via the Channel Tunnel and the HS1, making use of the European standard loading gauge available on these routes. It should be noted that this project is in the early stages of development.

7.5 It was also assumed that train lengths would increase in future, enabling each train to carry more freight and remove a greater volume of traffic from the road, generating additional benefits.

7.6 Appendix B has more information about assumptions and calculations.

Scenarios

7.7 Three scenarios were defined for the purposes of appraising the predicted future year freight flows. These scenarios reflected different levels of growth in the rail freight market, and investment in the rail network to accommodate these flows, incorporating the impacts of adjustment to public policy that could affect rail freight.

7.8 The material included in the scenarios can be linked back to the main challenges referred to in section 3. Continuing growth in London's economy and the flows of freight through the South East ports are reflected in the freight forecasts used for each scenario. Growing modal share and changes in the competitive environment are modelled in the scenarios through the application of policies that are pro-rail freight, such as additional regulation of road haulage. International connectivity is addressed in the scenarios through the provision of additional facilities to encourage the growth of rail freight through the Channel Tunnel. Finally, planning issues were addressed through the incorporation of additional Strategic Rail Freight Interchanges in the freight forecasts, reflecting a positive outcome for TfL's attempt to influence planning policy in this area.

7.9 Three scenarios were modelled, 'Do Minimum', 'Do More' and 'Do Most'. They were structured to reflect the likelihood of the various outcomes and policies discussed in the Strategy. The most likely outcomes were included in the 'Do Minimum' scenario (such as the growth in traffic via the ports), with the less likely being included in the other two scenarios.

7.10 Items in the 'Do Minimum' are assumed to be included in the 'Do More' and the 'Do More' items are assumed to be included in the 'Do Most' package.

7.11 The 'Do Minimum' scenario assumes:

- Strengthening/reconstruction of bridges and earthworks and track renewal on Barking to Gospel Oak route
- The current network is unchanged but for the works required to deliver the North London Railway Improvement programme for passenger traffic, and preserve existing freight capacity, primarily on the North London Railway and South London Line routes
- Freight growth currently anticipated by rail industry

7.12 The 'Do More' scenario assumes:

- Provision of W9 and W10 gauge on the Barking to Gospel Oak/Willesden route
- Provision of additional capacity on the Barking to Gospel Oak/Willesden route
- Additional capacity (26 extra paths per day) and gauge clearance to W10 standard on the Felixstowe to Nuneaton diversionary route
- Additional regulation of road haulage that raises hauliers' costs
- Operation of longer trains on the freight network to maximise the value of the available paths

7.13 The 'Do Most' scenario assumes:

- The CTRL freight terminal is developed
- Strategic rail freight Interchanges are developed
- Policies that promote rail liberalisation in Continental Europe are implemented, reducing rail freight hauliers' costs
- Electrification of the Gospel Oak - Barking route, providing greater opportunities for the continuing use of electric locomotives on freight trains travelling to and from Tilbury and a potential new terminal at London Gateway

Appraisal results

7.14 The appraisal summary table below shows the impacts of London Rail's packages of interventions compared to the "do minimum". It follows the Government's "New Approach to Appraisal" conventions.

Table 7.1: Costs and benefits of the rail freight "packages"

	+/-	Value of 'Do More' vs 'Do Minimum' £s million pv	Value of 'Do Most' vs 'Do Minimum' £s million pv	Explanation of objective	Pence per Sensitive Lorry Mile
Number of lorry miles removed from network		113 million per annum	177 million per annum		40.5p for road congestion
Objective					
Economy	+	5,266	6,203	Value of reduced road congestion and travel times for other users of both road and rail networks	
Environment	+	1,533	1,807	Value of reduced greenhouse gas, air and noise pollution arising from transporting goods by rail rather than by road	2.3p for carbon emissions 3.5p for noise 5.8p for pollution - 9.2p for rail's negative social and environmental impact
Social Inclusion and other	+	2,375	£2,798	Cost of accidents, severance, road user stress	2.7p for accidents 15.6p for other benefits including severance, stress etc
Total benefits	+	9,174	10,808		
Cost to public sector	-	2,782	3,167	Includes costs for most new railway infrastructure[17] , changes in road taxation income and changes in road maintenance expenditure	Loss of 30.4p in road taxation 13.2p for reduction in infrastructure maintenance costs
Benefit cost ratio	+	3.3 to 1	2.4 to 1		

[17] These costs are preliminary costs taken from sources including the Freight RUS and the North London Railway Infrastructure Project, but they include some optimism bias. See Appendix D for further details.

NB Delivering this plan will also require a substantial contribution from the private sector in the form of constructing terminals and rail connections. This is thought to be around £1.2 bn although the rail element is a fraction of this number, which includes construction of road logistics and storage facilities. It is assumed that no public subsidy will be required to build these terminals.

7.15 Appendix C has a more detailed appraisal summary table for each package. Time and financial benefits to business users and operators and time and crowding benefits to passengers accrue almost entirely to business and passenger users of the road network rather than the rail network.

Section 8

Action plan and freight guidance

8.1 The action plan set out below concentrates in areas where GLA/TfL has more immediate influence. In the case of GLA this is:

(a) The re-draft of the London Plan;

(b) As planning authority for disposal of London's municipal waste and

(c) Using its planning powers to influence decisions on the development content of strategic rail connected sites in London.

8.2 A programme for delivery of the short-listed options is set out in the action plan below. This also sets out a prioritisation of tasks and their allocation to various bodies.

Table 8.1: Action plan

Type	What	Who	When
Capability / capacity in London	Staged upgrade of Barking to Gospel Oak/Willesden route, including further development of a scheme for electrification of the route	TfL/NwR	Stages to 2013
	Further assessment and finalisation of infrastructure enhancement needs on the North London Line (excluding the Barking to Gospel Oak route) and South London Line to accommodate TfL's passenger service aspirations and the growth in rail freight flows	TfL	2007 Infrastructure in place by Olympics in 2012
	Case for electrification of Gospel Oak to Barking Line should be investigated for inclusion in the Strategic Freight Network	NwR	Autumn 2007
Capability / capacity outside London	Staged upgrade of Felixstowe to Nuneaton to be pursued with Network Rail	NwR / developer	Gauging and initial capacity work by 2012; full capacity scheme by 2016
	Options for partnering SEEDA / EEDA will be considered in European projects such as IMPACTE	TfL / RDAs	Ongoing in further funding rounds
Terminals	Maintenance of up-to-date planning information of potential sites for rail freight terminal development	TfL	Annual updates
Terminals	Planning work in partnership with key stakeholders to ensure adequate facilities are planned for HS1 freight	TfL / London boroughs / RFG / LTGDC	To fit Local Development Frameworks timescales etc
	Support for Marco Polo project 'EXCITE' to demonstrate market potential for international freight on HS1	EXCITE Partners (TFL support only)	Approx €3m awarded summer 2007
	Work with key stakeholders to resolve institutional barriers to growth of Channel Tunnel freight		

Type	What	Who	When
Terminals	Championing of the strategic case for the development of large rail-linked distribution sites on the edge of London	TfL	Ongoing
Other pro-rail policies	Promotion of rail liberalisation in Continental Europe	UK Government / RFG, FOCs etc	Ongoing
Other pro-rail policies	Promotion of targeted financial support for rail freight flows, particularly in cases where unfair competition with road continues	TfL, UK Government	Ongoing
Enablers	Joint business cases that capture benefits from enhancements to both freight and passenger users	TfL, NwR	Ongoing
Enablers	Ensuring that new freight facilities are included in London's strategic planning frameworks, and existing terminal sites safeguarded where appropriate	TfL, GLA, London Boroughs etc	Ongoing
Enablers	Investigate and support, where appropriate, innovative rail freight solutions such as rail freight consolidation centres, freight multiple units etc	Commercial	Ongoing
Enablers	Ensuring transport assessments consider rail options	TfL	Ongoing
Enablers	Developing data collection and processing capability	TfL Freight Unit	Ongoing

Section 9

Next steps

9.1 TfL has a key role in assisting rail freight even though its relevant direct powers are limited. The most important direct role is in the area of planning. Currently, the Mayor has powers to direct permission. However, following the review of the Mayor's planning powers, it is expected the scope of his authority will include powers of refusal. This could be key in safeguarding land for terminal development.

9.2 This document sets out a suggested strategy supported by a shorter term action plan. These comprise a combination of support for rail infrastructure schemes, including new terminals, and softer measures dealing with monitoring, planning and policy issues. The implementation of the strategy, appropriately coordinated with other organisations, will facilitate further rail freight growth for London and a shift from road, within the context of a growing passenger railway.

9.3 Over 2007 and beyond TfL intends to engage with industry partners and key local and regional planning authorities to implement the Strategy.

Appendix A

Freight forecasts

Freight forecasts were drawn primarily from Network Rail's recent Rail Utilisation Studies (RUSs) for Freight (draft published in August 2006) and Cross London Routes (published August 2006). Results from TfL's Anglia Rail Corridor Plan were also utilised. These reports were used to establish the base flows on the following key routes in 2005:

- Felixstowe – West Midlands, North West and Scotland. Deep sea container intermodal freight traffic.
- Tilbury – West Midlands, North West and Scotland. Deep sea container intermodal freight traffic.
- Thamesport (Isle of Grain) – West Midlands, North West and Scotland. Deep sea container intermodal freight traffic.
- Channel Tunnel – Wembley, London via the National Rail network. Intermodal freight traffic.
- Mendip Hills (Somerset) – Acton, London. Aggregates for the construction industry.
- Channel Tunnel – proposed Ripple Lane Freight Terminal at Barking. Intermodal freight traffic.

These flows were then increased to the levels anticipated for 2016 and 2026 for each of the three scenarios reviewed for the Freight Strategy. The key elements used to calculate the increases employed to model each scenario are described below. Flows were adjusted where required to reflect the latest outcomes from the freight forecasting work being undertaken by Steer Davies Gleave for TfL (to inform the sites list).

Additionally, the report on the business case for Howbury Park Strategic Rail Interchange (by Intermodality) was used to determine expected flows in 2016 and 2026 to and from the four Strategic Rail Freight Terminals in the London area included in the Strategy. These terminals were assumed to be: Howbury Park, Radlett, Colnbrook and Redhill.

'Do Minimum' scenario

- Economic growth leading to increased economic activity and demand for the movement of goods on the rail network
- New port facilities at London Gateway (near Tilbury), Bathside Bay (near Felixstowe) and Felixstowe, generating increased demand for the movement of deep sea containers on the rail network

'Do More' scenario

- All factors included in the 'Do Minimum' scenario
- Additional regulation of road haulage leading to a 10% increase in the demand to operate freight trains across the rail network, as road haulage becomes more expensive and therefore less competitive than rail based alternatives
- Longer trains enabling more freight to be carried by rail

'Do Most' scenario

- All factors included in the previous scenarios

- Measures to promote liberalisation of the rail freight market in Continental Europe, coupled with the implementation of a new pricing regime for HS1 Freight, that makes it economic for rail freight hauliers to use the Channel Tunnel. This is expected to lead to a rise in the demand for freight trains running between the Channel Tunnel and destinations in the UK, using the National Rail Network
- Commencement of operation of rail freight services over HS1, utilising the line's European loading gauge. These trains will run to a rail freight terminal at Ripple Lane (Barking), which TfL believe needs to be expanded in order to help realise the potential rail market growth in this international sector.
- Services operating to and from four new Strategic Rail Freight Interchanges in the London area

Summary of Freight Forecasts and their Sources:

Flow	Current trains per day, 2005 (current)	Forecast trains per day, 2016 and 2026	Source information
Do Minimum scenario			
Deep Sea Containers, Felixstowe/Bathside Bay via WCML	14	34 (2016) 44 (2026)	Current: Cross London RUS, page 140, Shenfield Table, Intermodal trains average Forecast: Additional paths from Anglia Rail Corridor Plan (2016) and Cross London RUS, page 47, para 4.4.5. (2026). Mid range of forecasts quoted for Felixstowe and Bathside Bay used
Deep Sea Containers, Tilbury/London Gateway via WCML	7	21 (2016) 29 (2026)	Current: Cross London RUS, page 142, Woodgrange Park Junction - Barking Table, Intermodal trains average reduced by two to remove Intermodal services operating between Southampton and Barking Forecast: Additional paths from Anglia Rail Corridor Plan (2016) and Cross London RUS, page 47, para 4.4.5 (2026). Mid range of forecasts quoted for London Gateway used
Deep Sea Containers, Thamesport (Kent) via WLL and WCML	5	13 (2016) 19 (2026)	Current: Cross London RUS, page 143, Nunhead Junction - Nunhead Table, Intermodal trains average Forecast: Additional paths from Freight RUS, page 32, Figure 4.1. Mid range of forecast for traffic on North Kent Line taken
Intermodal, Channel Tunnel to Wembley	4	4 (2016 and 2026)	Current: Latest freight forecasts from Steer Davies Gleave. No growth forecast under this scenario.

Flow	Current trains per day, 2005 (current)	Forecast trains per day, 2016 and 2026	Source information
Do Minimum scenario			
Aggregates, Wiltshire - Acton (London) via GWML	18	26 (2016) 32 (2026)	Current: Cross London RUS, page 142, Acton Main Line - Acton Wells Table, Aggregates trains average. Forecast (additional paths): 2016 - Freight RUS, Figure 4.1, page 32, increased by 70% to provide 2026 figure.
All other flows			Current and forecast values calculated from Cross London RUS, page 60, table 5.9, average paths for 2005 and additional paths for 2016 (increased by 70% to provide 2026 forecast)
Do More scenario			
All flows			Current and forecast trains per day taken from 'Do Minimum' scenario. Forecast for trains per day for 2016 inflated by 10% to reflect impact of increased road haulage costs, except for Channel Tunnel Intermodal freight trains
Do Most scenario			
All flows excepting those via Channel Tunnel and relating to Strategic Rail Freight Interchanges.			Current and forecast trains per day taken from 'Do More' scenario
Intermodal, Channel Tunnel to Wembley via National Rail Network.	4	17	2005 base figure sourced from 'Do More' scenario. Forecast for 2025 increased by 13 trains. Taken from Freight RUS, page 32, figure 4.1. Mid range of forecast for additional traffic via Ashford in 2014 used
Intermodal, Channel Tunnel to Ripple Lane (Barking) via CTRL	0	15	Forecast taken from Cross London RUS, page 49, para 4.4.20.
Strategic Rail Freight Interchanges		2016: 2 to/from Channel Tunnel. 3 to/from DIRFT. 1 to/from Nottingham or Alfreton. 2026: 4 to/from Channel Tunnel. 6 to/from DIRFT. 1 to/from Nottingham or Alfreton	Howbury Park Business Case Report by Intermodality, table 14 page 46. Forecasts apply to each terminal separately

Appendix B

Business Case methodology

The demand for freight trains in the years selected for evaluation (2016 and 2026) was estimated using the forecasting methodology outlined in Appendix A. This demand was then matched against the predicted available capacity on the rail network in 2016 and 2026, based on the latest available information, for each of the scenarios under evaluation.

This enabled the estimation of the number of freight trains that could operate in 2016 and 2026, and the number that could not run as a result of capacity constraints resulting in goods being transported by road instead. This assessment was completed for the selected rail freight flows that were expected to drive future growth in the demand for freight trains on the rail network in London. These flows are listed in Appendix A.

The balance between those goods moved by rail and those moved by road was calculated using the output from the process described above. A positive balance (an excess of goods moved by rail over goods moved by road) generated a net social and environmental benefit, while an excess of goods moved by road over rail generated a negative net social and environmental impact.

The value of these benefits and negative impacts was quantified using Sensitive Lorry Miles (SLMs), guidance on the use of which was provided by the Strategic Rail Authority in 2003. SLMs quantify the social and environmental benefits of moving freight by rail rather than by road, covering the following key areas:

- Changes in the number of road accidents
- Changes in road noise
- Changes in emissions of atmospheric pollutants
- Changes in a number of other undesirable factors, including community severance, driver frustration and stress, etc

Changes to the emissions of greenhouse gases were quantified separately using the latest data and methodology available from the DfT.

The use of SLMs is normally recommended only for small scale schemes. Larger scale projects (such as the London Rail Freight Strategy) should ideally make use of the Multi-Modal Study (MMS) Approach. SLMs have been used for the Freight Strategy because given the high-level nature of the strategy, it has not been possible to use the MMS approach.

The environmental benefits associated with electrifying the Gospel Oak - Barking route were quantified for freight trains only, by comparing the performance of diesel and electric locomotives using research already completed by TfL London Rail. It was assumed that electrifying the route would allow freight trains operating to and from Tilbury to continue to be operated by electric rather than diesel traction in 2025 should capacity on the route via the Great Eastern Main Line be unavailable. Freight trains operating to and from London Gateway were excluded from the analysis as there are currently no plans to electrify the rail connection to this new port facility.

However, TfL believes a base case may exist for electrifying the Shell Haven branch in addition to the remainder of the Gospel Oak - Barking section that is not electrified so

that London Gateway trains can be electrically hauled. It would also provide a diversionary route for other electrically hauled freight trains. The case for this electrification is difficult to make in terms of benefits to London. However, within a national context in which environmental benefits are increasingly valued, it is recommended that the case is considered for early implementation as part of the Strategic Freight Network.

Attempts were made to quantify the value of the cost savings accruing to freight hauliers from transporting goods by rail rather than by road. However, these overestimated the value of the cost savings so it was assumed (conservatively) for this business case that there were no cost savings.

SLMs were also used to quantify the following cost impacts, using the same approach as described above for the benefits:

- Changes in expenditure on road maintenance
- Changes in receipts from road taxation

It was assumed for the purposes of this analysis that there would be no change in fuel duty receipts arising from the operation of additional freight train services. This is because no fuel duty is charged on the diesel used by freight trains.

Other costs included in the business case are described below:

- Capital costs for the following enhancements to the capability of the rail network:
  - Capital cost of various enhancements required to maintain existing freight capacity with planned passenger enhancements on North and South London Line routes
  - Works to strengthen structures and renew track on the Gospel Oak - Barking route
  - Upgrade of the loading gauge on the Gospel Oak - Barking route to W9 and W10
  - Increased capacity on the Gospel Oak - Barking route
  - Upgrade of the loading gauge between Felixstowe and Nuneaton to W10, together with capacity enhancements
  - Capital costs were assumed for the provision of strategic rail freight facilities at Ripple Lane (Barking) and four other sites. 50% of the total capital cost of constructing these sites was included in the business case, representing the proportion of the total cost that is expected to be incurred on providing facilities for rail freight operations. 66% was added to the estimated capital cost to account for optimism bias, with a further 20% being added to account for scheme development to the GRIP 5 stage.

These costs are described further in Appendix D.

The capital costs associated with the construction of the rail freight terminals was assumed to be met by the private sector. All other capital and operating costs were assumed to be met by the public sector.

Note that not all benefits, costs and revenues apply to all scenarios. For a description of what is included in each scenario, refer to section 6.2.

All benefits and costs used within the final business case were discounted over a 60 year project life, using a price base of quarter one 2005/06, and the discount rates recommended in the TfL Business Case Development Manual. Real increases in the benefits, road taxation income and expenditure on road maintenance during the project life were captured by inflating the base values using the real increase in GDP per capita, as described in the TfL Business Case Development Manual.

Benefits and operating costs were calculated for the two forecast years, 2016 and 2026. The 60 year project life was assumed to commence in 2016. Benefits and operating costs were added between 2016 and 2026. No further changes to either variable were assumed after 2026, except for the impact of GDP growth as detailed above.

Appendix C

Appraisal summary tables

Table 9.1: Appraisal summary table for the 'Do More' rail freight scenario

TfL objective	Sub-objective	+/-	Value (£m pv)	Rationale
Environment	Noise	+	456	There is a noise-related benefit generated by reducing the lorry mileage on the national road network
	Local air quality	+	756	Reducing lorry mileage will reduce the overall level of emissions of pollutants at the local level, improving air quality
	Greenhouse gases	+	321	Reducing lorry mileage will reduce the overall level of emissions of greenhouse gases, helping to combat global warming
	Townscape and landscape	=	n/a	No effect expected
	Heritage and historic resources	=	n/a	No effect expected
	Biodiversity	=	n/a	No effect expected
Economy	Public Accounts (cost to public sector)	-	2,782	This includes all capital costs for infrastructure investment and impacts on operating costs and revenues within the transport network that fall to the public sector, as well as impacts on road taxation revenues
	Time and financial benefits to business users and operators	+	1,053	Reduced road congestion arising from fewer lorry miles saves business users money, by reducing the time taken to travel and increasing the reliability of road journeys. This benefit relates purely to time saved from reduced congestion of the road network, and no other factors
	Time and crowding benefits to passengers	+	4,213	Reduced road congestion arising from fewer lorry miles delivers savings in journey times, and improved journey time reliability for private users of the road network
	Wider economic impacts	+	Not quantified	Impact expected to be positive, as the scenarios will ease movement of imports and exports through new and existing port facilities in the vicinity of Tilbury and Felixstowe and other locations. Benefits expected for the national economy on which the smooth transit of goods depends. The scenarios described will also support local economic development in the vicinity of Tilbury, Barking and Felixstowe

TfL objective	Sub-objective	+/-	Value (£m pv)	Rationale
	Option values (i.e. value of alternative routes)	=	n/a	No effect expected
Social inclusion	Accidents	+	348	Reducing lorry journeys on the national road network reduces the incidence of road accidents and the economic costs associated with these
	Severance and other	+	2,027	Severance effects will be lessened as the overall usage of the road network is reduced. It should be noted that the figure quoted includes the impact on other items as well as severance, including driver frustration and stress, fear of accidents, restrictions on cycling and walking and visual intrusion. The impact on all of these items will be positive, however the overall quantitative impact cannot be disaggregated for each individual element with the information currently available
	Access to the transport system	+	Not quantified	Supports access to the rail network from key ports in the South East and East of England and HS1, promoting the growth of the national economy
	Transport Interchange	+	Not quantified	Supports access to the rail network from key ports in the South East and East of England and HS1, promoting the growth of the national economy
	Land use policy	+	Not quantified	Complies with the Land Use Policy of the London Plan by supporting the development of sites for the intermodal transfer of freight to and from rail, including the proposed Ripple Lane Freight Terminal at Barking

Table 9.2: Appraisal summary table for the 'Do Most' rail freight scenario

TfL objective	Sub-objective	+/-	Value (£m pv)	Rationale
Environment	Noise	+	537	There is a noise-related benefit generated by reducing the lorry mileage on the national road network
	Local air quality	+	890	Reducing lorry mileage will reduce the overall level of emissions of pollutants at the local level, improving air quality
	Greenhouse gases	+	380	Reducing lorry mileage will reduce the overall level of emissions of greenhouse gases, helping to combat global warming
	Townscape and landscape	=	n/a	No effect expected
	Heritage and historic resources	=	n/a	No effect expected

TfL objective	Sub-objective	+/-	Value (£m pv)	Rationale
	Biodiversity	-	n/a	Slight negative effect due to construction of terminals
	Public Accounts (cost to public sector)	-	3,167	This includes all capital costs for infrastructure investment, and impacts on operating costs and revenues within the transport network that fall to the public sector, as well as impacts on road taxation revenues
Economy	Time and financial benefits to business users and operators	+	1,241	Reduced road congestion arising from fewer lorry miles saves business users money, by reducing the time taken to travel and increasing the reliability of road journeys. This benefit relates purely to time saved from reduced congestion of the road network, and no other factors
	Time and crowding benefits to passengers	+	4,963	Reduced road congestion arising from fewer lorry miles delivers savings in journey times and improved journey time reliability for private users of the road network
	Reliability	+	6,203	This represents the total value of reduced road congestion across all users of the road network. It is the summation of the above two sub-objectives
	Wider Economic impacts	+	Not quantified	Impact expected to be positive, as the scenarios described will ease the movement of imports and exports through new and existing port facilities in the vicinity of Tilbury and Felixstowe and other locations. Benefits expected for the national economy on which the smooth transit of goods depends. The scenarios described will also support local economic development in the vicinity of Tilbury, Barking and Felixstowe
	Option values (i.e. value of alternative routes)	=	n/a	No effect expected
Social inclusion	Accidents	+	410	Reducing lorry journeys on the national road network reduces the incidence of road accidents and the economic costs associated with these
	Severance	+	2,388	Severance effects will be lessened as the overall usage of the road network is reduced. It should be noted that the figure quoted includes the impact on other items as well as severance, including driver frustration and stress, fear of accidents, restrictions on cycling and walking and visual intrusion. The impact on all of these items will be positive, however the overall quantitative impact cannot be disaggregated for each individual element with the information currently available
	Access to the transport system	+	Not quantified	Supports access to the rail network from key ports in the South East and East of England and HS1, promoting the growth of the national economy

TfL objective	Sub-objective	+/-	Value (£m pv)	Rationale
	Transport Interchange	+	Not quantified	Supports access to the rail network from key ports in the South East and East of England and HS1, promoting the growth of the national economy
	Land use policy	+	Not quantified	Complies with the Land Use Policy of the London Plan by supporting the development of sites for the intermodal transfer of freight to and from rail, including the proposed Ripple Lane Freight Terminal at Barking

Appendix D

Costing Assumptions

Item	Value (£m)	Notes and source
Strengthening of GOB structures and track	14.5	Value from Freight RUS, page 133.
F2N Intermediate Upgrade (gauge and capacity)	133.3	Value from Draft Freight RUS, page 77.
F2N Full Upgrade (capacity only)	400	Value from Network Rail initial Strategic Business Plan.
Peterborough - Nuneaton W10 gauge enhancement	45	Value from Draft Freight RUS, page 72. Middle of £40 to £50 million range
GOB W10 structure enhancement and headway improvements	34.5	DfT announcement, July 2007. Includes P-TIF funding and NwR NRDF funding
Additional central government grant support for freight	23.5	per annum, London Rail estimate
North London Railway Infrastructure Project	240	TfL Investment Programme 2007
Train lengthening	50	TfL estimate
Cost of 1 Strategic Rail Freight Interchange	251	Value for Barking taken from A13 corridor plan, reduced by 50% to account for that element of the construction that relates to rail facilities, then increased by 20% to account for cost of development of project, from GRIP stages 1 to 5. 66% also added to the spot cost for the project to account for optimism bias.

Appendix E

Abbreviations

AM	-	Annual Monitoring
AM2001	-	Annual Monitoring 2001
ALG	-	Association of London Government
BCR	-	Benefit Cost Ratio
BNFL	-	British Nuclear Fuels Ltd
bt km	-	billion tonnes - kilometres
CCAP	-	Climate Change Action Plan
CSRGT	-	Continuing Survey of Road Goods Transport
CNG	-	Company Neutral Grant
D and G	-	Mayor of London's Directions and Guidance to the SRA
DfT	-	Department for Transport
DIRFT	-	Daventry International Rail Freight Terminal
DLP	-	Draft London Plan
DRS	-	Direct Rail Services
ECML	-	East Coast Main Line
EEDA	-	East of England Development Agency
EiP	-	Examination in Public
EU	-	European Union
EWS	-	English Welsh & Scottish Railway
FFG	-	Freight Facilities Grant
FDMU	-	Freight Diesel Multiple Unit
FMCG	-	Fast Moving Consumer Goods
FOC	-	Freight Operating Company
FQP	-	Freight Quality Partnership
FTA	-	Freight Transport Association
F2N	-	Felixstowe to Nuneaton
GBRF	-	GB Railfreight
GDP	-	Gross Domestic Product
GEML	-	Great Eastern Main Line
GLA	-	Greater London Authority
GOB	-	Gospel Oak to Barking Line
GPS	-	Global Positioning System
GRIP	-	Guide to Railway Investment Projects
GVW	-	Gross Vehicle Weight
GWML	-	Great Western Main Line
HGV	-	Heavy Goods Vehicle
HLOS	-	High Level Output Statement
HS1	-	High Speed 1 (formerly CTRL)
IMPACTE	-	Intermodal Port Access and Commodities Transport in Europe
IVUs	-	In Vehicle Units scheme
LDA	-	London Development Agency
LIFE	-	London International Freight Exchange
LLB	-	London Lorry Ban
LLCS	-	London Lorry Control Scheme

LoLo	-	Lift on Lift off
LP	-	London Plan
LRFS	-	The London Rail Freight Study
LSDP	-	London Sustainable Distribution Partnership
MML	-	Midland Main Line
MPG6	-	Minerals Planning Guidance Note 6
mt	-	Million tonnes
n.a.	-	Not available
NLL	-	North London Line
NwR	-	Network Rail
ORR	-	Office of the Rail Regulator
PLA	-	Port of London Authority
PPG	-	Planning Policy Guidance Note
PRDC	-	Princess Royal Distribution Centre
RDA	-	Regional Development Agency
RFG	-	Rail Freight Group
RHA	-	Road Haulage Association
RoRo	-	Roll on Roll off
RPG	-	Regional Planning Guidance
RUS	-	Route Utilisation Strategy
SEEDA	-	South East England Development Agency
SLL	-	South London Line
SLM	-	Sensitive Lorry Miles
SMART	-	Specific, Measurable, Achievable, Realistic and Timed
SRA	-	The Strategic Rail Authority
S.106	-	Section 106 Agreement
TAG	-	Track Access Grant
TEU	-	Twenty Foot Equivalent Units
TfL	-	Transport for London
TIF	-	Transport Innovation Fund
TLRN	-	Transport for London Road Network
tpd	-	trains per day
TOPS	-	Total Operating System
UDC	-	Urban Distribution Centre
UDP	-	Unitary Development Plan
VED	-	Vehicle Excise Duty
VI	-	Vehicle Inspectorate
WCML	-	West Coast Main Line
WLL	-	West London Line
W10	-	Loading gauge able to transport the latest ISO standard 9'6" containers

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