PTEG:
FREIGHT IN THE CITY REGIONS

Final Report

MDS Transmodal

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CONTENTS

1 INTRODUCTION

1.1 Study objectives

Freight transport logistics is an essential feature of any economy in that it allows manufacturers to receive their raw materials and components and to distribute their products to customers while its quality helps to maximise the range of goods retailers can stock for consumers to purchase. The freight and logistics industry is also a major employer, accounting for 9% of the country's GDP and 7% of its total employment. At the same time, however, freight transport movements are a source of environmental emissions, contribute to congestion and generate noise. At a local level the diesel engines that are used by most road freight vehicles emit particulates that are damaging to human health. Urban areas are normally the final destination for goods transported, whether they are retail goods, documents and parcels or construction materials, making those same urban areas the most efficient and economical location for distribution centres to be located.

For these reasons, local authorities have a growing interest in freight. Good practice in developing and implementing packages of freight transport policy measures already exists in the UK and there are further examples from the rest of the European Union.

This report, which was commissioned from MDS Transmodal by the Passenger Transport Executive Group (PTEG) in Autumn 2012 for the six passenger transport executives and local authorities in the English City Regions, sets out the context for freight transport across the major urban centres in England outside London. It is intended to provide an overview of the "big picture" issues and trends, as well as highlight some of the key policy issues arising from freight transport. It also provides a broad policy tool-kit for authorities to consider when developing their freight strategies.

The **policy objective** for this study was set out by PTEG as being:

To ensure the safe, efficient and reliable movement of freight in order to support economic growth whilst, at the same time, minimising freight's negative impacts on the environment and the quality of life for residents.

This policy objective is there to secure "sustainable distribution" where a balance is found between economic efficiency and environmental sustainability in the freight industries activities in the City Regions. The policy objective also recognises the contribution that freight transport can make to economic development and regeneration, through its contribution to creating employment opportunities and in generating prosperity.

The **study objectives**, as set out in the Tender Request, were to:

- Develop a typology for freight, with a particular focus on freight in the City Regions.
- Illustrate past and likely future trends in freight activity for all modes through statistical analysis and forecasting and consideration of technological, operational and management developments.
- Conduct a strategic analysis of the GB "freight network" in terms of the main nodes and links and the traffic flows that they have to accommodate, with the identification of key challenges and pinch points on this network.
- Identify what is "good practice" for urban freight transport in the UK and Europe, illustrated by case study examples;
- Develop the policy implications of all of the above analysis through the development of common policy issues/themes for City Regions and possible generic policy measures that could be implemented by PTEs and local authorities.

These study objectives reflected a desire on the part of the City Regions to understand the key policy issues that emerge from an analysis of the freight sector and, given that freight activity is almost always undertaken by the private sector, determine what policy measures could be implemented by the public sector in the City Regions to encourage more "sustainable distribution".

The study begins by describing the differing perspectives of the freight industry and local authorities towards freight issues in the City Regions, which provides essential context to the rest of the study.

1.2 The perspectives of the freight industry and local authorities in relation to freight in the City Regions

Road freight movements in urban areas are a source of environmental emissions, contribute to congestion and generate noise, which is a particular issue if deliveries are being made at night. These issues cause concern for residents in urban areas and for the local authorities that are responsible for environmental regulation and transport policy in these areas. At the same time, residents want to have a wide range of goods available in the local shops, want to receive e-commerce parcels at their homes or offices and would also recognize that freight transport activity generates employment, as well as supporting city economies by providing an efficient low cost service. These different perspectives lead to a need to ensure that as far as is possible, the regime that is faced by the private sector freight industry and its customers encourages it to reflect the interests of local residents, as represented by local authorities.

The different expectations of the various actors in relation to urban freight transport can be described through stakeholder analysis, which categories the different groups of people and organisations with an interest in the subject and highlights their different expectations.

Figure 1.1 shows the main stakeholder groups that are affected by freight transport in the City Regions, with their main expectations. In very general terms, residents and visitors are seeking a high quality of life or high quality experience, while transport operators and their customers have a strong interest in achieving low cost on-time deliveries.

These different expectations can result in conflicts that need to be resolved through trade-offs between the private needs of the freight industry and its customers and public needs (improved air quality, lower congestion etc.) through the intervention in the market by the public sector in the City Regions. In economic terms, where the costs of private activities are not fully reflected in the user costs of the freight industry and their customers, there is market failure; the public sector therefore has a role in seeking to balance the needs of the private operators with the wider needs of society.

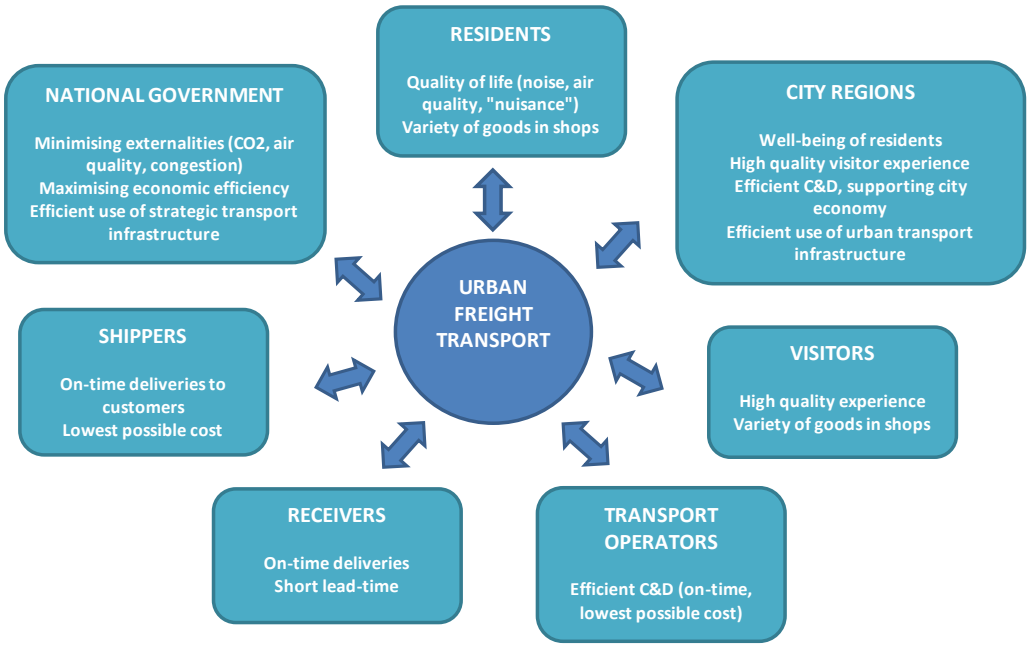


Figure 1.1: City Region stakeholders & expectations in relation to freight

The perspectives of national government are likely to be different from those of PTEs and local authorities in the City Regions. While government at the national level is likely to be more concerned with impacts on the strategic transport infrastructure, the more strategic (and global) issue of greenhouse gas (GHG) emissions and the efficiency of the national economy, City Regions

are likely to have a greater concern with the well-being of local residents and the functioning of the local economy.

1.3 Freight-specific issues in City Regions

Introduction

Table 1.1 sets out the main issues that emerge in relation to freight transport in City Regions, categorised as being either costs or benefits from the point of view of the common good. The air quality issue is likely to be a key concern to City Regions because of the impact on human health and the threat of fines from the EU for failure to meet emissions air quality targets; this is an increasingly important issue because the Government has suggested that local authorities should be, at least in part, responsible for paying any fines that are levied.

Table 1.1: Freight-specific issues in City Regions

Costs	Benefits
Congestion: Road freight vehicles both contribute to congestion on strategic and urban road networks and also suffer from congestion as freight transport operators have to deploy additional resources to make on-time deliveries. Rail freight services use scarce rail network capacity, particularly at pinch points on the network and also suffer from any delays caused by passenger services. **Safety:** Injuries and fatalities suffered by other road users, such as cyclists, due to accidents involving freight vehicles. Freight vehicles can also cause damage to the physical fabric and infrastructure of cities (e.g. "bridge strikes" by HGVs). **Air quality:** Impact on human health from particulate emissions from diesel-powered freight vehicles. **Carbon emissions:** GHG emissions from freight movements contribute to global warming **HGV routing:** Congestion and "nuisance" caused by HGVs using inappropriate routes. **Wear and tear:** Greater impact on urban road infrastructure caused by HGVs compared to lighter vehicles. **Noise:** This is a particular issue for deliveries made at night, when residents' sleep can be disturbed. **Inefficient deliveries & collections:** Results in higher costs for freight operators which are passed onto their customers and the wider economy.	**Efficient deliveries and collections:** More efficient deliveries and collections reduce the costs of the freight operators and provide a better service to businesses located in urban areas. This leads to lower costs for the economy as a whole as the lower costs will be passed on to the wider economy through market forces. **Employment:** Freight transport creates employment in the City Regions in freight transport businesses and at distribution centres and port facilities. Indirectly, efficient City Region logistics help to support retail and HoReCa employment by reducing delivery costs for businesses.

Source: MDS Transmodal

Costs of freight transport in the City Regions

Most of the impacts of freight transport in the City Regions are local in nature and are related to deliveries and collections; the contribution that freight transport makes to issues such as road congestion, poor air quality, use of inappropriate routes and noise pollution are generally related to these ”last mile” issues, rather than strategic freight flows between, for example, a port and a distribution centre in the East Midlands. The benefits that can be secured from freight transport can also be local, in that it can provide employment particularly in distribution centres on the edge of City Regions; in addition, efficient deliveries and collections in urban areas can help to preserve and enhance the competitiveness of the local economy.

However, “last mile” deliveries and collections are part of wider supply chains that are more strategic in nature and, unless local authorities and PTEs understand the strategic context within which the freight transport industry operates, they will not be able to minimise the impacts of, and maximise the opportunities from, freight transport in their local areas.

Efficiency of “last mile” deliveries and collections

Despite the highly competitive nature of the freight transport industry, the efficiency of “last mile” deliveries and collections cannot be taken as a given. Inefficiency in distribution in urban areas around the European Union is exhibited in the following ways:

- Low load factors and empty running;
- A high number of low volume or low weight deliveries made to individual premises within a given time period;
- Long dwell times at loading and unloading points.

It is difficult to know the extent to which freight operators are operating efficiently in the City Regions because this is generally confidential information, but, in principle, one would expect hauliers to operate as profitably as possible in the context of their own commercial environment. We believe that the logistics industry in the City Regions is likely to be reasonably efficient (compared to the EU average) as it is highly competitive and the larger logistics operators and their customers seek to reduce costs by using larger vehicles, maximising load factors as much as possible and scheduling deliveries. The major issue in terms of logistics efficiency is most likely to be related to congestion and its impact on the reliability of journey times for freight transport operators when accessing city centres; this inefficiency also has public costs because the freight vehicles are more likely to be slow-moving or stationery with their engines operating less efficiently.

This inefficiency leads to additional costs for transport operators, which would normally be passed on to receivers/shippers (in the case of third party operators) or absorbed as costs for own account

operators. These costs are ultimately borne by the wider economy. However, shippers, receivers and their transport operators do not always have a significant incentive to increase the efficiency of the deliveries to reduce costs because the transport cost is often only a small proportion of the value of the goods that are being transported and the overall costs of the shippers/receivers. The freight transport operators are paid for the service they provide and are responding to market demand, but may also be forced to make deliveries in peak times due to regulatory requirements (e.g. by time windows for deliveries to pedestrianized areas in city centres).

Employment benefits

The other clear benefits from freight transport come from employment opportunities created by freight transport businesses themselves (lorry drivers, transport clerks and managers) and employment in distribution centres.

The economics of freight transport

The freight industry is almost entirely owned and operated by the private sector and it is highly competitive. It therefore has to be very concerned about its cost base, which, in very general terms, consists of:

- The vehicles it uses to carry out freight transport movements from A to B (HGVs, LGVs, locomotives, railway wagons, ferries etc.);
- The salaries and wages of the personnel required to operate these vehicles;
- The fuel required to propel the vehicles between A and B;
- "Terminals" such as warehouses, ferry terminals and rail freight terminals where the freight can be transferred between modes or stored.

In addition, there are management and administrative overheads, where there is likely to be a focus on the use of ICT to facilitate the efficient management of the above resources. Overall, the culture of the freight industry in the UK is entrepreneurial, flexible and instinctively deregulatory. Resistance to change will often reflect a view that to shift behaviour may lead to commercial failure. It is important that the public sector understands how to incentivise the freight sector to change behaviour when this is perceived as in the public interest.

Local "conflicts" related to freight transport

Local authorities will very often encounter the freight industry in the context of a "problem", such as HGVs using an inappropriate route through a residential area, night-time deliveries disturbing the sleep of local residents or a freight vehicle being involved in an accident with a cyclist.

Planning and economic development professionals in local authorities will also be involved in "conflicts" in relation to distribution sites, particularly where they are located in the green belt. These conflicts relate to the desire of developers to develop commercially attractive sites, which can also create employment, but also increase traffic volumes in the area around the sites and where local residents may not regard employment in the distribution industry as being appropriate for their area.

Overall, the local authority culture in relation to the freight industry is often reactive to the issues created by the freight industry (which in itself cannot easily be controlled a it is owned and operated in the private sector) and with an instinct to adopt regulatory responses in an attempt to resolve issues for the general good of the local area.

1.4 Scope, approach and methodology

Scope of study

The **geographic scope** of the study is multi-layered in that many freight issues have to be considered at a strategic level as supply chains are at least national and often global in extent, but the impacts and benefits of freight also need to be considered at a City Region level because of their impacts on local communities and economies. Case studies of practices and measures adopted throughout Europe provide examples of good practice that could be adopted by the City Regions.

The **City Regions and cities** that we have been asked to consider in the study are:

Bristol
Greater Manchester City Region
Leicester
Merseyside City Region
Nottingham
Sheffield City Region
Tyne and Wear City Region
West Midlands City Region
West Yorkshire City Region

All **modes of transport** are considered in the study, particularly as it is essential to understand door-to-door transport chains that can involve more than one mode in a domestic transport chain and three or more modes in an international chain. Therefore, as well as road freight, the study considers the role of rail freight for medium to long distance freight and niche opportunities for inland waterways, cycling and walking. It also considers the role of maritime transport (including ports) and air freight within international freight transport chains. However, many of the key issues

for City Regions relate to road freight, both transit traffic through City Regions and, in particular, "last mile" issues for deliveries and collections in city centres.

Approach & structure

This study has mainly involved data analysis and desk research, drawing frequently on the consultants' experience in the freight sector at a European, national, regional and local level. However, the client group has also provided the consultancy team with examples of freight issues and policy measures and practices from the City Regions. The consultants have also had the opportunity to discuss freight policy at a national level with the Department for Transport (DfT).

The study begins by providing some strategic context to freight in the City Regions by explaining the key market trends in freight at a national and international level for all main modes of transport (Chapter 2 Freight Typology and Freight Trends) and then setting out central Government policy guidance on freight and the European Commission's policy vision for freight to 2030 (Chapter 3 European & National Freight Policy). The report then describes the strategic freight network for all main modes (road, rail, ports, strategic rail freight interchanges and distribution centres) and analyses where the key pinchpoints are likely to be located on this network (Chapter 4 The Strategic Freight Network).

Chapters 5-6 focus on the City Regions themselves by describing some of the main issues and challenges in relation to freight that are likely to be affecting them (Chapter 5 The City Regions: Typology, Issues & Challenges) and describing the potential future challenges for City Regions in relation to freight (Chapter 6 The Future of Freight in the City Regions). The report concludes (Chapter 7) by setting out a vision for freight in the City Regions for 2030 and describes the measures that the City Regions could use to move towards this vision.

2 FREIGHT TYPOLOGY & FREIGHT TRENDS

2.1 Introduction

This chapter provides a typology for freight transport, including some definitions, and then sets out some of the fundamentals of freight transport economics. It provides some context on trends in freight transport at a national level over the last 15 years.

2.2 Definition of freight transport

General definitions

Freight transport is the carriage of goods between an origin and a destination for commercial reasons because goods available at one geographical location are required at another location for processing, storage or consumption. This definition excludes some "white van" traffic, which is related to the provision of services rather than the transport of goods.

Economists regard the demand for freight transport as a *derived demand*, as the transport is not required in itself, but only as a means to satisfy other needs or wants.

Logistics is a broader concept that involves designing and managing "supply chains" for individual organisations, including purchasing, manufacturing and storage as well as transport. The freight transport industry is therefore involved in both transport and logistics. This report mainly discusses freight transport, rather than logistics, but attention is also paid to storage facilities (i.e. warehousing or distribution centres) because of their importance as nodes in the wider freight network, in adding value to the goods stored and in creating employment.

Freight transport can generally be categorised as being:

- Domestic or international
- Mode of appearance (bulk or non-bulk)
- Mode of transport (road, rail, waterborne)

Domestic freight transport is defined as the carriage of goods with both the first origin and final destination within the United Kingdom, while **international freight transport** is the carriage of goods with either an origin or destination outside the United Kingdom. As Great Britain is an island, all international freight has to be handled through a port, airport or through the Channel Tunnel.

Bulk freight transport is where large volumes of a homogenous cargo are carried in specialised transport equipment between specialised terminals. Examples include the transport of imported coal in railway wagons between a specialised coal terminal at a port and inland power station.

Non-bulk freight transport is where cargoes are carried in standard "box" units, mainly road trailers and containers, and is generally used to carry relatively high value commodities such as retail goods. Examples are where a truck makes a delivery of food and beverages from a warehouse to a supermarket or where a container containing consumer goods from China is transported on a rail service from a container port such as Felixstowe to an intermodal rail freight terminal, where it is then loaded onto the back of a truck for final delivery to a warehouse.

Measuring freight transport

Freight transport is usually measured in terms of **freight tonnes lifted** or **freight tonnes moved**. Freight tonnes moved can be expressed in tonne kilometres (tkm) or, for road freight, vehicle kilometres (vkm). In general, tonne kilometres is the more relevant measure for defining modal split.

Tonne Kilometres (tkm) = Tonnes Lifted x Length of Haul in Kilometres

Vehicle Kilometres (vkm) = Tonne Kilometres / Average Load in Tonnes

Over the first decade of this century, average freight tonnes lifted in Great Britain was 2.14 billion tonnes per annum, of which 1.77 billion was by road. A significant proportion is re-distributed (i.e. lifted more than once) so that total average unique tonnes actually moved in a typical year may be no higher than 1.5 billion tonnes. Approximately one third of that tonnage passes through the ports, demonstrating how important international trade is within domestic freight tonnages.

Modes of freight transport

Freight transport is often defined in terms of the **mode of freight transport** because this determines the relative economics of the freight transport movement and its environmental impacts. The following main modes are used for freight transport:

- Road: The dominant mode because of its inherent flexibility and cost-effectiveness, particularly over shorter distances and for smaller consignments, and because most industrial warehouse sites are no longer directly connected to other modal networks.
- Rail: Cost-effective over even short distances for trainload consignments where sites are rail connected (such as shipments of coal from ports to inland power stations) and can provide economic and flexible transport chains for higher value goods when transported in containers within intermodal transport chains. Intermodal transport is when the goods are

transported in a single unit and transferred between modes; an example would be the transfer of a deep sea container at the Port of Felixstowe to an intermodal train for transport by rail to an inland terminal at (say) Daventry, where it is transferred to a truck for delivery to a distribution centre in the East Midlands.

- Waterborne freight: This includes the transport of freight on inland waterways and coastal and short sea movements of freight. While there are significant volumes of short sea international freight movements of all kinds of goods into our major estuaries and also large volumes of bulk goods transported coastwise between ports, there are only limited volumes of goods in niche markets that are transported by barge on inland navigations.
- Pipeline: A specialist mode for the cost-effective transport of large volumes of bulk liquids and gases between ports and manufacturing sites, refineries and power stations.
- Air freight: A specialist mode of transport, mainly for the international transport of relatively low volumes of high value goods and documents.

The vast majority of road freight lifted and moved is carried in **heavy goods vehicles (HGVs)**, which are defined as vehicles over 3.5 tonnes gross laden weight (i.e. weight of vehicle plus its load). Although there are a variety of types and sizes of HGV, the main type of HGV used for long distance road haulage is the combination of a tractor and 13.6-metre trailer unit.

There has been an increase in **light goods vehicles (LGVs or so-called "white vans")**, but while this is partly due to an increase in parcels traffic as consumers and businesses buy goods on-line, some of the growth that has been seen is due to increased service-related activities.

While domestic waterborne freight is mainly cost-effective for the transport of large volumes of bulk goods or for the transport of all kinds of international freight, the greatest potential for the transfer of domestic freight from road to sustainable transport is provided by rail freight.

2.3 Modal economics

Road freight market

According to economic theory, the **road freight transport market** provides an example of near perfect competition because there are a large number of buyers and sellers operating in the market, there is a high degree of market knowledge (e.g. road haulage costs are well-understood in the market) and there are few barriers to entry, particularly in terms of capital investment and regulation. In this business environment, road haulage operators have to be highly efficient and cost-effective in order to remain profitable in a competitive market. They are, as a consequence, highly responsive to changes in the regulatory or market environment.

Rail freight market

The **rail freight industry**, by comparison, was an example of an imperfectly competitive market until about 10 years after rail privatisation because the handful of owners of the locomotives, wagons and rail terminals tended to each enjoy competitive advantage in their own sub-sectors. However, the rail freight market is now becoming more internally competitive with the gradual entry of new players into the market and all existing operators penetrating their competitors' markets. This is because grant and track charging systems offered a level playing field. Although there will always be higher barriers to entry than in the road haulage industry because of the higher capital investment required in locomotives and wagons, there are now more open access terminals available and there is greater transparency on costs due to increased competition within the market. This has meant that the rail freight industry has reduced its relative costs and been able to secure more traffic in competition with road freight in the intermodal market. It has also attracted some road hauliers to contract for trainload capacity, which has further increased competition.

As the freight industry as a whole is generally competitive, the ability of rail to compete with road is largely determined by its relative costs and by the need to secure different sizes of consignments. While the basic unit of measurement for road haulage is the HGV, rail freight services need to secure enough units to form a full train (the equivalent of perhaps 25-30 HGVs). Therefore rail freight services tend to be competitive on routes where there are large and regular flows of traffic, such as between container ports and inland intermodal terminals. Few individual cargo owners can fill daily trains so multi-user intermodal services are required, requiring specialist intermediaries to take the risk of developing services on behalf of clients.

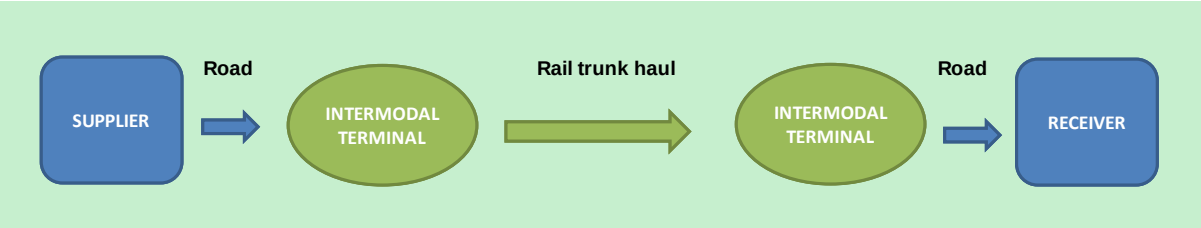
Economies of scale

The pursuit of economies of scale is one of the key economic drivers of the freight industry as it helps individual businesses to reduce their unit costs and secure a competitive advantage. Road hauliers and logistics companies use ICT to reduce units costs and want to use the largest possible vehicles (if they are "full") to make deliveries in city centres. Rail freight operators want to be able to operate longer trains on the rail network so they can transport more freight with a single locomotive and shipping lines are introducing larger vessels to reduce the cost of transporting a tonne of cargo. Larger distribution centres reduce the unit cost of storing goods and larger distribution sites generate the critical mass of traffic required to justify shared infrastructure such as a connection to the rail network. However, the pursuit of economies of scale by the freight industry can lead to issues at a local level: larger vehicles for deliveries can lead to more road congestion if there are not off-street loading and loading bays to receive them; larger distribution sites generate more traffic in particular locations and local residents may regard the scale of development as inappropriate.

Rail freight versus road freight

Figure 2.1 provides an example of a door-to-door intermodal rail freight transport chain where a unit load is collected by road from a supplier and taken a relatively short distance to an intermodal terminal, where it is loaded onto a railway wagon. The trunk haul is then by rail to a second intermodal terminal, where the unit is loaded onto a road trailer for local delivery to the receiver of the goods. A road freight transport chain, by comparison, would provide a service directly between the supplier and the receiver of the goods.

Figure 2.1: Example of an intermodal freight transport chain, requiring road collection and delivery at both ends of the chain



Source: MDS Transmodal

The road freight transport chain has relatively low fixed costs per unit carried (mainly the cost of the tractor and trailer combination and the cost of the driver) and high variable costs, mainly the cost of fuel. Rail freight on the other hand has higher fixed costs which can be categorised as follows:

- The capital cost of the locomotive and wagons;
- The cost of transferring the unit between modes of transport;
- The essentially fixed cost of road haulage to transport the unit between the rail terminals and the origins and/or destinations of the traffic.

However, rail freight has lower variable costs per unit kilometre moved than road freight because the fuel cost per unit kilometre is lower. This combination of higher fixed costs but lower variable costs per kilometre means there is a distance over which rail freight becomes competitive over road. While the cost of the locomotive, wagons and intermodal transfers at terminals cannot easily be avoided, it is possible to reduce the fixed costs (and therefore reduce the break-even distance for rail) by removing the fixed costs of road collection and delivery. This is possible by operating rail freight services between rail-connected sites, such as deep sea container ports and rail-connected distribution parks. It is for this reason, plus internal competition within the rail freight industry, that intermodal rail freight services have been particularly successful to and from deep sea container ports since about 2004. In addition, the economics of intermodal rail freight highlight the importance of the development of a network of rail-connected distribution parks in Great Britain to secure greater modal shift by locating the origins and destinations of most freight flows (distribution centres) on the same site as an intermodal rail freight terminal.

When road and rail freight economics are examined over a range of distances, the costs per unit and break-even distances for road freight and intermodal rail freight are as follows:

- When road collection or delivery is required at both ends of the intermodal transport chain, rail freight is competitive from about 375 km;
- When road collection or delivery is required at only one end the transport chain (e.g. between a deep sea container port and an intermodal terminal in the Midlands, with final delivery by road) rail freight is competitive from about 175 km;
- When road collection and delivery is required at neither end of the transport chain (e.g. between a deep sea container port and an SRFI at Daventry, where distribution centres are located on the same site as the intermodal terminal) rail freight is competitive at a distance of less than 100km.

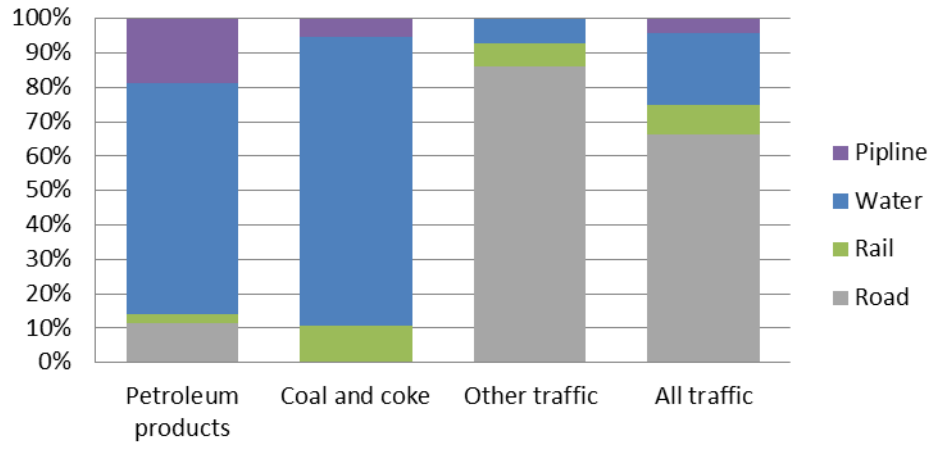
It is clear from the above that Strategic Rail Freight Interchanges or SRFIs (see Map 4.4 of this report for the location of existing SRFIs in GB) are essential to the development of sustainable distribution at a strategic level because they significantly reduce the distance over which freight movements by rail can be competitive against road freight. However, in order to justify the investment in rail freight infrastructure at SRFIs the development needs to be large enough to justify a minimum number of trains per day. The number of potential sites in any region that are sufficiently large, with high quality access to the strategic road and rail networks, are quite limited. Developers' proposals for SRFIs are often highly controversial for the local areas because they generate more HGV traffic on the local road network, require large amounts of often green belt land and create employment in a sector that local residents may feel is not appropriate for their area. The development of SRFIs usually involves the substitution of older distribution centres with larger, more modern (and environmentally sustainable) distribution centres, which may involve the displacement of employment from one location to another. In policy terms, SRFIs are essential for a national policy of sustainable distribution because they provide the conditions for a transfer of freight over medium to long distances from road to rail, but their size and characteristics can generate issues at a local level.

There is a trend towards the use by the road haulage industry of double-deck trailers for the transport of lightweight and voluminous goods and this is likely to lead to some loss of traffic from rail to road on some flows because the loading gauge on GB's rail network is not able to match the height advantage provided by these semi-trailers. The widespread introduction of longer trailers (now being piloted in a scheme that is being administered by the DfT) in the UK will also in itself improve the competitiveness of road freight against rail freight, but in this case the rail freight industry can respond by introducing longer intermodal units for use on its existing standard rail wagons.

2.4 Categories & value of goods transported

Figure 2.2: Freight moved by broad commodity type & mode, 2009

Source: DfT Transport Statistics Great Britain, analysis by MDS Transmodal



As explained above, the mode of transport used is essentially determined by its door-to-door cost and bulk commodities that are homogenous and high volume but relatively low value per tonne are often transported using dedicated infrastructure. For this reason, some 19% of petroleum products are transported by pipeline and 67% is by water - mainly the transport of petroleum products by sea from coastal refineries to coastal tank storage facilities (Figure 2.2 above). Similarly, both steam coal and coking coal are transported by sustainable modes of transport rather than by road.

It is "other traffic" (essentially non-energy goods) in Figure 2.2 above, accounting for 73% of the 238 billion tonne kilometres of freight transport in 2009, that is contested between road and more sustainable modes of transport. Within this very broad category of goods, road freight has an 86.3% share, rail has 6.4% and waterborne freight has 7.3%.

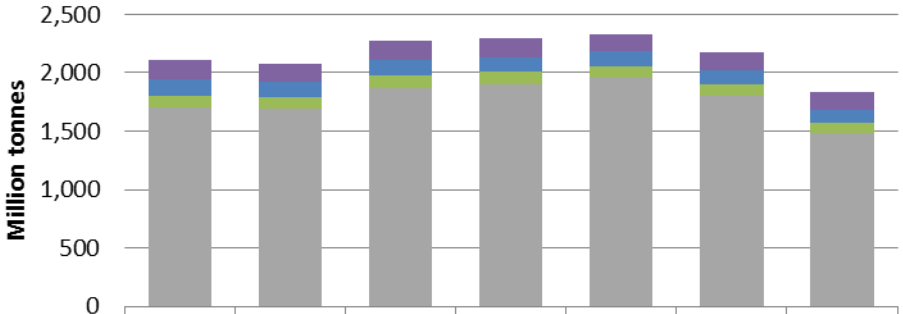
2.5 Historic trends by mode

Domestic freight transport

Figure 2.3 shows the trend in domestic freight transport lifted by mode between 1995 and 2009 and demonstrates how freight volumes have fluctuated with the economic cycle, with a 20% decline from 2.29 billion to 1.83 billion tonnes between 2007 and 2009.

Figure 2.3: GB Freight Trends by Mode, 1995-2009 (tonnes lifted)

Source: DfT Transport Statistics Great Britain

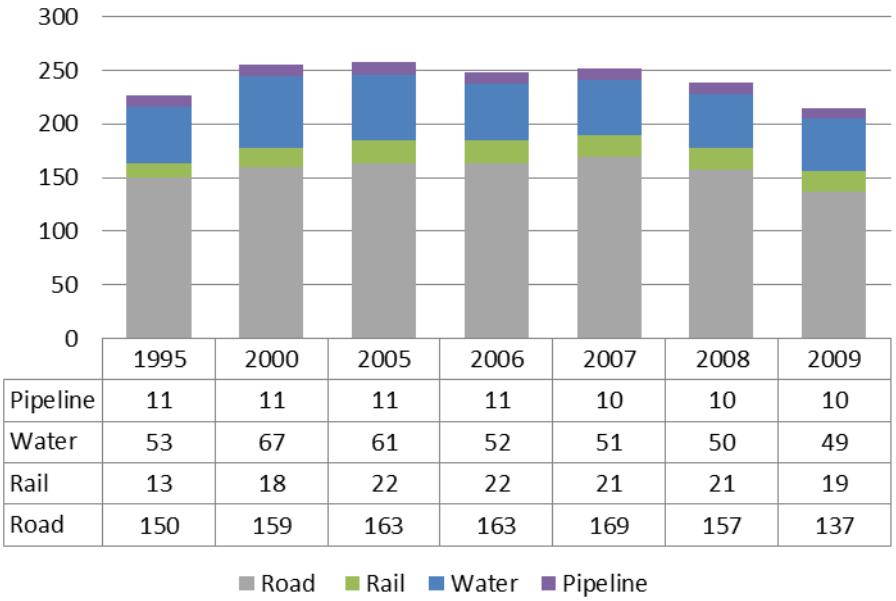


	1995	2000	2005	2006	2007	2008	2009
Pipeline	168	151	168	159	146	147	147
Water	143	137	133	126	126	123	110
Rail	101	96	105	108	102	103	87
Road	1,701	1,693	1,868	1,901	1,953	1,800	1,488

Figure 2.4 shows the trend in freight transport by mode between 1995 and 2009 and demonstrates how total freight transport in terms of tonne kilometres also fluctuates with the economic cycle, with a 14% decline between 2007 and 2009. Recovery since 2009 has been modest. There is now less freight in terms of tonnes lifted and less freight transport in terms of tonne kilometres than in 1995.

Figure 2.4: GB Freight Trends by mode, 1995-2009 (billion tkm)

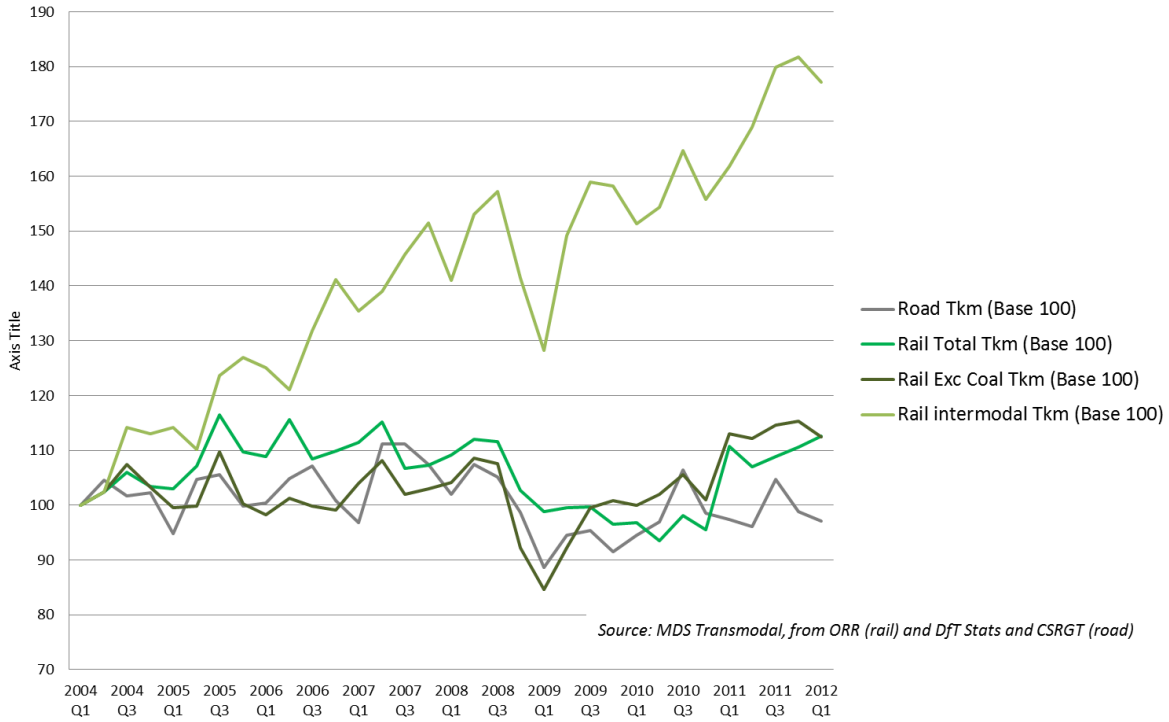
Source: DfT Transport Statistics Great Britain



	1995	2000	2005	2006	2007	2008	2009
Pipeline	11	11	11	11	10	10	10
Water	53	67	61	52	51	50	49
Rail	13	18	22	22	21	21	19
Road	150	159	163	163	169	157	137

Figure 2.5 shows the indexed trends for road freight transport and rail freight transport on a quarterly basis from Q1 2004 to Q1 2012. It demonstrates, in particular, the extent to which liberalisation of the rail freight market and the propensity to increasingly import goods in containers from China and the rest of the Far East has facilitated a significant increase in the volumes of intermodal rail freight at a time when road freight transport has been declining.

Figure 2.5: Indexed freight tonne km in Great Britain by road and rail by quarter ,2004-12

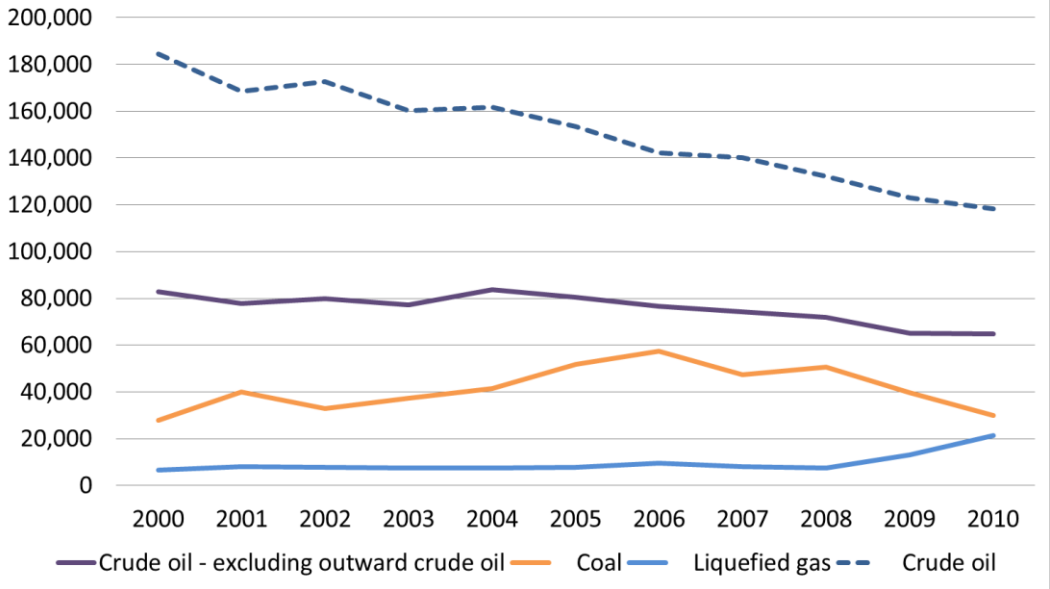


International freight transport

International freight is handled either through ports, airports or the Channel Tunnel. The latter accommodates two types of services:

- The Eurotunnel Freight Shuttle, which is effectively a "ferry" service for HGVs between Folkestone and Calais;
- Through Channel Tunnel intermodal rail freight services, where wagons loaded in (say) Trafford Park are transported through the Channel to (say) Northern Italy.

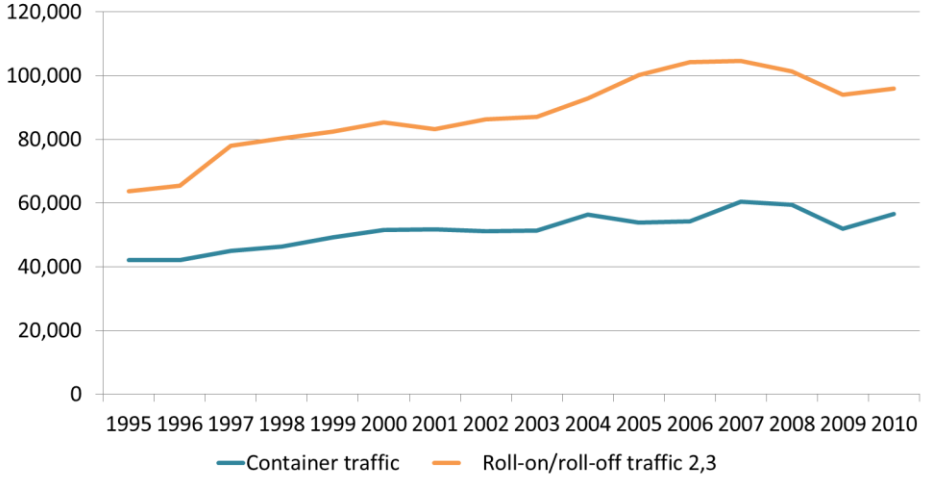
Figure 2.6: UK energy bulk port traffic, 2000-2010 ('000 tonnes)
Source: DfT Maritime Statistics



The majority of international freight traffic passing through sea ports relates to **energy bulks**. Figure 2.6 shows how reducing volumes of North Sea oil are being landed in the UK either for processing at refineries or for export from storage facilities in Scotland and on the Tees. In addition, since 2006 steam coal imports have been declining, partly due to lower power consumption but also due to the closure of some coal-fired power stations under EU emissions legislation. Steam coal is being replaced to some extent by increased imports of liquefied natural gas (LNG) via Milford Haven in West Wales and a terminal on the Isle of Grain in the Thames Estuary.

Other non-unitised traffics have generally grown quite slowly. Most bulk traffic, with the exception of steam coal, has little impact on strategic inland networks because it is either transported inland by pipeline or is only transported relatively short distances by either road or rail.

Figure 2.7: UK unitised port traffics, 1995-2010 (thousand tonnes)
Source: DfT Maritime Statistics



However, the main growth sectors for international freight through ports has been **unitised traffic**, both ferry traffic from the Continental mainland and containers from non-European locations via deep sea container ports. This growth in unitised traffic has been due to increasingly trade liberalisation, as the EU economies have become more integrated and emerging economies such as China joined the World Trade Organisation. This has led to displacement of domestic production of all kinds of goods by imports through GB ports, which has had the following impacts on freight transport:

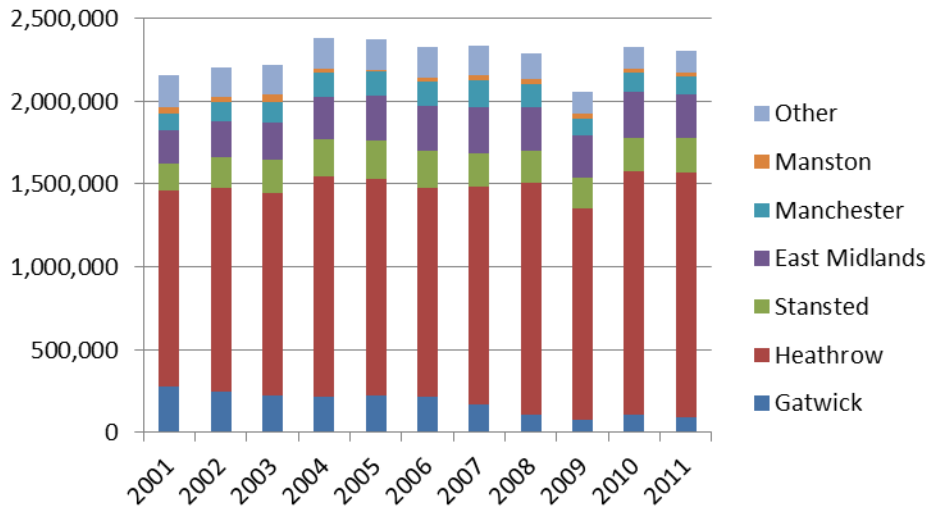
- Developments of new deep sea container port capacity at Felixstowe South (already constructed), London Gateway (under construction), Liverpool 2 (its development clarified in the context of Peel Ports' refinancing in December 2012) and Southampton, with planning consents also secured at Bathside Bay, Bristol and the Tees.
- More intermodal rail freight services being operated between the deep sea ports of Felixstowe and Southampton, to inland terminals in the East and West Midlands, the North West and the North East of England.
- Until 2008, growth in traffic through Dover and on the Eurotunnel freight shuttle services, and also the development of longer distance ferry services between the Forth, Tees and Humber to the Near Continent and Scandinavia.
- A gradual shift of distribution centres towards ports, with the development of some "port-centric distribution" actually on the port estate on the Tees. There is also a major port-centric distribution site under development at London Gateway, adjacent to the new deep sea container port and plans for a similar development at the Port of Liverpool.

A map showing the location of the relevant ports is provided in section 4.6 below.

Air freight is a highly specialised sector of the freight industry, which handles relatively low volumes of high value freight; in 2011 total air freight volume passing through UK airports was less than 3 million tonnes, while the total volumes of traffic handled through UK sea ports was 519 million tonnes in the same year.

Figure 2.8: Air freight traffic by airport handling >100k tonnes, 2001-11

Source: Civil Aviation Authority



Most air freight is carried in specialised containers in the bellies of international passenger jets, operating on inter-continental routes. For this reason, Heathrow is by far the most important airport for freight in terms of tonnage handled. East Midlands, Stansted and Manston Airports have specialised more in air freight handling dedicated air freighters transporting larger consignments of freight. Figure 2.9 shows how the air freight sector was affected by the economic downturn, with a significant decline in traffic in 2009.

Airports that handle large volumes of freight have specialised distribution facilities located close to the airports where air freight logistics operators receive and despatch air freight and provide storage. As the volumes of freight are quite low, only road freight transport is used for collection and delivery.

2.6 Wider economic role of freight transport

The logistics or distribution industry is a major source of prosperity and employment for the UK, accounting overall for about 9% of GDP and 7% of the workforce. There is extensive employment in operating and managing freight transport and, in particular, at distribution centres where goods are stored, sorted, packaged and loaded and unloaded. This is relatively secure employment because it is related to providing a service to retail outlets located in urban areas within the region where the distribution centre is based, rather than being dependent on remote markets.

Table 2.1 shows the number of people employed in the employment categories that are most likely to be related to the freight industry in 2001 and 2011. Total employment may have declined marginally over the 10 year period, but the table demonstrates the relative importance of storage and warehousing which accounts for about 50% of the total.

Table 2.1: Estimated employees in the freight industry, 2001 & 2011
Thousand employees

Category of employment	2001	2011	% change
Managers & directors in storage & warehousing	69	87	+26%
Transport & distribution clerks & assistants	68	62	-9%
Large goods vehicle drivers	306	299	-2%
Van drivers	198	180	-9%
Forklift truck drivers	92	91	-1%
Elementary storage occupations	422	406	-4%
Total	1,155	1,125	-3%

Source: Labour Force Survey, 2001 & 2011; analysis by MDS Transmodal

However, the indirect economic benefits from cost-effective and efficient freight transport are also important for the functioning of the national economy as freight transport delivers raw materials and semi-finished goods to factories and distributes finished products to distribution centres or to ports for export. It also delivers imports from ports to retailer's distribution centres and makes final deliveries to retailers. The freight industry is therefore essential to the functioning of the economy at national and local level and, as the freight industry is competitive, any cost reductions that the industry achieves will ultimately be passed on to its customers and therefore the wider economy.

2.7 Market sectors and transport chains for City Regions

Almost all types of freight pass through or around City Regions, but the following broad market sectors are particularly relevant to deliveries and collections in urban areas:

- Retail (including e-commerce);
- Courier and post;
- Hotel, Restaurant and Catering (HoReCa);
- Construction;
- Waste.

The **retail sector** in the UK is mainly concentrated in large retail chains which are able to secure the critical mass of traffic to secure reasonably "full" loads for deliveries into urban areas, with backloads of packaging and returned goods. The supply chains are usually well-organised to minimise costs with deliveries made by HGVs from regional distribution centres located within reasonable proximity to the relevant City Regions. While diversity in the retail sector provided by small and medium-sized independent retail outlets offers greater choice for consumers and can be seen as providing wider benefits to society, economies of scale in the provision of freight transport services in all sectors tends to lead to greater logistics efficiency, lower costs and lower impacts.

Parcel, courier and express transport services are one of the fastest growing transport sectors in cities. This sector uses large vans or small to medium sized trucks and is based on consolidated delivery and collection tours departing from distribution centres located in close proximity to urban areas, which are part of a national or international network. The express courier delivery companies, such as Fedex and TNT, seek to maximise the use of their vehicles when making delivery and collection rounds of high value documents and packages. The more traditional parcel delivery sector is increasingly used by the e-commerce sector to make deliveries in urban areas. One of the key issues for e-commerce is missed deliveries when the parcel delivery company is unable to make a delivery because no one is available to receive the parcel. According to a 2012 report by the Boston Consulting Group, e-commerce in the UK was worth about £2,000 per head of population in 2010 and represented some 13.5% of all purchases; the consultancy believed this will increase to 23% of purchases by 2016.

The **hotel, restaurant and catering (HoReCa)** sector is generally described as an homogenous market sector, but its commercial activities present very different logistics and organisational constraints according to the specific service offered to the final consumers. In general terms, HoReCa distribution channels are characterised by unpredictability, which can mean that receivers maintain significant stocks but also means that just-in-time (JIT) supplies are often required in small quantities, leading to frequent (and inefficient) deliveries. Nevertheless, the larger, more "organized" HoReCa businesses, such as the large hotel and restaurant chains, are more likely to

achieve economies of scale through centralised procurement and more consolidated and less frequent deliveries.

In the context of urban freight transport, **construction** activity involves the delivery of a wide range of materials to construction sites, which can be located in already congested areas and sensitive locations such as heritage city centres; it also involves the removal of waste materials for disposal. Industry organisations have accepted that historically construction logistics, including the transport of materials to and from the site, are not always optimised, mainly due to the fragmented nature of the industry and the project-based nature of construction activity. This can lead to a relatively high proportion of lorries running either empty or with only part-loads, lorries having to wait to gain access to construction sites in urban areas or to be unloaded and significant amounts of waste material has to be removed by lorries from construction sites.

Local authorities have the legal responsibility for collecting **household waste,** even though the provision of the services is contracted to private companies. These generally large private sector companies are able to secure economies of scale through optimised fleet management and routing, by minimising environmental impacts (e.g. noise and pollutant emissions) and by improving access to waste disposal facilities.

In summary, the freight industry is generally most efficient on a cost per tonne mile basis and its environmental impact per unit carried when economies of scale are available to larger operators. Higher load factors, efficient routeing and the minimum number of deliveries per vehicle all contribute. For this reason, as a general rule, large-scale retail distribution and express/courier services tend to be more efficient than fragmented distribution services to small retailers and in the HoReCa sector.

2.8 Summary

The freight industry is owned and operated by the private sector and the total amount of freight transport activity tends to fluctuate with the economic cycle. The industry is competitive, so that cost reductions or cost increases due to changes in market conditions and in the regulatory environment will be passed onto the wider economy.

Air freight, pipeline and waterborne freight are most relevant for international freight that passes through sea ports or airports or in specialized domestic freight markets. Rail freight, on the other hand, has increased its modal share at the expense of road freight since 2004 due to greater competition within the rail freight industry, greater access to open access terminals and a change in the structure of the GB economy, with greater emphasis on imported consumer goods through deep sea container ports.

The key to achieving greater sustainable distribution for strategic medium- to long distance flows to, from and through City Regions is likely to be securing more growth in intermodal rail freight services. The economics of rail freight are such that the main requirements in order to achieve greater modal shift are the availability of a network of rail-connected distribution parks (or Strategic Rail Freight Interchanges, SRFIs) in the City Regions and adequate paths for more freight services to share the capacity of the rail network. While these SRFIs are required to secure more sustainable distribution on these strategic freight flows, they have local impacts because, in particular, they generate additional road freight traffic on local roads and need to occupy large sites of 100 hectares or more to justify rail freight services.

3 EUROPEAN & NATIONAL FREIGHT POLICY

3.1 Introduction

This chapter provides a summary of European Commission policy on urban freight transport, an area in which the EU may seek a greater role in the future. It then provides some analysis of Government transport and planning policy that is particularly relevant to freight transport.

3.2 European policy on freight transport

This European Commission Transport White Paper (published March 2011) identified a number of significant issues generated by transport, including:

- GHG emissions which lead to climate change;
- Road congestion, with leads to accompanying economic costs;
- Poor air quality, which affects the health of European citizens; and
- High dependence on fossil fuels which threatens Europe's energy security.

The vision for urban freight transport that was set out in the White Paper describes a situation in which freight deliveries and collections in Europe's urban areas are, in the future, efficient both economically and environmentally, to reduce emissions and use of fossil fuels, while also minimising generalised costs for freight operators and their customers. The vision includes:

- Minimizing the number of freight movements and the distances required to carry them out;
- Using low emission urban trucks to carry out deliveries;
- Making maximum use of Intelligent Transport Systems (ITS) to increase the efficiency of deliveries;
- Reducing noise pollution from freight movements, so that road infrastructure could be used more efficiently by making deliveries at night, rather than in the morning and afternoon peak periods.

The Commission introduced the policy goal for urban freight transport of "essentially CO_2-free city logistics in major urban centres by 2030", which is a more ambitious target in terms of CO_2 reduction than that for passenger transport in the White Paper. In the UK, this will require a radical switch from diesel-powered vehicles to LEVs for collection and deliveries in city centres; at present some electric vehicles have been deployed, but there has been no significant shift towards LEVs due to the investment costs involved.

The other key goal from the White Paper that is particularly relevant to City Regions is that, "30% of road freight over 300 km should shift to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050, facilitated by efficient and green freight corridors." These are

ambitious policy targets for both the UK and the rest of the EU, which will only be achieved by a significant expansion of rail and water-connected distribution parks and an expansion of capacity on the rail network. However, as the mean length of an intermodal rail freight journey in Britain is currently only 330 kms it is reasonable to assume that this objective is economically feasible for rail freight to achieve, once other conditions (including land use strategy) are in place.

3.3 National freight transport & planning policy

The Coalition: Our Programme for Government

Following the formation of the Coalition Government in May 2010, much of the existing policy initiatives directly relevant to freight policy was discarded (e.g. 'Freight Best Practice', DaSTS.) as the new administration chose to adopt a new approach.

The Coalition Programme for Government contained relatively little of detail on transport, but it did support the development of some rail infrastructure, including High Speed 2 and Crossrail. These two major rail infrastructure schemes are important because they have an impact on the amount of rail capacity available on the future rail network. The Government's commitment to sustainable transport also includes a reference to developing infrastructure for low emission vehicles:

We will mandate a national recharging network for electric and plug-in hybrid vehicles.

The only policy that specifically mentions freight is the commitment to ensure that foreign-registered HGVs are required to contribute towards the costs of providing and maintaining the road network:

We will work towards the introduction of a new system of HGV road user charging to ensure a fairer arrangement for UK hauliers.

The Logistics Growth Review – Connecting People with Goods

The Logistics Growth Review (November 2011), which was the result of a consultation exercise with the logistics industry and its customers, is the key policy document in relation to freight transport and logistics that has been produced so far by the Coalition Government.

It defined various barriers to the growth of a more competitive and sustainable logistics sector in the UK and then set out measures that the Government is taking to reduce these barriers. It essentially sets out the case for Government as being a facilitator of greater efficiency and sustainability in the logistics sector, without developing major policy initiatives or increasing the volume of regulation.

The Review pointed out that the logistics industry is a major industry in its own right (9% of GVA and 7% of employment) and is essential to the efficient functioning of the national economy. It is also a highly competitive industry, which means that any efficiency gains facilitated by Government will lead to reduced costs for the UK economy. The review then set out six barriers to growth in the sector, along with the ways in which Government is seeking to facilitate the reduction of these same barriers (Table 3.1 below).

Table 3.1: Barriers to growth and Government initiatives from the Logistics Growth Review

Barrier to growth	Government initiatives
Giving industry greater confidence to invest in the short term by removing planning barriers to sustainable logistics development.	The Government has produced guidance on SRFIs in order to provide policy guidance to planners and to the Major Infrastructure Planning Unit to encourage the development of additional rail freight distribution parks by private sector developers close to major urban areas. The Government has ring-fenced £1 billion of funding for the most growth-critical sections of the strategic road network, including £220 million for a Pinch Point Fund which will improve junctions, roundabouts and road layouts to reduce congestion at a local level. It is also considering how best to attract innovative private sector funding in the road network, with proposals for the A14 near Cambridge being the first example. The Government has also provided resources from the Regional Growth Fund for various freight transport-related projects e.g. to part fund some port and rail terminal developments.
Improving the longer term capacity, performance and resilience of our congested road and rail networks, and in doing so, also improving connectivity to ports.	Strategic Rail Freight Network: £55m will be available to "remove bottlenecks and improve capability and longer term connectivity to the UK's major ports". The Government is working towards the "first tranche of a set of strategic freight paths that will provide the rail freight industry with assured capacity for new services", particularly to and from the main deep sea container ports. Network Rail is working towards a 24/7 freight railway with specific routes to be delivered between 2014 and 2019. The Pinch Point Fund will also deliver technology improvements on a number of key routes to assist drivers – particularly those in the road haulage sector - in managing their journeys. The Government will discuss with industry and information providers about additional traffic information that would help the logistics industry to enable effective planning and scheduling of freight operations. Various measures to cope more effectively with severe weather and serious incidents on the strategic road network and reduce delays for freight transport..
Promoting the image of the sector at local level.	The Government will consider the requirement for further guidance on quiet night time deliveries. The Government will ask the Noise Abatement Society and the Freight Transport Association to build on the Quiet Deliveries Demonstration Scheme by expanding the existing Scheme's best practice guidance into a toolkit that includes standards for quiet night time deliveries and then identify if further government guidance is needed to promote uptake.
To reduce unnecessary regulation	The Government is seeking to ensure that compliance with the Habitats and Wild Birds Directives does not lead to unnecessary costs and delays to development. The Government will continue to resist the draft EU proposal to impose a 4m height limit on heavy goods vehicles (existing trailer heights are up to 4.95m in the UK) and has started a trial of up to 1800 longer semi-trailers. The Government will introduce a scheme of HGV road user charging (see below).
Attracting and retaining high calibre recruits.	The Government will provide £4m of funding to Skills for Logistics to establish new and innovative approaches to training.
Market barriers to the take up of low emission HGV technology.	The Government is making available £8m capital funding to pump prime procurement of low emission HGV technologies (via a demonstration project) and their supporting infrastructure.

Source: MDS Transmodal, based on analysis of the Logistics Growth Review

The Government initiatives aim therefore to create an environment within which the UK logistics industry, which is regarded as being a key growth industry for the UK, can become more effective and reduce its costs while also becoming more sustainable. This policy generally reflects the views of the logistics industry as well, which wants to see less regulation, more expenditure on road and rail infrastructure to remove pinch points and improve capacity and resilience on the networks, a "level playing field" for UK hauliers in competition with foreign-registered vehicles and direct intervention by Government only where there is perceived to be a degree of market failure. The latter may be justified to encourage take-up of low emission vehicle technology in the road freight industry and to facilitate the development of skills and training in the logistics industry.

Strategic Rail Freight Interchange Policy Guidance

This guidance, published in November 2011 in parallel with the Logistics Growth Review, sets out Government policy for "nationally significant" Strategic Rail Freight Interchange (SRFI) infrastructure and was produced in an attempt to assist developers to secure planning permission for large (more than 60 hectares) rail freight distribution parks located close to major urban areas that meet certain criteria - even if they are located in the green belt.

It was published in the interim pending the publication of the DfT's consultation document on the National Networks National Policy Statement (NPS) and was a response to a perceived need for planning guidance on SRFIs at a time when major SRFI schemes in the South East were under consideration by Government and the regional policies to promote such initiatives elsewhere were being abandoned as the Government changed its planning policies.

The guidance sets out the main objectives of Government policy on SRFIs as being to:
a) Reduce road congestion;
(b) Reduce carbon emissions;
c) Support the long-term development of efficient rail freight distribution logistics to serve major conurbations, both within the UK and to facilitate trade links between UK regions and the European Union.
(d) Support growth and create employment.

Government aims to meet these objectives by encouraging the development of a network of SRFIs. However, the document makes it clear that "it is for the industry to identify potential SRFI sites to meet commercial logistics requirements, and to take forward development proposals".

The guidance sets out a number of criteria that need to be met for SRFIs to be regarded as being "nationally significant" infrastructure and therefore subject to the new planning rules introduce in the Localism Act 2011. These SRFIs should:

- Be at least 60 hectares in size and able to handle at least 4 trains a day;
- Have a number of rail-connected or rail connectable warehouses;
- Have an operational rail network connection and areas for intermodal handling and container storage.
- Have the capability to handle 775 metre trains;
- Be located alongside the main trunk rail routes (especially the Strategic Freight Network) and close to the motorway and trunk road network.
- Be located close to a rail route with at least W8 loading gauge.
- Be appropriately located relative to the markets they will serve, which will largely focus on major urban centres, or groups of centres, with links to key supply chain routes.

The document then provides a policy steer on where new SRFI developments are most needed:

The majority of existing operational SRFI and other intermodal RFI are situated predominantly in the Midlands and the North. Conversely, in London and the South East, away from the deep-sea ports, most intermodal RFI and rail-connected warehousing are on a small scale and/or poorly located in relation to the main urban areas. To date, only one SRFI has been granted planning consent in the whole of the South East region.

While the immediate need for additional capacity is in the South East, the need for further rail linked distribution parks remains a key issue for City Regions, as a national network is required to support the future growth of intermodal rail freight services to and from all GB regions.

High Level Output Specification and the Strategic (rail) Freight Network

In July 2012, the Department for Transport published its High Level Output Specification (HLOS) for the period 2014–19. This clarified that the current Strategic (rail) Freight Network programme (at around £40m per annum for infrastructure upgrades) will continue, generally switching from loading gauge upgrades (to accommodate modern containers on efficient wagons) to capacity expansion. These capacity upgrades for freight will mainly consist of providing additional passing loops on mainlines to avoid conflicts with faster passenger trains, although there may also be scope for funding for the re-opening of freight-only lines; at present it will be the "freight industry" that decides where the priorities for funding should lie.

In addition, important long distance mixed passenger and freight upgrades of capacity on the East Coast Main Line and the 'electric spine' (Southampton – Oxford – Bedford – Sheffield) are to be funded which will address key pinch points for freight such as at Peterborough, Leicester and on the Midland Main Line.

HLOS appears to offer the prospect of the Government (via Network Rail) delivering a significant increase in long distance rail freight capacity that will allow its growth to be maintained.

National Policy Statement for Ports

This Ports NPS, published in January 2012, provides the framework for decisions on proposals for new port development and is required essentially to meet the requirements of the EU Wild Birds and Habitats Directives (which protect sensitive marine habitats from unnecessary development) by demonstrating a national need for port development projects, even if they damage these habitats. It also defines port development projects that are considered to be nationally significant and therefore will be considered by the Infrastructure Planning Unit of the Planning Inspectorate under the Localism Act 2011, leading to a recommendation to the Secretary of State for Transport.

The guidance explains that port development proposals in England and Wales will be considered to be "nationally significant infrastructure projects" where the estimated incremental capacity exceeds:

- 0.5 million TEU for a container terminal;
- 250,000 movements for roll-on roll off (ro-ro);
- 5 million tonnes for other (bulk and general) traffic; or
- A weighted sum equivalent to these figures taken together.

The Government sets out its policy objectives for port development as follows:

- An engine for economic growth;
- Supporting sustainable transport by offering more efficient transport links with lower external costs; and
- Supporting sustainable development by providing additional capacity for the development of renewable energy.

The document sets out forecasts of demand for port capacity up to 2030 (based on forecasts produced by MDST in 2006-07) while accepting that the economic recession will delay the requirement for additional capacity in some markets. It also points out that, since the forecasts were produced, the renewables sector has become more prominent and there is likely to be an additional requirement for port development to accommodate the manufacture of wind turbines and the operation and maintenance of offshore wind farms.

As with SRFIs, port developments will be brought forward by the private sector and the document argues that it is not for Government to decide where the facilities should be developed:

Government does not wish to dictate where port development should occur. Port development must be responsive to changing commercial demands, and the Government considers that the market is

the best mechanism for getting this right, with developers bringing forward applications for port developments where they consider them to be commercially viable.

The document argues that,

…despite the recent recession, the Government believes that there is a compelling need for substantial additional port capacity over the next 20–30 years, to be met by a combination of development already consented and development for which applications have yet to be received. Excluding the possibility of providing additional capacity for the movement of goods and commodities through new port development would be to accept limits on economic growth and on the price, choice and availability of goods imported into the UK and available to consumers. It would also limit the local and regional economic benefits that new developments might bring. Such an outcome would be strongly against the public interest.

The NPS concludes that,

Given the level and urgency of need for infrastructure of the types covered as set out above, the IPC should start with a presumption in favour of granting consent to applications for ports development.

The Ports NPS sets out the case for further port development as being of potentially of overriding national importance and therefore meeting the requirements of EU law in relation to protecting wildlife habitats, while leaving the development of the case for individual port facilities to the developer for consideration through the planning process.

Charging Heavy Goods Vehicles

As set out in the Coalition Programme for Government, the Government has decided to introduce a charge for all HGVs of 12 tonnes and over (whether UK and foreign-registered) for the use of the UK road network. This measure is mainly to provide a "level playing field" for the UK road haulage industry by ensuring that foreign-registered vehicles are required to make a contribution towards the maintenance and development of the UK road network while being essentially cost-neutral for UK-based hauliers.

The Government intends to implement a time-based user charge, of up to £1,000 a year or £10 a day for the heaviest vehicles. Charges would vary according to vehicle type, weight and the number of axles, so that the charging scale would be linked to the amount of damage an individual HGV causes to the road network.

While foreign owners can choose to pay the charge on a daily, weekly, monthly or annual basis, UK owners are likely to have to pay the charge on an annual or six monthly basis. As the charge is

designed to be more or less cost neutral for UK owners, the most likely balancing measure in practice is expected to be a reduction in VED towards minimum EU levels and should result in no more than £50 per year extra cost for the vast majority of UK-registered HGVs.

The introduction of a charge of this kind is unlikely to have a significant impact on the volume of road freight traffic overall, but it will only marginally affect the economics of the operations of foreign-based hauliers. There may be a minor switch of roro traffic away from the Short Straits routes (Dover routes plus the Eurotunnel Freight Shuttle) to longer distance routes as some shippers on the continental mainland that export to the UK choose to reduce costs by using unaccompanied roro services to the Thames, Haven and Humber to avoid the HGV User Charge. This could create some jobs in the sub-regions around the ports as the foreign shippers/freight forwarders will need UK-based partners to transport the trailers between the UK ports and the inland origins and destinations.

For the first time, the Government is introducing a user pays system for use of the UK road network, based on the type of vehicle and the amount of time the vehicle uses the network. However, it is not Government policy to introduce full-scale road pricing for freight, taking into account parameters such as the type of road and the time of day.

The introduction of the Sulphur Emissions Control Zone (SECA)

A much more significant impact on short sea shipping services is expected as a result of the introduction of the Sulphur Emissions Control Area (SECA) that limits ship fuel emissions to only 0.1% sulphur (currently 1.5%) in the Baltic, North Sea and Channel from 1st January 2015.

There is a strong cost-benefit case for its introduction due to the positive impacts on human health, but SECA is expected to raise ship operating costs considerably for longer crossings of the North Sea and lead to a significant transfer of unitised freight traffic from longer crossings (e.g. Benelux to the Humber or Tees) to short crossings (e.g. Calais to Dover). As much as 15% of the present levels of intra European unitised traffic could switch away from North Eastern English ports. The shipping industry as a whole has been slow to develop suitable strategies to respond to the introduction of SECA and European Governments and the European Commission have largely assumed that the shipping industry will be able to find suitable solutions.

National Planning Framework

The Coalition Government has sought to reduce the amount of guidance that is provided to local government in relation to land use and transport planning. The National Planning Framework (March 2012) provides the only guidance at a national level and has to be taken into account when local authorities prepare their development plans and in considering development applications. It is

only about 50 pages in total, with three pages dedicated to transport and covers all development plans with the exception of Nationally Significant Infrastructure Projects.

Sustainable development remains the fundamental objective of planning policy and there is a presumption in favour of economic development in an attempt to foster a faster planning process for developments that will lead to economic and social benefits for the local area.

The specific planning guidance on transport can be applied to both passenger and freight transport, although much of the terminology applied appears to relate mainly to passenger transport issues.
The guidance encourages local authorities to adopt patterns of development that promote sustainability, including greater use of sustainable modes of transport:

Encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion. In preparing Local Plans, local planning authorities should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport.

The Framework specifically requires local planning authorities to work together in relation to more strategic developments, including major freight facilities:

Local authorities should work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development, including large scale facilities such as rail freight interchanges, roadside facilities for motorists or transport investment necessary to support strategies for the growth of ports, airports or other major generators of travel demand in their areas.

The Guidance seeks to reduce the potential for local authorities to refuse planning consent except when there are likely to be “severe” cumulative impacts. Where transport impacts are likely to be “significant” the guidance states that the development should be appropriately located and make provision for freight:

Plans and decisions should ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised.

The document requires that,

Plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. Therefore, developments should be located and designed where practical to [inter alia] *accommodate the efficient delivery of goods and supplies…*

The document also includes provision for safeguarding:

Local planning authorities should identify and protect, where there is robust evidence, sites and routes which could be critical in developing infrastructure to widen transport choice.

In summary, this planning policy document is designed to steer planning authorities towards facilitating the development of sustainable transport, including sustainable distribution, but without taking a prescriptive approach.

3.4 Summary

At a European level, the European Commission has developed a policy vision of low carbon logistics in cities and for modal shift to rail and waterborne transport for significant volumes of medium and long distance flows by 2030. Given the principle of subsidiarity that governs the competence of the EU, this vision can only be achieved through partnership working between the European Commission, national governments and local authorities, including City Regions. The Commission is likely to continue to develop proposals for road pricing (even in urban areas) as it would encourage industry to adopt sustainable distribution strategies by internalising external costs. It is also likely to continue to provide sources of match-funding via the CIVITAS Programme for local authorities that develop innovative sustainable distribution projects with the active participation of the freight industry. In the area of technological standardisation, the Commission is likely to focus on seeking to encourage the introduction of LEVs for "last mile" deliveries, the take-up of ITS for freight and the development of low noise equipment for night-time deliveries.

While the Coalition Government develops its own national policies for freight transport, many of its policies are generally in line with those that have been developed at a European level. There is a strong emphasis on the development of sustainable distribution, for example, and it is developing a user pays system for use of the UK road network. It has started a trial of the use of longer semi-trailers to establish whether their wider adoption could lead to both economic and environmental benefits for both operators and for society as a whole. The Government has generally chosen to take a "hands-off" approach towards freight transport policy, restricting itself to seeking to influence the decision-making of the industry to secure greater economic and environmental efficiency, while also making some enhancements to the GB road and rail freight networks. In the case of the port and maritime sectors and the development of SRFIs, the Government has left investment decisions almost entirely to the private sector.

The Government's freight policy is, in effect, set out in the Logistics Growth Review. This sees the logistics industry as being the key player in developing sustainable distribution, with enhancements to road and rail capacity being provided by government and limited interventions in the market by Government only where there are areas of perceived market failure, such as the limited take-up of LEVs and night-time deliveries.

The Government has also intervened in planning policy in relation to freight in an attempt to encourage the development of a national network of SRFIs (to secure greater use of sustainable distribution services) and to ensure that it has defined an immediate national need for future port developments (to meet the requirements of the EU Habitats Directives). Planning guidance at a local level has been reduced to a minimum and is very limited specifically for freight. However, it seeks to encourage development that secure economic benefits and sustainable distribution. It also encourages planning authorities to co-operate over planning for strategic freight facilities and includes provision for the safeguarding of sustainable distribution sites.

Overall, however, little guidance has been provided to local authorities on appropriate measures that they can adopt at a local level to secure more sustainable distribution. This may be because it is difficult to establish a "one size fits all" approach; while the freight industry operates on at least a national scale, policies towards freight at a local level need to take into account local planning issues, local traffic conditions and local social and economic needs. Potential generic policy measures at a local level, as part of a "policy toolkit" for the City Regions, have been considered in more detail in Chapter 7 of this report.

4 THE STRATEGIC FREIGHT NETWORK

4.1 Introduction

This chapter describes the strategic multimodal "freight network" in Great Britain and defines the major freight projects that are currently planned on this network.

Most of the strategic network that is used by freight transport is shared with passenger traffic. With the exception of the pipeline network and some ports that have no passenger ferry or cruise traffic, all other strategic infrastructure is shared between freight and passengers. This means that a distinct "freight network" cannot easily be defined, except in terms of which links and nodes handle freight traffic.

The strategic network for freight that is most important to City Regions can be defined as follows:

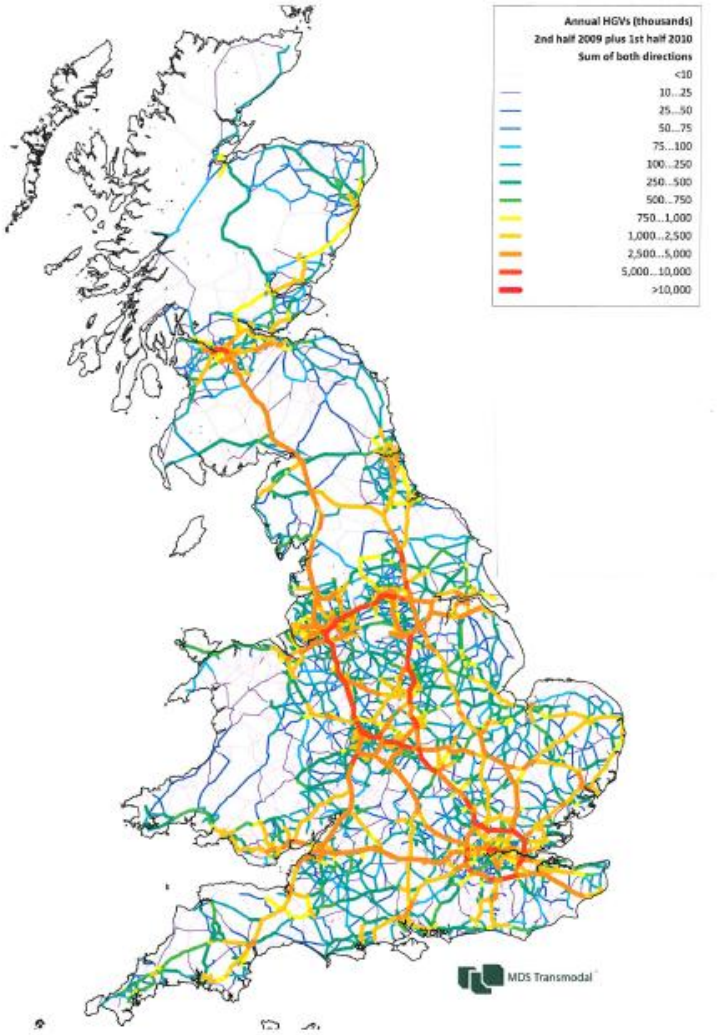
- Motorways and other trunk roads on the strategic highway network;
- Distribution centres that store freight;
- The rail network, including intermodal rail freight terminals;
- SRFIs that combine both intermodal rail freight terminals and distribution centres on a single site;
- The waterborne freight network that includes ports for handling imports and exports and inland waterways.

The following sections describe the existing networks and the pinch points that have a particular impact on freight movements for each modal network.

4.2 The strategic road network

The existing network

Map 4.1 shows the distribution of all HGV traffic on the GB road network, colour-coded to show the intensity of freight traffic in terms of annual HGV movements on each link. It shows how the greatest concentrations of freight traffic by link are on some of GB's busiest motorways i.e. the M6, M1, M62 and the north east sections of the M25. As Map 4.1 demonstrates, HGV movements are concentrated on the strategic road network (motorways and trunk roads), which handles 60% of all HGV traffic but only 33% of all road traffic.



Map 4.1: The distribution of HGV traffic on the GB road network

Major pinchpoints on the network

During 2009-10, MDS Transmodal carried out a n*etwork analysis of freight traffic* for the DfT[1] and as part of the study, an output table comparing total vehicle flow and network capacity on the strategic highway network was compiled. The output table contains AADF values for each link (i.e. between junctions) and direction on the strategic highway network, sub-divided into six vehicle categories: motorbikes, cars, coaches, light goods, rigid HGVs and articulated HGVs. The AADF vehicle flow data (by link and direction) in the output table is expressed as Passenger Car Units (PCUs) with a rigid HGV classed as 1.9 PCUs and an articulated HGV as 2.9 PCUs. Vehicle flow in PCUs per hour (by link and direction) in the AM-peak, PM-peak and inter-peak time periods is also included in the output table and compared with the theoretical design capacity for each link, again expressed as PCUs per hour.

[1] The Final Report and Appendices can be downloaded from the DfT website (http://www.dft.gov.uk/publications/freight-modal-choice-study/).

The vehicle flow to capacity ratio was used as a means to identify links which suffer from vehicle congestion and delays on a regular basis (also termed 'network stress'). Links with a flow:capacity ratio equal to or greater than 0.75 (i.e. vehicle flow is greater than 75% of link capacity) were considered to be roads which experience network stress on a fairly frequent basis, while links with a ratio equal to or greater than 1.00 (i.e. vehicle flow is greater than link capacity) are considered 'high stress' roads.

It should be noted that this flow: capacity ratio is simply a comparison of flow and network capacity, and links which may be classed as suffering from network stress on this measure during particular time periods are not necessarily 'grid-locked' every day during these periods. In many cases, traffic can and is able to flow freely on links where the vehicle flow is approaching or greater than the theoretical design capacity (a ratio of 1.0). However, as a link's flow:capacity ratio increases beyond 0.75, its operational resilience (i.e. the ability to maintain an efficient vehicle flow during incidents or recover quickly following incidents, such as vehicle collisions or breakdowns), generally reduces. Consequently, minor vehicle incidents, such as a breakdown on the hard-shoulder, can cause congestion and delays.

The output table has been interrogated to identify those links on the strategic highway network in the City Regions relevant to the study which display a vehicle flow:capacity ratio greater than 0.75 in the AM-peak, PM-peak or Inter-peak periods (see Table 4.1).

Table 4.1: "Pinchpoints" on the strategic highway network

Links on highways with flow: capacity ratio of > 0.75

City Region	Highway and Link	Period of Flow: Capacity Ratio > 0.75	Major freight projects
West Midlands	M42 Jct 8-10	AM-peak and PM-peak	-
	M42 Jct 3-6	AM-peak and PM-peak	-
	M42 Jct 8-9	Inter-peak	-
	M42 4-6	Inter-peak	-
	M6 Jct 4-10	AM-peak, PM-peak and Inter-peak	Managed motorway scheme: expected completion 2014
North West	M6 Jct 20-21	AM-peak, PM-peak and Inter-peak	-
	M6 Jct 17-18	AM-peak	-
	M6 Jct 16-20	PM-peak and Inter-peak	-
	M6 Jct 23-25	PM-peak	-
	M56 Jct 6-7	AM-peak and PM-peak	-
	M56 Jct 9-10	AM-peak and PM-peak	-
	M56 Jct 3-1	AM-peak and PM-peak	-
	M61 Jct 3-4	AM-peak and PM-peak	-
	A5036	AM-peak	-
	M60 Jct 18-20	AM-peak and PM-peak	-
	M60 Jct 24-27	AM-peak and PM-peak	-
	M60 Jct 1-5	AM-peak and PM-peak	-
	M60 Jct 9-12	AM-peak and PM-peak	Managed motorway scheme: expected start 2014/15 Jct 12-15 to be widened from 3-4 lanes, expected to start 2014/15
	M60 12-18	AM-peak, PM-peak and Inter-peak	
West Yorkshire	M62 Jct 24-30	AM-peak, PM-peak and Inter-peak	Managed motorway scheme: expected completion 2014
	M1 Jct 41-42	AM-peak	Managed motorway scheme: expected start 2013/14
	M1 Jct 39-41	PM-peak	
South Yorkshire	M1 35-36	AM-peak	-
	M1 Jct 31-35	PM-peak	-
	A1(M) Jct 38-35	AM-peak and PM-peak	-
East Midlands	M1 23a-30	AM-peak, PM-peak and Inter-peak	M1 Jct 25-28 up-graded
North East	A1, A194(M) to A19	AM-peak, PM-peak and Inter-peak	
	A1(M) Jct 61-63	AM-peak	
South West	M4 Jct 19-20	PM-peak	

Source: MDS Transmodal

NB: Where a range of links are indicated, an individual link in the range may have a ratio below 0.75, however the majority of the links in the range display a ratio above 0.75.

** M1 Jct 25-28 recently upgraded to Managed Motorway, capacity data may therefore be out of date*

We have then developed a list of all current nationally significant infrastructure projects and other major infrastructure projects that are being developed under other planning consent procedures (See Appendix 1) to establish the extent to which the links that may be under stress are being up-graded. Based on this high level analysis of the entire network, we believe that many of the links that may be experiencing "network stress" are planned to be enhanced or up-graded in the next few

years, but this may not the case for all the links that are likely to be reducing the reliability of HGV journeys on the network.

4.3 Distribution centres

The current network

The 'hub' of large road or rail based logistics operations is the **distribution centre** and these have tended to be located close to, or with easy access to, the strategic road network to increase the efficiency of road operations and to minimise local environmental impacts. There are basically two types: National Distribution Centres (NDCs) and Regional Distribution Centres (RDCs). They have also tended to be located away from urban areas to avoid conflicts with local residents.

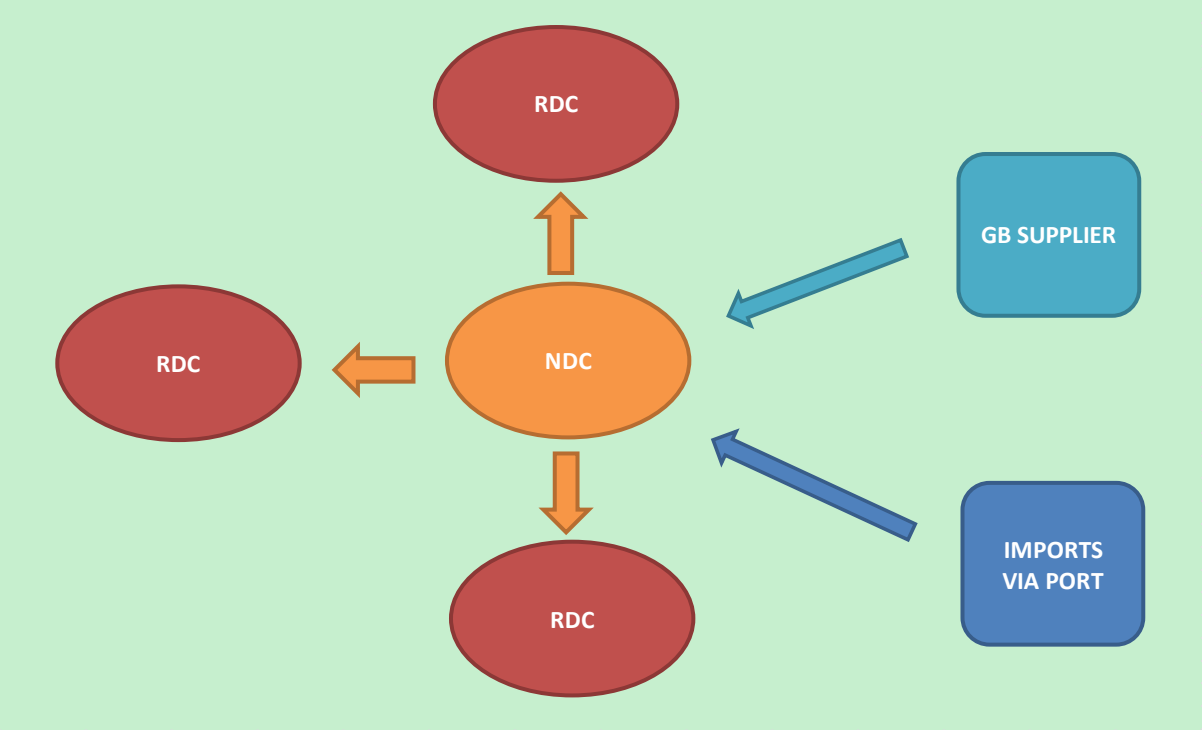


Figure 4.1: Flows of retails goods via distribution centres
Source: MDS Transmodal

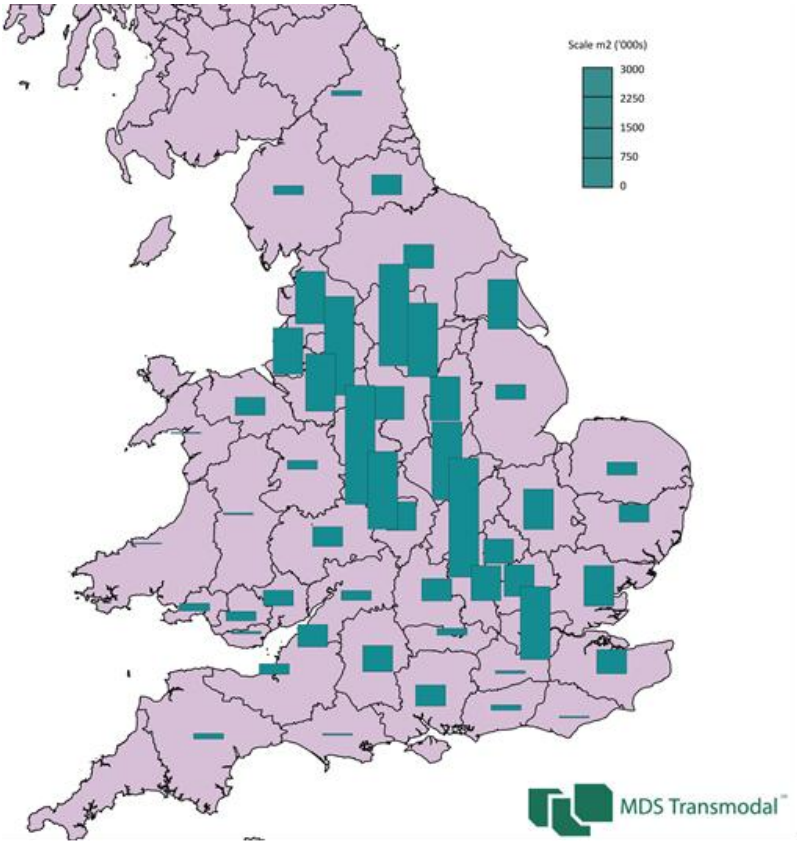
NDCs act as inventory holding points for imported and nationally sourced goods, before re-distribution to other stages in the supply chain. Average dwell time varies considerably but may average 4–6 weeks. They are termed 'national' because they serve the whole of the UK from the one site. They are normally associated with manufacturers (located either on actual factory sites or close by) or with suppliers to retailers such as importers of electrical goods, beers/wines/spirits or clothing. Some major retailers also operate their own NDCs. NDCs have traditionally been located

mainly in the Midlands as this minimises the total cost of supply chains from suppliers through to retail outlets, although increasingly they are also located in the North of England, reflecting lower land and labour costs

Due to the increasingly proportion of goods that are sourced from abroad, the economic centre of gravity for NDCs is shifting towards port locations. These **"port-centric distribution"** facilities have been developed on the Tees for major retailers such as ASDA and are also included in the Master Plan for the Port of Liverpool. The London Gateway deep sea container port development on the Thames has an associated distribution park, which is also being marketed for PCD.

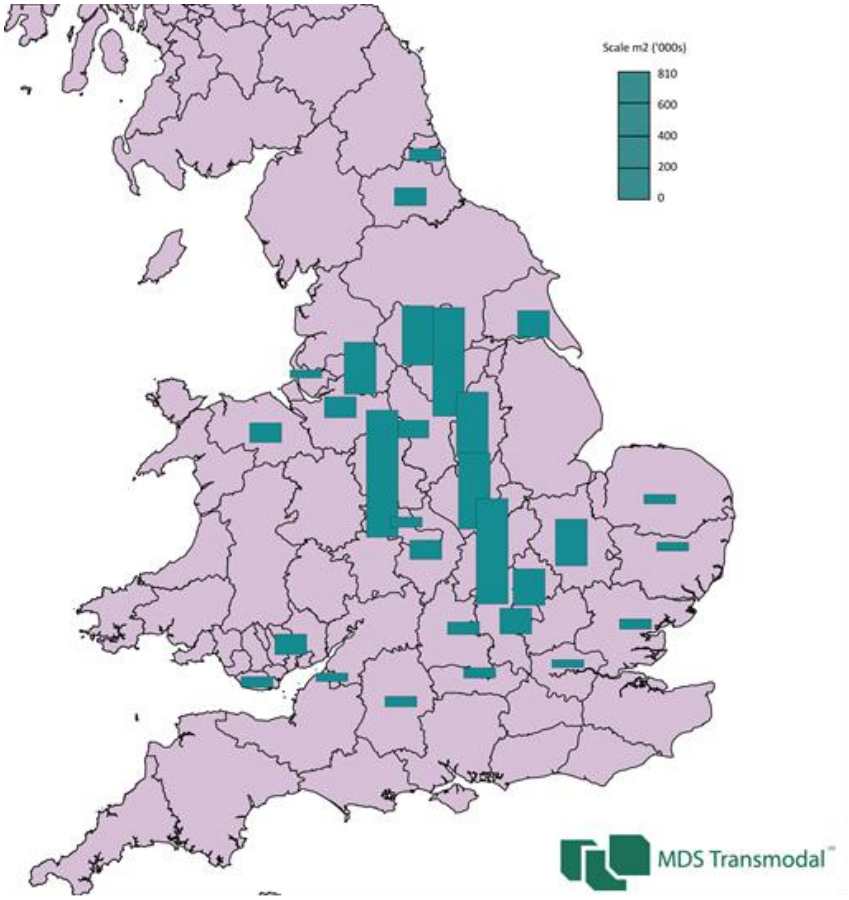
RDCs re-distribute inward supplies of goods to other stages in the supply chain, normally a retail outlet but also increasingly direct to homes. They have a regional hinterland and are normally associated with retailers. Their primary role is to consolidate and re-distribute goods in short periods of time, rather than acting as inventory holding locations. Consequently dwell times are shorter at RDCs (average 12 days for non-ambient goods) than at NDCs. Goods are generally received in homogenous loads from NDCs then split into smaller consignments for re-distribution in mixed loads of commodities to retail outlets, sometimes within 24 hours for perishable goods without passing through pallet racking systems and simply transferring between vehicles (a process called 'cross docking').

Map 4.2 shows the location of large warehouses in England, defined as more than 9,000 square metres of storage space. The map shows that there is a concentration of distribution centres (mainly NDCs) in the so-called logistics "Golden Triangle" (bounded by the M42, M1 and M6), but there are also significant concentrations located within or close to the City Regions.



Map 4.2: The location of distribution space over 9,000 square metres in England in 2012

There is also a trend for the newer, larger distribution centres (over 50,000 m2) to be developed between Birmingham and the M62 i.e. outside the Golden Triangle (as shown in Map 4.3 below), where land and labour is likely to be cheaper.



Map 4.3: The location of distribution space over 50,000 square metres in England in 2012

As explained in section 2.4 above, the key to achieving sustainable distribution for medium- to long-distance flows is the development of SRFIs where large warehouses are located on distribution sites with intermodal rail freight terminals; this makes rail freight services to and from the SRFIs more cost-effective because the origin and/or destination of the door-to-door freight transport movement (a warehouse) is next to the rail terminal so that no road delivery or collection is required between the rail freight terminal and the distribution centre.

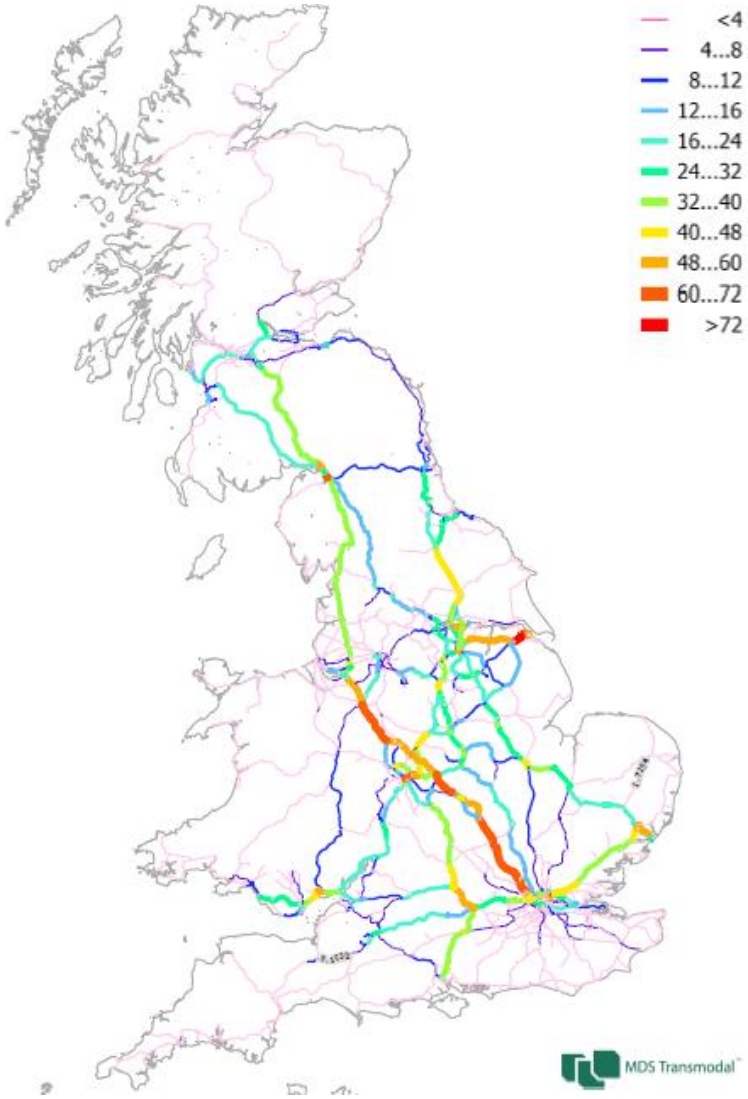
4.4 Strategic rail network

The current network

Map 4.4 shows the average daily freight trains accommodated on the GB rail network in 2011. It shows how the busiest routes are:

- The West Coast Main Line (WCML), which acts as the spine route for intermodal rail freight services between London and the South East (including the major deep sea container ports) and the West Midlands, the North West and Glasgow.
- The route to/from the Port of Immingham, which accommodates a rail shuttle for iron ore and coking coal from the port to the Scunthorpe steelworks and trainloads of imported steam coal for inland power stations.

The main capacity pinchpoints on the network are routes to/from the Port of Felixstowe and on the WCML south of Nuneaton, but restrictions in loading gauge have until very recently significantly limited the volume of "high cube" deep sea containers that can be accommodated on the standard railway wagons that are deployed by the rail freight operators. In some cases, the re-opening of some lines for use by rail freight services could lead to more efficient use of the overall network where it frees up capacity for passenger services.



Map 4.4: Average daily rail freight services by link (sum of both directions), 2011

Major pinchpoints on the network

Map 4.5 below shows the national railway network in England and Wales 'colour coded' by the total number of passenger trains operating on a typical weekday. The data used to produce the map is derived from the Working Timetable for a "typical" weekday, with red and orange lines indicating the highest numbers of passenger trains operating on a typical weekday (red being the highest) and green and blue lines indicating significantly lower numbers of passenger trains (blue being the lowest).

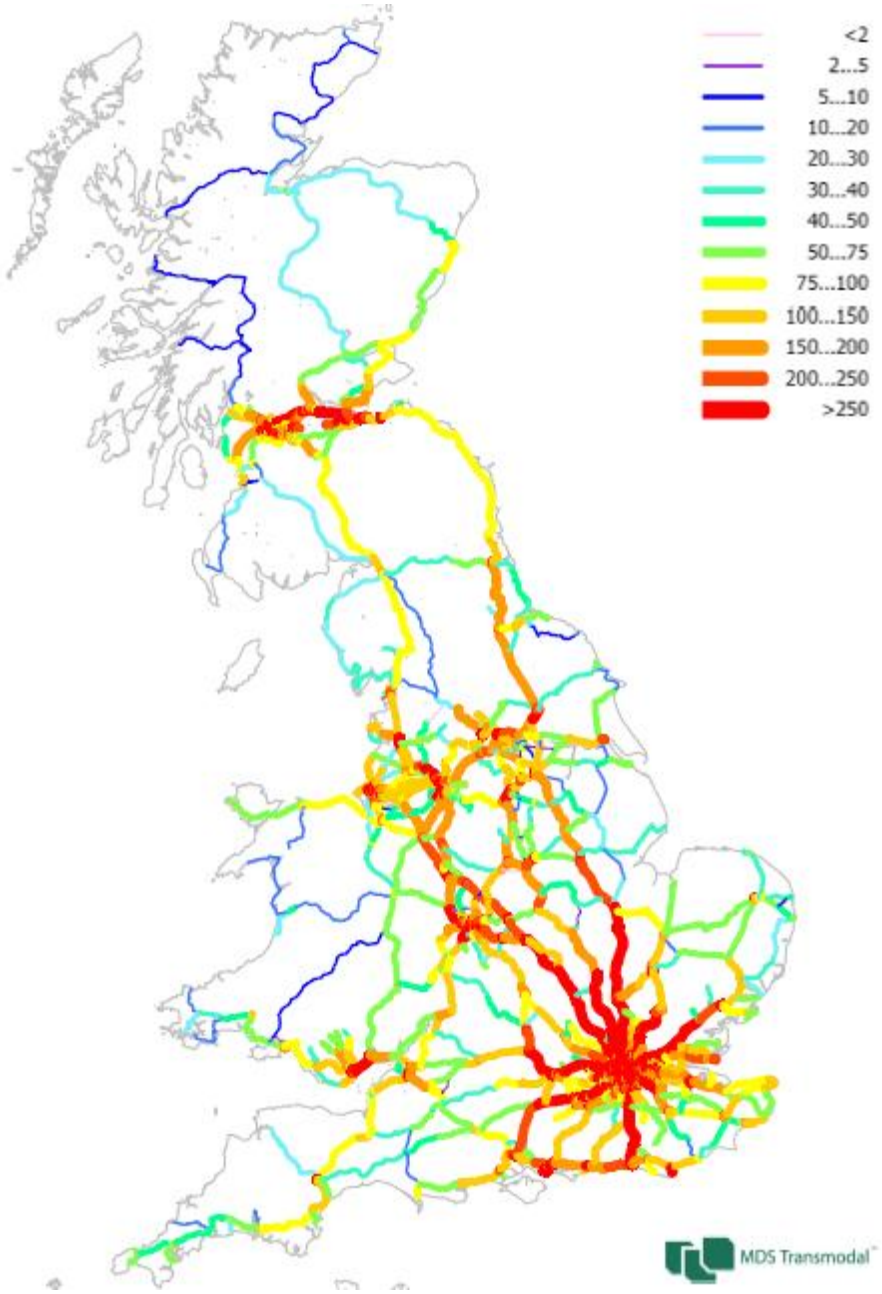
Map 4.5 shows where the national railway network is most intensively used on a daily basis and those parts of the network indicating the most intensive usage may therefore be where additional path capacity for freight train services could be difficult to secure during the day-time off-peak

period. In the City Regions relevant to this study, the following corridors and sections of the network show particularly high numbers of daily passenger train services:

- Manchester: Bolton-Deansgate-Piccadilly-Stockport corridor;
- Liverpool (albeit on the 'segregated' network used by Merseyrail services and therefore not available to freight);
- Leeds-York corridor;
- Sheffield to Meadowhall corridor; and
- West Midlands: Wolverhampton-New Street-International, New Street-Aston and Bromsgrove-New Street.

It should be noted that this analysis can only be indicative of potential pinchpoints. Where a particular line or corridor shows an intensive usage by passenger trains, it does not necessarily mean that additional freight path capacity will not be available during the day-time off-peak period. That will be dictated by, among other factors, the number of lines available, junction layouts (grade separated or 'on the flat') and the signalling. Availability of additional freight capacity can only be determined on a 'case by case' basis by undertaking detailed pathing and timetable analysis. Consequently, freight paths may be available on those parts of the network coloured red or orange, but a detailed assessment would need to be undertaken to demonstrate that is the case.

Map 4.5: Railway network in England and Wales by number of passenger trains (both directions) on typical weekday
Source: MDS Transmodal, based on Working Timetable



Major freight projects

On the rail network up to 2014, Network Rail has mainly been focusing on upgrading loading gauge on routes between the deep sea container ports and the WCML and ECML, plus selected capacity upgrades, such improving the capacity on the line from the deep sea container port of Felixstowe to Nuneaton on the WCML. The main effect of improving the loading gauge has been to allow the rail freight operators to carry more units by rail because the higher clearance allows them to carry "high cube" containers, which are increasingly used by the deep sea shipping lines.

However, for the period from 2014 to 2019, the Government has allocated £200m for further enhancements of the rail network specifically for freight. The prioritisation of projects to use this funding allocation will be determined in due course by Network Rail in consultation with the rail freight industry, mainly to raise capacity.

Electrification of several routes will allow for the simultaneous improvement in loading gauge on routes such as the Great Western Line to Bristol and South Wales, which is currently a "missing link" in the W10 loading gauge network. However, electrification, which is driven by the need to improve the economic and environmental efficiency of the passenger network, may not directly provide economic and environmental benefits from the electrification of rail freight services. This is for the following reasons:

- There are no plans to electrify freight-only routes because there is unlikely to be a business case. In addition, freight diversionary routes for the main existing rail freight routes (the ECML and WCML) are not being electrified.
- Reception facilities at most rail freight facilities (existing SRFIs and at other intermodal terminals) are not fitted with overhead equipment, which means that diesel locomotives have to be used. Network Rail requires that freight trains immediately leave the mainline network when they arrive at terminals to avoid conflicts with other services. New SRFIs and other terminals can be designed with electrified reception sidings so that an electric mainline locomotive can haul the train off the mainline but this will still imply a separate diesel shunting engine will be required in the vicinity of craneage
- The rail freight industry has invested in fleets of relatively modern diesel locomotives, which provides the benefit to the operators of operational flexibility on the network. However, diesel locomotives accelerate more slowly than electric locomotives and this has an impact on the amount of capacity available on the network. Clearly diesel locomotives generate more environmental emissions and noise than electric locomotives.

Overall, the HLOS should lead to additional network capacity for rail freight services which will be required to allow the industry to continue to grow and therefore remove HGVs from the strategic road network for medium and long distance freight movements. A major benefit of the network electrification programme for freight will be to allow the simultaneous improvement of the loading

gauge on some routes for intermodal rail freight services; however, this does not mean that the rail freight operators will rapidly switch to using electric locomotives because they have already invested in diesel locomotives and much of the network used by rail freight services will not be electrified. Another benefit is that faster acceleration will allow more freight trains to be fitted into timetable that is generally focused on passenger services.

4.5 Intermodal rail freight terminals and SRFIs

The current network

The network of rail freight terminals that are particularly relevant to the City Regions are intermodal terminals and Strategic Rail Freight Interchanges (SRFIs) because there are existing and planned terminals located in all English regions and they are required to allow for the growth of sustainable distribution.

An **intermodal terminal** is a facility designed to transfer units between rail and road and consists of sidings to accommodate trains, special cranes for loading and unloading the units and space for storage. There are existing terminals in the City Regions in Greater Manchester, West Yorkshire, Liverpool, the West Midlands, Bristol and South Yorkshire, but many of these terminals have no distribution centres located on the same site and are generally owned and operated by the incumbent operators that inherited them on privatisation.

Map 4.5: Location of existing Strategic Rail Freight Interchanges in GB
Source: MDS Transmodal

Map 4.5 shows the location of **Strategic Rail Freight Interchanges (SRFIs)** in GB. These distribution parks, with associated intermodal rail freight terminals on the same site, are funded by developers on a commercial basis and, as explained in Chapters 2 and 3, are essential to securing a shift of traffic from road to rail over medium- to long-distances. They do, however, generate additional local road freight movements between the distribution park and the strategic road network and may not be perceived as "desirable" sources of employment in more affluent parts of GB. The relatively large sites required by SRFIs generate economies of scale for the economic operation of rail freight services and also reduce operational costs for the operators of distribution centres. While the distribution centres generate significant numbers of jobs in the area around the SRFIs and have lower environmental impacts than the older warehousing stock that they replace, they are mainly displacing jobs from one location to another.

Major freight projects

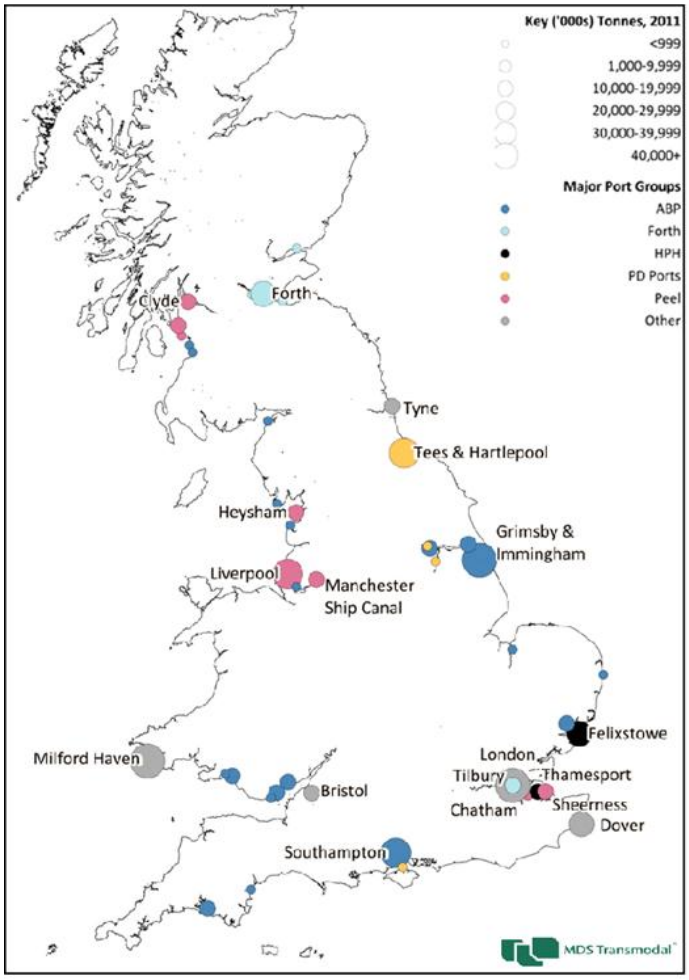
There are a number of SRFI developments that are being brought forward by private sector developers in the City Regions (see Appendix 1), but there is a lack of capacity in the South East/London due to the difficulty that developers have had in securing planning permission against

local opposition. Without sufficient sites in the South East, the development of domestic rail freight services from Northern England for the south will be inhibited.

4.6 Waterborne freight network

The UK has an indented coastline, with deep water access to its major estuarial ports and wharves on the Forth, Tees, Tyne, Humber, Harwich Haven and Thames on the east coast, the Solent on the south coast and on the Severn estuary, Milford Haven, Mersey and Clyde on the west coast. The major ports handle about 95% of the UK's international trade and the City Regions have three major port cities at Liverpool, Tyne and Bristol. These ports act as gateways for international unitload cargo from the Near Continent, Ireland, the Atlantic coast and from deep sea locations worldwide and also handle energy bulk traffics and a wide range of other bulk commodities. They can also provide locations for port-centric distribution, where distribution centres are located on port estates.

Map 4.6: Major GB ports by traffic volume, 2011



Short sea and coastal shipping movements along these major estuaries are recorded as **inland waterway movements** for statistical purposes and there are also numerous wharves on major rivers, such as the Rivers Humber, Hull and Trent. Significant movements of freight on man-made canals are limited to traffic to and from the inland port of Goole and to and from the wharves on the Manchester Ship Canal. There are some movements of bulk freight on narrow gauge canals, but these represent niche traffics.

The Canal and River Trust (the body that superseded the British Waterway Board) is responsible for the development of freight activity on most rivers and canals in England and has recently established a Freight Advisory Group to develop a strategy for freight.

The planned development at Port Salford in Greater Manchester is also an SRFI which would have access to the Manchester Ship Canal (see Appendix 1), thereby providing an opportunity for a tri-modal facility. Similarly, the London Gateway development that is being constructed on the Thames will be an SRFI that provides access to a deep sea container port.

4.7 Summary

As the strategic road and rail networks are shared with passenger traffic, any enhancements to these networks provide benefits to the freight industry. The planned enhancements to the strategic road network will improve door-to-door journey times to, from and between the City Regions and make them more reliable. This will reduce costs for the freight industry, which will in due course be passed onto the wider economy in the City Regions as the freight market is competitive. However, it might also help to make the argument for road pricing for freight, when public investment leads to private benefits.

A rail network that is capable of accommodating "high cube" deep sea containers on standard rail wagons has been the main focus on investment for freight by Network Rail in recent years, but the focus is likely to switch to electrification and increasing capacity for freight trains on main lines (through the provision of passing loops) during the period 2014-19. However, the prioritization of projects that will benefit from the £200 million of funding during this period is only just underway, which could provide an opportunity for the City Regions to influence the decision-making process.

The private sector is bringing forward a number of projects to develop SRFIs and some port developments (such as the Liverpool 2 container terminal) in the City Regions. These facilities provide significant opportunities to secure modal shift from road to rail (and in some cases to waterborne transport) and also create employment, while generating additional localised road freight traffic.

5 THE CITY REGIONS: TYPOLOGY, ISSUES & CHALLENGES

5.1 Introduction

This chapter moves away from the strategic freight issues that have been discussed in Chapters 3 and 4 to consider the issues and challenges in the City Regions themselves. It begins by setting out a categorization of urban areas that has been developed specifically for this study to facilitate the analysis of likely issues and challenges in different types of city that are within the scope of this study. This typology of urban areas is then used to describe briefly the main generic issues and challenges that are likely to be experienced by each category.

The chapter then continues by providing some "pen portraits" of each of the City Regions included within the scope of the study, setting out some freight data and describing some of the likely issues and challenges in relation to freight. Given the limited resources available for this study, the pen portraits can only provide a high-level comparative analysis of freight-related issues that may need to be addressed by local authorities and PTEs in the future.

5.2 City Region typology

The definition of urban areas that we have chosen to use in this study is recommended by the United Nations and used by a number of European Union member states:

Areas that have urban (i.e. built-up) land of 20 or more hectares that are less than 200 metres apart and linked to form a continuous built-up area.

The City Regions included in this study are quite diverse and are likely to have different freight transport issues at varying levels of intensity depending on their individual circumstances. To assist in the high-level analysis of the City Regions included within the scope of this study, we have developed a categorization of the relevant urban areas, based on a typology that we developed for a study on urban freight transport for DG MOVE of the European Commission in 2011. The typology, which also makes a distinction between port cities and non-port cities, is shown in Table 5.1.

Table 5.1: Categorization of urban areas

Type of urban area	Port city	Non-port city
Large Urban Zone	Merseyside	Greater Manchester
	Tyne & Wear	Sheffield City Region
		West Midlands
		West Yorkshire
Medium-sized City	Bristol	Leicester
		Nottingham

Source: MDS Transmodal

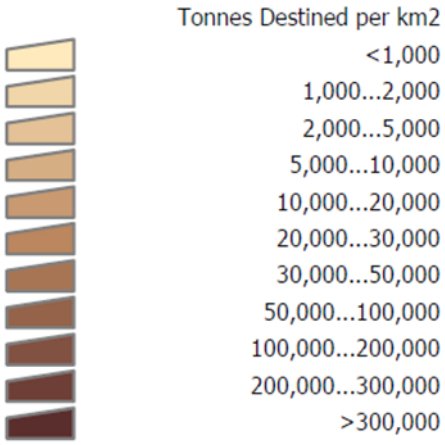
Large Urban Zones are, based on the Eurostat definition, urban areas with more than 500,000 inhabitants. These urban areas are likely, due to the concentrations of traffic found within them, to suffer from poor air quality and road congestion and are major retail, service and tourism centres. All these Large Urban Areas have motorways that allow long-distance traffic to by-pass city centres, but where they are also port cities, there is some strategic traffic that passes through the urban areas to access the strategic highway network.

Medium-sized cities are smaller in terms of geographic area and population and are less likely to have significant air quality problems. They may experience road traffic congestion in peak hours due to local commuting and are also major retail, service and tourism centres. All the relevant cities have motorways that allow long-distance traffic to by-pass city centres and the only port city (Bristol) has direct access to the strategic road network, which reduces transit traffic through the city itself.

5.3 City Region pen portraits

This section of the report provides "pen portraits" of each City Region with:

- Freight statistics in terms of estimated freight tonnes delivered and collected from to each City Region and road and rail modal split;
- A list of the main sustainable distribution facilities (i.e. ports and wharves, intermodal rail freight terminals and SRFIs) located within each City Region;
- "Freight density maps", which show where in general terms most freight is likely to be delivered in each City Region. The scale for the maps in terms of tonnes delivered per square kilometre is shown below.



The freight density maps and the freight data has been drawn from the origin-destination matrix within the MDST GB Freight Model. The base data for road freight is at a county-to-county level and the rail freight data is an individual terminal level; the freight density maps have been produced at a post code district level (PCD), using a modelling technique based on land use data for each PCD.

It should be noted that although some cities or City Regions do not have sustainable distribution facilities located within their administrative areas, they may be served by SRFIs, intermodal rail freight terminals and port facilities located in adjacent areas.

Bristol

According to our typology of cities developed for this study Bristol is a Medium-sized City, with a population of 428,000 and a land area of some 110 km^2. It is also a Port City, although as the Port of Bristol enjoys direct access to the M5 motorway, port traffic is unlikely to transit the city itself. Total estimated freight delivered in Bristol in 2010 was some 16.5m tonnes, while the city was the origin of an estimated 19.9 m tonnes of freight. An estimated 7% of this traffic is by rail, with 93% transported by road.

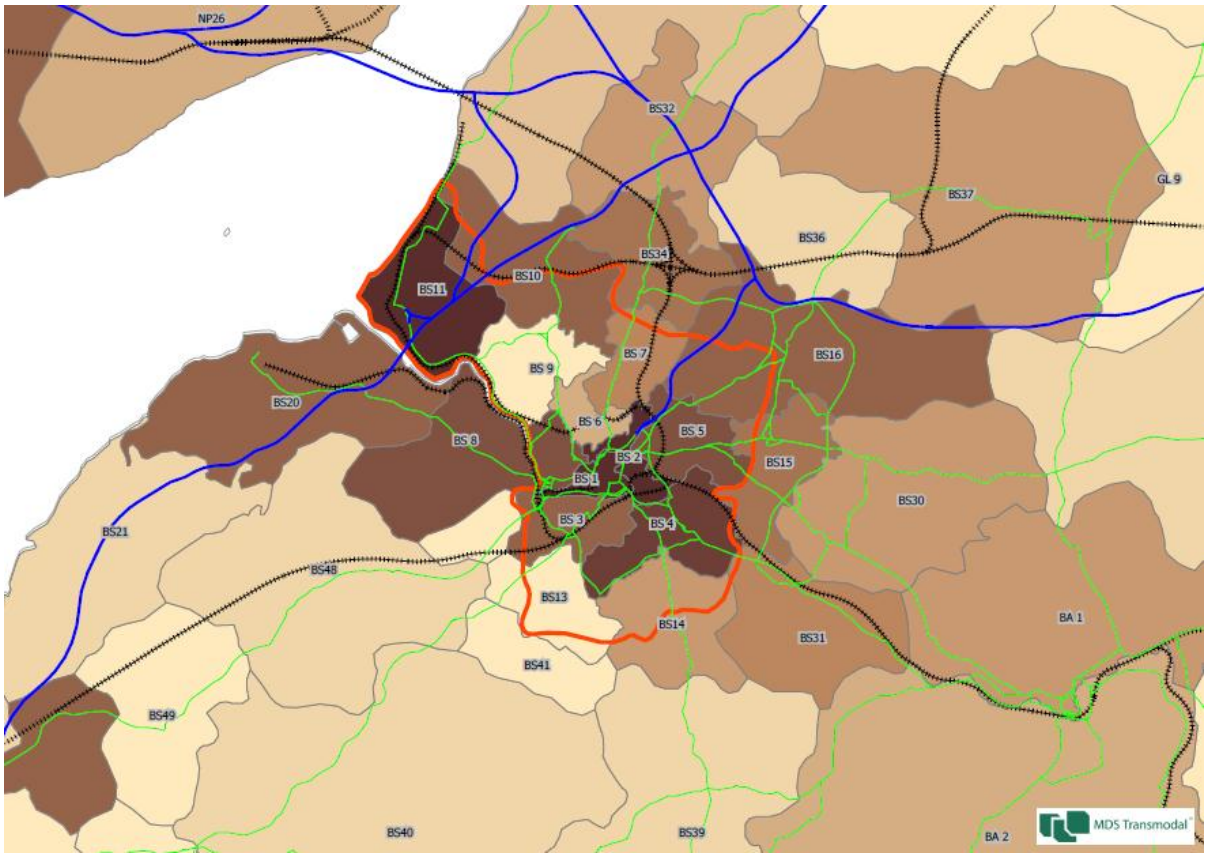
Table 5.2: Freight data for Bristol, 2010
Million tonnes

	Origin of freight (million tonnes)	Destination of freight (million tonnes)
Non-bulk	9.3	9.4
Bulk	10.7	7.2
Total	19.9	16.5

Source: GB Freight Model

The city has an intermodal rail freight terminal operated by Freightliner, with intermodal rail freight services for deep sea containers to and from the ports of Felixstowe and Tilbury.

Map 5.1: Freight density map for Bristol



Freight issues and challenges specific to Bristol:

- Network stress on the M4 during the PM-peak, between Junctions 19 and 20.
- Loading gauge enhancement to W10 on the WML.
- Finding and developing a site for a SRFI that can allow distribution buildings in the city region to be co-located with an intermodal rail freight terminal as there are no proposals currently in the public domain for a SRFI near Bristol. One could be created by consolidating land uses in the Avonmouth area.
- Potential development of the Port of Bristol for port-centric distribution, serving the City Region and beyond. The port is rail-connected, so that a tri-modal freight hub could be developed and this could also act as the City Regions' SRFI. However, the volume of unit load traffic currently through Bristol is small, reflecting the modest scale of its immediate hinterland and the diversion required for deep-sea services to call at the Port.

Leicester

According to our typology of cities developed for this study Leicester is a Medium-sized City, with a population of 330,000 and a land area of some 73 km^2. Total estimated freight delivered in Leicester in 2010 was some 11.0m tonnes, while the city was the origin of an estimated 9.7 m tonnes of freight. 100% of this traffic was transported by road, although it is likely that some of this traffic is via rail freight terminals in the Midlands. These terminals will provide a sub-regional facility for Leicester.

Table 5.3: Freight data for Leicester, 2010

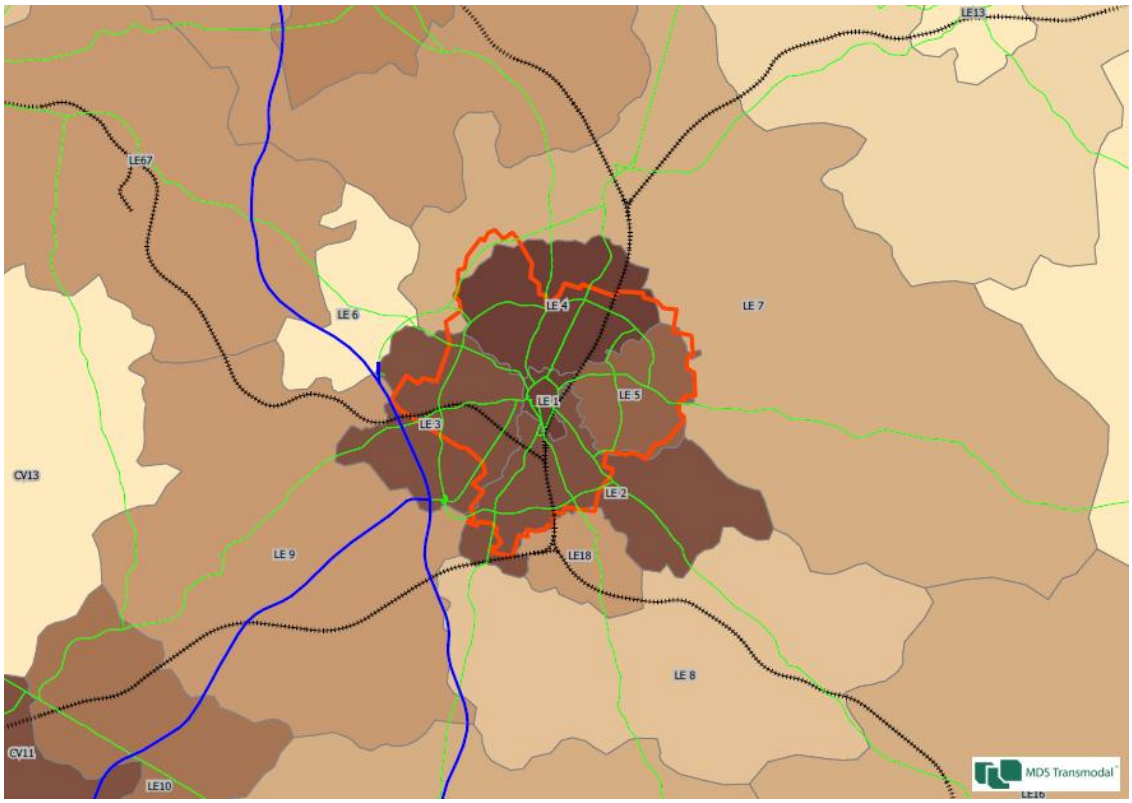
Million tonnes

	Origin of freight (million tonnes)	Destination of freight (million tonnes)
Non-bulk	6.3	7.2
Bulk	3.4	3.9
Total	9.7	11.0

Source: GB Freight Model

The city has no intermodal rail freight terminal or SRFI, but some of the traffic with an origin or destination in the city will be transported by road to/from a terminal or SRFI in the Midlands.

Map 5.2: Freight density map for Leicester



Freight issues and challenges specific to Leicester: A number of SRFIs are planned for the East Midlands, which will be able to serve handle medium to long distance flows by rail before final distribution to the city. These include the East Midlands Distribution Centre, which is an SRFI near Castle Donnington (operational during 2013) where Marks and Spencer have developed a 100,000 square metre distribution centre to handle e-commerce commodities and slow moving store lines. There are also plans to develop SRFIs at Kegworth and Etwall (Burnaston).

Greater Manchester

According to our typology of cities developed for this study Manchester and the Greater Manchester City Region is a Large Urban Zone, with a population of about 2.7 million and a land area of some 1,276 km^2. Total estimated freight delivered in Greater Manchester in 2010 was some 58.1m tonnes, while the city was the origin of an estimated 50.7 m tonnes of freight. 11% of this traffic was transported by rail and the remainder by road.

Table 5.4: Freight data for Greater Manchester, 2010

Million tonnes

	Origin of freight (million tonnes)	Destination of freight (million tonnes)
Non-bulk	25.6	29.2
Bulk	25.1	28.8
Total	50.7	58.1

Source: GB Freight Model

The City Region has three intermodal rail freight terminals, all located at Trafford Park, and with services mainly to and from deep sea container ports located in the Greater South East:

- Trafford Park Freightliner Terminal;
- Barton Dock Road;
- Trafford Park Eurotterminal (now mothballed).

The Manchester Ship Canal provides access to the Mersey and there is a barge service for containers between Irlam and the Port of Liverpool. There is no existing SRFI in Greater Manchester, but the Port Salford development has been granted planning permission and will have access to both the rail network and the Manchester Ship Canal.

Map 5.3: Freight density map for Greater Manchester

Freight issues and challenges specific to Greater Manchester:

- Network Stress on the M60 during the AM-peak and PM-peak, in particular the northern section from Junctions 9-18 and the southern section through section through Stockport. It is noted that Junctions 8-12 are planned for an upgrade to Managed Motorways (works expected to 2014/15), while Junctions 15-12 are earmarked for widening to 4-lanes (works expected to 2014/15). The M62 Junctions 18-20 are also planned for Managed Motorways (works expected to 2014/15).
- Rail freight capacity and access to the Trafford Park terminals: Freight trains are currently pathed alongside passenger trains via Platforms 13 and 14 at Piccadilly station, a known capacity pinchpoint. The planned Northern Hub scheme should provide additional capacity for both freight and passenger trains.
- Port Salford SRFI: This scheme would deliver an increase in the amount of warehousing in the city region which is directly rail-served. It offers the advantage of providing rail access without trains having first to pass through the centre of the city. While this SRFI has already been granted planning consent, it has yet to be developed. Vehicle congestion on the M6 to the south of the city region i.e. south of Junction 20.
- Upgrade of the A556 Knutsford to Bowdon. The A556 essentially forms the main highway route between the Manchester city region and the M6 southbound. The current route is currently heavily congested through most of the day and is an accident black spot. The proposals include upgrading the route to dual carriageway standard throughout, using a mixture of on-line and new alignments, together with junction improvements where the route connects to the M6 and M56. An Application for a Development Consent Order is expected to be made during early 2013.
- The Chat Moss railway line between Liverpool and Manchester is currently being upgraded to W10 loading gauge, with completion scheduled for 2016. This will serve the planned SRFI at Port Salford.

Merseyside

According to our typology of cities developed for this study Merseyside is a Large Urban Zone and Port City, with a population of about 1.4 million and a land area of some 645 km^2. Total estimated freight delivered in Merseyside in 2010 was some 30.5m tonnes, while the city was the origin of an estimated 32.2 m tonnes of freight. 8% of this traffic was transported by rail and the remainder by road.

Table 5.5: Freight data for Merseyside, 2010

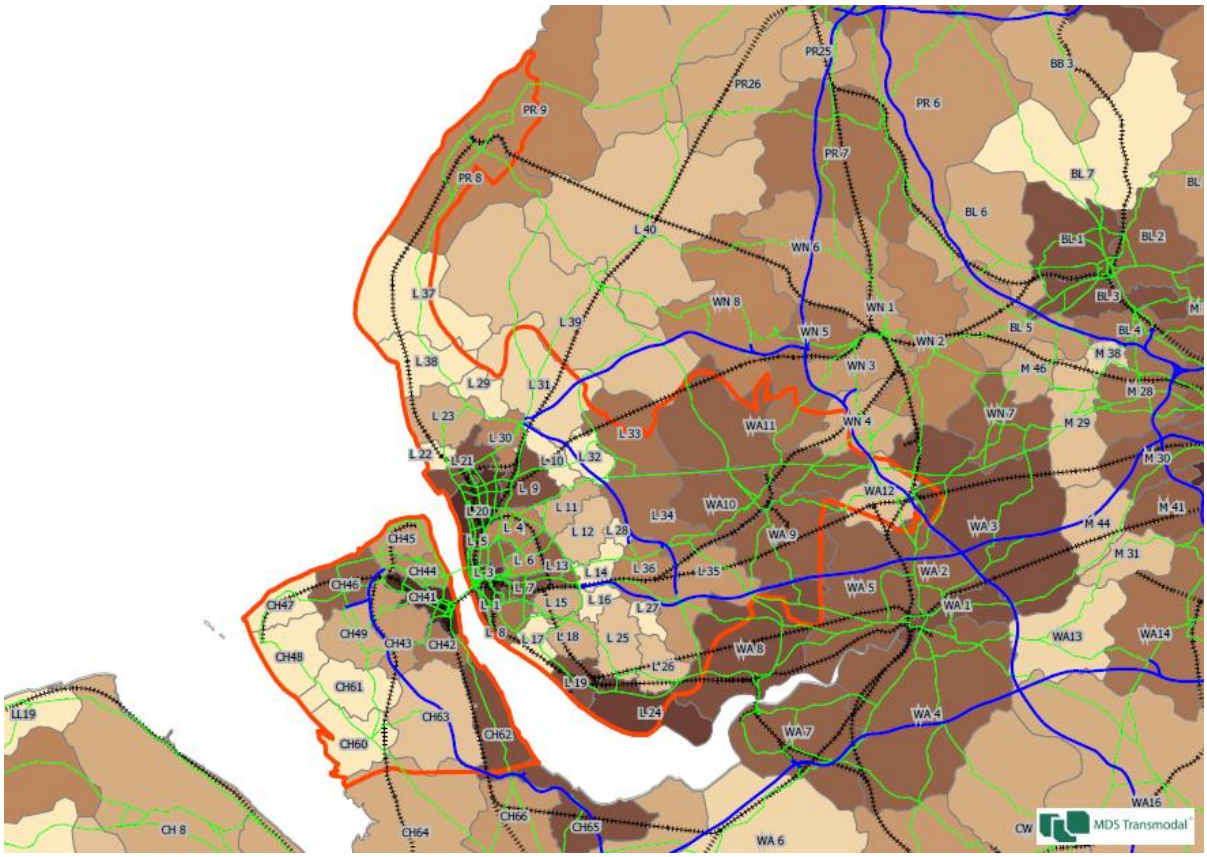
Million tonnes

	Origin of freight (million tonnes)	Destination of freight (million tonnes)
Non-bulk	18.4	15.3
Bulk	13.8	15.3
Total	32.2	30.5

Source: GB Freight Model

The City Region has intermodal rail freight terminal at Garston (operated by Freightliner) and Knowsley (operated by Potter Group), as well as the 3MG Strategic Rail Freight Interchange at Ditton. There are major deep sea port facilities in the City Region at the Port of Liverpool (Peel Ports) and short sea facilities at Birkenhead (Peel Ports) and Garston (Associated British Ports). The Port of Liverpool is rail-connected and there is a barge service for containers between Seaforth Docks and Irlam on the Manchester Ship Canal.

Map 5.4: Freight density map for Merseyside



Freight issues and challenges specific to Merseyside:

- Development at the Port of Liverpool: The port plans to develop a new post-panamax deep-sea container quay directly on the River Mersey (i.e. avoiding the need for vessels to pass via the lock gates), which would be able to handle the largest container vessels currently in operation. The port Master Plan also envisages the development of port-centric warehousing within the (possibly extended) port estate. Both developments would generate additional HGV traffic.
- Road access to the Port of Liverpool (A5036): The road passes along a predominantly residential corridor and is potentially unsuitable for further substantial growth in HGV traffic.
- Current lack of intermodal rail freight services to and from the Port of Liverpool, with containers being road-hauled between the Port and the Freightliner terminal at Garston.
- The Mersey Gateway Bridge: A new tolled river crossing between Runcorn and Widnes alongside the existing Silver Jubilee bridge, which suffers from congestion and low operational resilience during daytime hours. SRFI capacity: The city region's existing SRFI, the Mersey Multi Modal Gateway (3MG), is in the process of being built out, while St Helens Council have made provision in their Local Plan for an SRFI on the former Parkside colliery site near Newton-le-Willows.

Nottingham

According to our typology of cities developed for this study Leicester is a Medium-sized City, with a population of 304,000 and a land area of some 75 km^2. Total estimated freight delivered in Nottingham in 2010 was some 7.8m tonnes, while the city was the origin of an estimated 6.3m tonnes of freight. 100% of this traffic was transported by road, although it is likely that some of this traffic is via rail freight terminals in the Midlands.

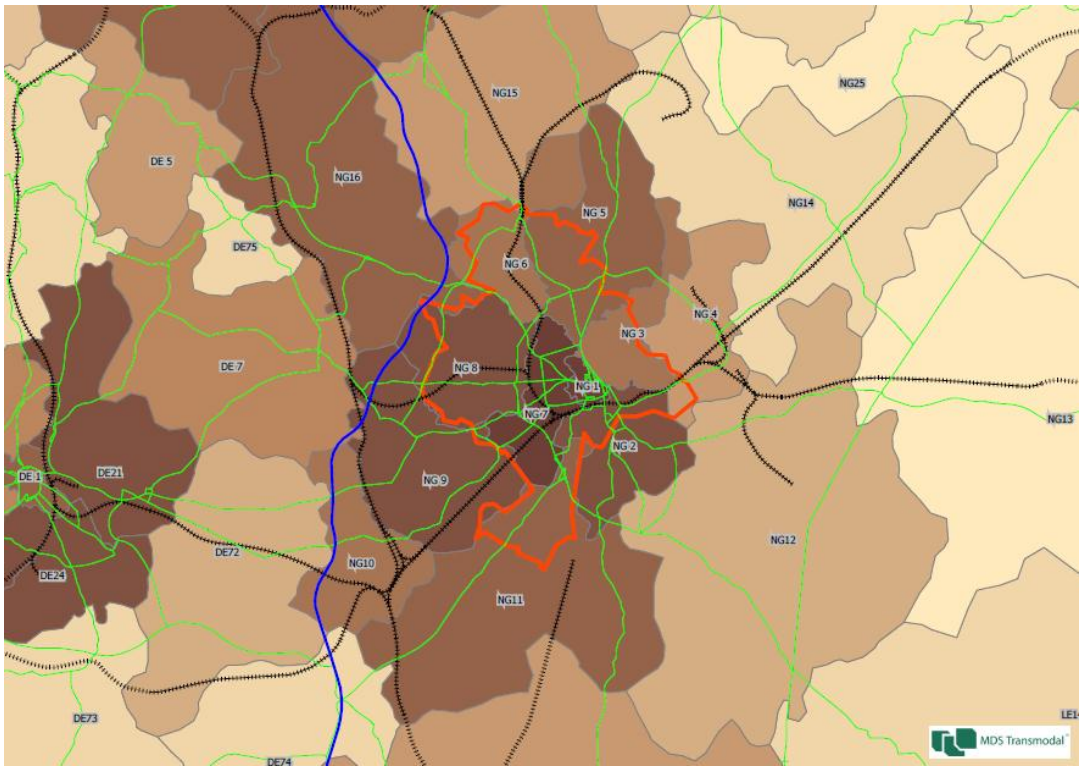
Table 5.6: Freight data for Nottingham, 2010

Million tonnes

	Origin of freight (million tonnes)	Destination of freight (million tonnes)
Non-bulk	3.1	4.3
Bulk	3.3	3.4
Total	6.3	7.8

Source: GB Freight Model

Map 5.5: Freight density map for Nottingham



The city has no intermodal rail freight terminal or SRFI, but some of the traffic with an origin or destination in the city will be transported by road to/from a terminal or SRFI in the Midlands.

Freight issues and challenges specific to Nottingham:

- Network Stress on the M1 during the AM-peak and PM-peak, particularly from Junction 23-30. However, Junctions 25-28 have recently been upgraded to be a Managed Motorway.
- The East Midlands Distribution Centre SRFI near Castle Donnington will become operational during 2013, with the opening tenant (Marks and Spencer) developing a 100,000 square metre distribution centre to handle e-commerce commodities and slow moving store lines. A number of other SRFIs are planned for the wider Nottingham area, including at sites at Kegworth and Etwall (Burnaston).
- The Birmingham to Doncaster railway line (which passes via Toton) is currently being upgraded to W10 loading gauge, with completion scheduled for March 2014.
- The potential for port traffic from the Humber, to be distributed via the River Trent to Nottingham, which would require suitable canal-side loading and unloading facilities in the city and an upgrade of the navigation itself.

Sheffield City Region

According to our typology of cities developed for this study the Sheffield City Region is a Large Urban Zone, with a population of about 1.8 million and a land area of some 3,518 km^2. Total estimated freight delivered in the Sheffield City Region in 2010 was some 52.8m tonnes, while the city was the origin of an estimated 53.3m tonnes of freight. 10% of this traffic was transported by rail and the remainder by road.

Table 5.7: Freight data for the Sheffield City Region, 2010

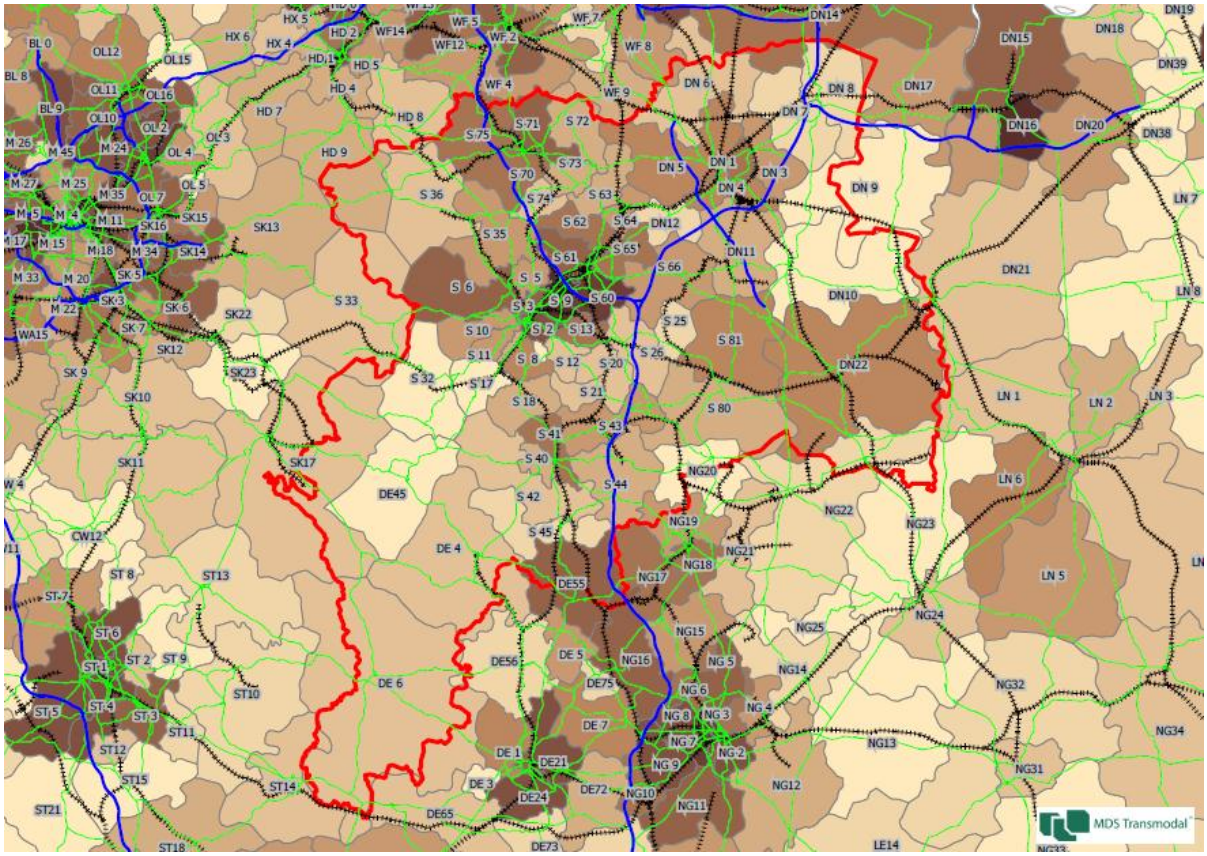
Million tonnes

	Origin of freight (million tonnes)	Destination of freight (million tonnes)
Non-bulk	20.9	21.6
Bulk	32.3	31.2
Total	53.3	52.8

Source: GB Freight Model

The City Region is served by the Doncaster Europort intermodal rail freight terminal.

Map 5.6: Freight density for Sheffield City Region



Freight issues and challenges specific to the Sheffield City Region:

- Network stress on the M1 during the AM-peak and PM-peak, particularly from Junction 31-36 and on the A1(M) during the AM-peak and PM-peak around Doncaster.
- The development of an SRFI at Rossington: Doncaster Inland Port, as it is branded, is being promoted by Helios Europe, Shepherd Developments and SEGRO. When fully developed, the Inland Port will offer around 530,000 square metres of rail-served warehousing alongside intermodal terminal facilities. The development was granted planning consent by Doncaster Council in the Autumn of 2011.
- The Birmingham to Doncaster via Sheffield and Rotherham railway line is currently being upgraded to W10 loading gauge, with completion scheduled for March 2014.

Tyne and Wear

According to our typology of cities developed for this study Tyne and Wear is a Large Urban Zone and Port City, with a population of about 1.1 million and a land area of some 538 km^2. Total estimated freight delivered in Tyne and Wear in 2010 was some 24.4m tonnes, while the area was the origin of an estimated 20.4m tonnes of freight. An estimated 10% of this traffic was transported by rail and the remainder by road.

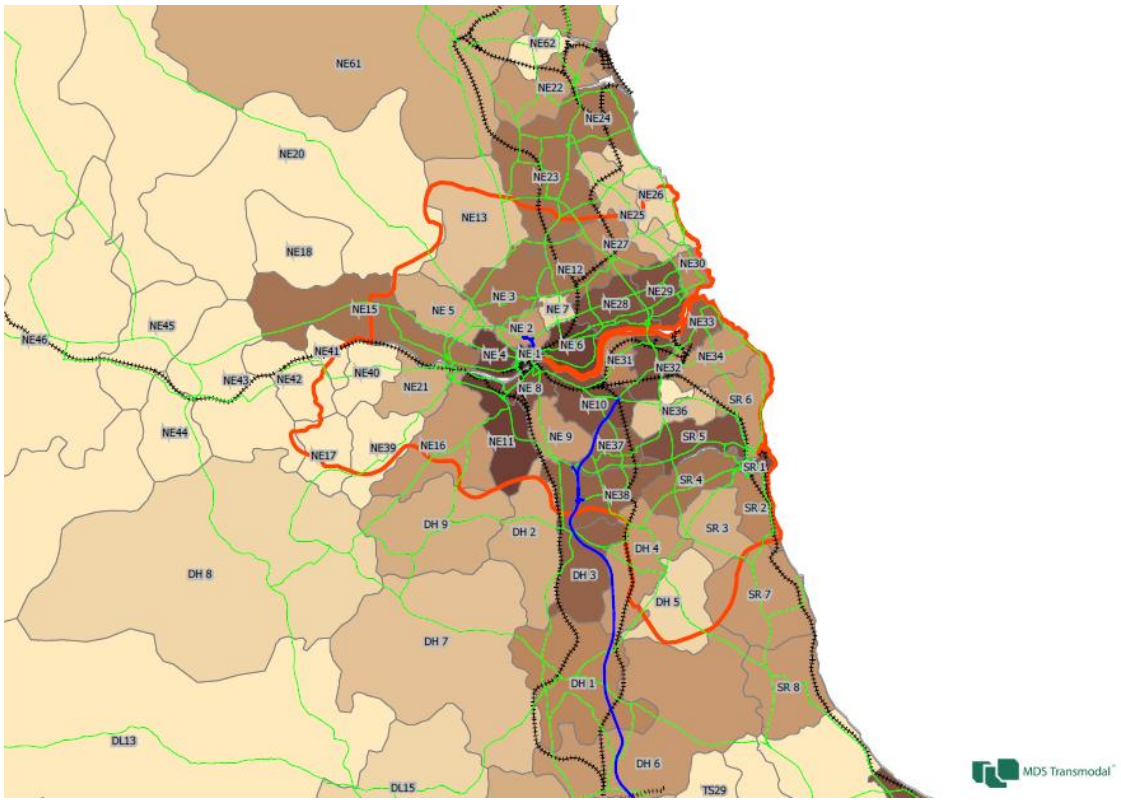
Table 5.8: Freight data for Tyne & Wear, 2010
Million tonnes

	Origin of freight (million tonnes)	Destination of freight (million tonnes)
Non-bulk	8.9	10.3
Bulk	11.4	14.0
Total	20.4	24.4

Source: GB Freight Model

There only intermodal rail freight terminals or SRFIs in Tyne and Wear is within the Port at Tyne Dock but there are port facilities at the Port of Tyne and at Sunderland.

Map 5.7: Freight density for Tyne & Wear



Freight issues and challenges specific to Tyne and Wear are:

- Network Stress on the A1, A1(M) and A194(M) during the AM-peak and PM-peak.
- Development at the Port of Tyne: rail-connected, so the port provides a tri-modal freight hub and is an important facility for the export of cars from the Nissan factory at Washington.
- There is no rail-served warehousing in Tyne and Wear and there are no proposals currently in the public domain for an SRFI in the North East. The existing rail terminal facilities within the Port of Tyne could act as a hub around which future development could be centred (i.e. port-centric distribution).
- The East Coast Main Line between Doncaster and Berwick is currently being upgraded to W10 loading gauge, with completion scheduled for March 2014.
- Prioritisation of freight vehicles: Newcastle City Council is consulting on whether to exclude freight vehicles from some No Car Lanes, with the objective of giving greater priority to buses, taxis, cyclists and motorcycles.

West Midlands

According to our typology of cities developed for this study the West Midlands is a Large Urban Zone, with a population of about 2.7 million and a land area of some 902 km^2. Total estimated freight delivered in the West Midlands conurbation in 2010 was some 62.1m tonnes, while the city was the origin of an estimated 58.2m tonnes of freight. 6% of this traffic was transported by rail and the remainder by road.

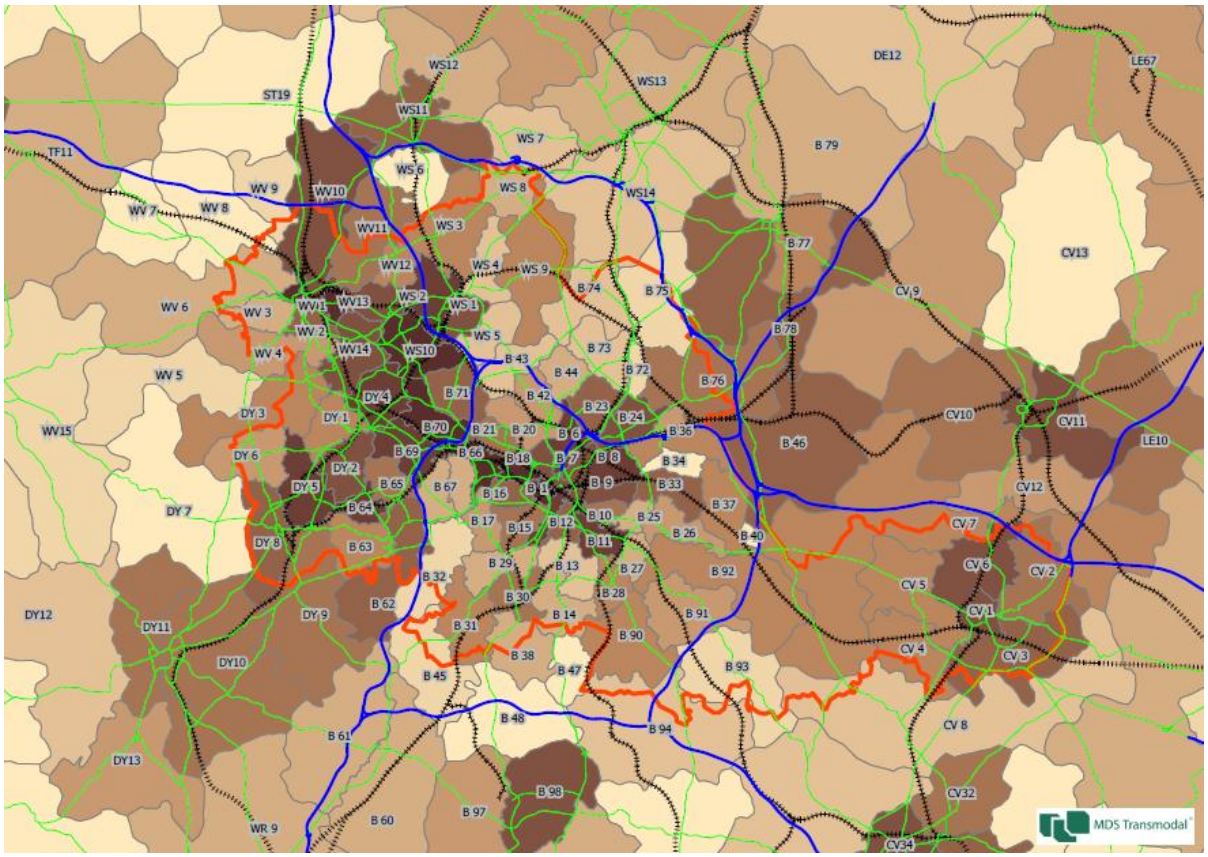
Table 5.7: Freight data for the West Midlands, 2010
Million tonnes

	Origin of freight (million tonnes)	Destination of freight (million tonnes)
Non-bulk	26.7	29.6
Bulk	31.5	32.5
Total	58.2	62.1

Source: GB Freight Model

The City Region is served by two SRFIs at Hams Hall and Birch Coppice and there are rail connected warehouses at a site at Coventry. There is also an intermodal rail freight terminal (Lawley Street Freightliner Terminal), while there are proposals to create rail linked intermodal terminals at Bescot and just beyond the Metropolitan area at Cannock. There are two proposals for an SRFI north of Wolverhampton.

Map 5.8: Freight density for the West Midlands



Freight issues and challenges specific to the West Midlands are:

- Network stress on the M42 during the AM-peak and PM-peak, particularly Junctions 3-6 and 8-10.
- Network stress on the M6 during the AM-peak and PM-peak, particularly Junctions 4-10. Junctions 5-8 are planned to be upgraded to Managed Motorways (works expected to be completed by 2014/15)
- The existing SRFIs at Hams Hall and Birch Coppice may be nearing 'build out'. Additional land will therefore need to be allocated for an expansion of rail-served warehousing in the conurbation. The existing Pentalver container site at Cannock already is capable of re-activating its rail connection.
- The potential re-opening of the Stourbridge to Walsall railway line: This would enable 'cross West Midlands' freight trains to be diverted and avoid the centre of Birmingham, thereby releasing capacity for additional passenger services.
- The extent to which Birmingham's canal system can be used for the transport of bulk non-time sensitive freight such as construction materials and waste, which is closely related to the issue of safeguarding canal-side loading and unloading sites from development. However, the canals are only able to accommodate narrow boats and the potential is limited.

West Yorkshire

According to our typology of cities developed for this study West Yorkshire is a Large Urban Zone, with a population of about 2.2 million and a land area of some 1,044 km^2. Total estimated freight delivered in the West Yorkshire conurbation in 2010 was some 60.7m tonnes, while the city was the origin of an estimated 54.5m tonnes of freight. 7% of this traffic was transported by rail and the remainder by road.

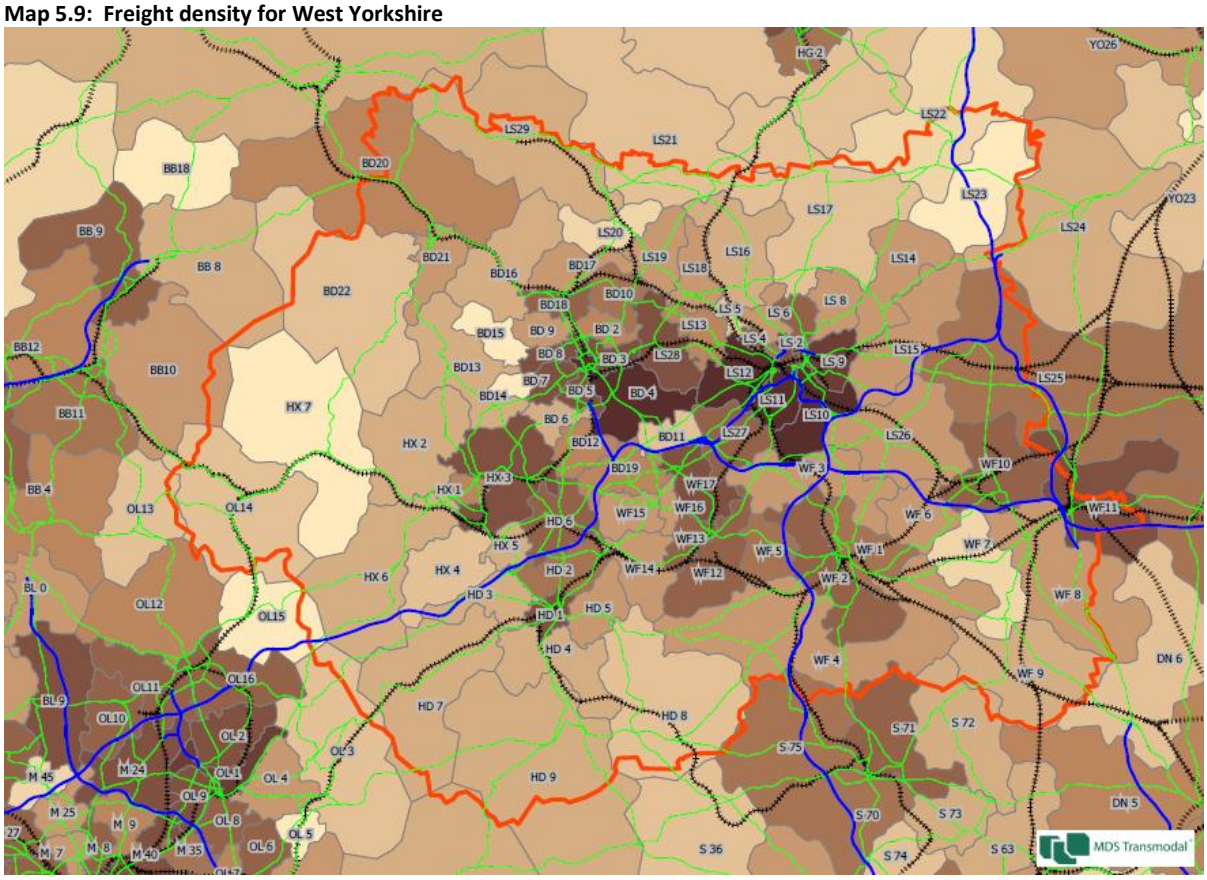
Table 5.7: Freight data for West Yorkshire, 2010
Million tonnes

	Origin of freight (million tonnes)	Destination of freight (million tonnes)
Non-bulk	32.9	29.9
Bulk	21.6	30.7
Total	54.5	60.7

Source: GB Freight Model

The City Region is served by two intermodal rail freight terminals at Wakefield Europort and Leeds Freightliner Terminal. The Wakefield site gained consent as an integrated terminal and warehousing site (SRFI) but is not operated as a single entity.

Map 5.9: Freight density for West Yorkshire



Freight issues and challenges specific to West Yorkshire are:

- Network stress on the M62 during the AM-peak and PM-peak, particularly from Junction 24-30. This section is currently being upgraded to Managed Motorway status. The M1 Junctions 39-42 are also planned for Managed Motorways, with works scheduled to start in 2014.
- There is no rail-served warehousing in the Leeds area, nor are there any proposals in the public domain for an SRFI near the city. While there is a substantial warehousing development close to the Wakefield Europort terminal near Normanton, it cannot be classed as a true SRFI as connections to/from the intermodal terminal are via the public road network. The only SRFI development proposed for Yorkshire is at Rossington near Doncaster.
- The East Coast Main Line between Doncaster and Berwick is currently being upgraded to W10 loading gauge, with completion scheduled for March 2014.
- The potential for port traffic from the Humber could be distributed via the inland waterway network to Leeds, which would require suitable canal-side loading and unloading facilities in the city.

5.4 Summary

All the cities and city regions within the scope of this study have economies that are based mainly on service industries, principally financial services, education, health, public administration and retail. They are all therefore major destinations for "last mile" deliveries of retail goods, office supplies and documents/parcels. They are all significant centres for leisure activities and therefore generate deliveries to the hotel, restaurant and catering sector. These deliveries have to be made on generally congested urban road infrastructure from regional distribution centres that are usually located some distance from city centres on former agricultural land, close to a junction with the trunk road network. With their extensive residential areas, all the cities and city regions will be experiencing increased volumes of e-commerce deliveries, mainly by "white vans". Other, usually bulk freight flows, relate to the movement of construction materials into urban areas for use on residential and commercial development projects. All these freight movements contribute to the economic vibrancy and prosperity of the City Regions, but also generate externalities that have been discussed in Chapter 1. All the City Regions are required to deal with very similar issues related to these intra-urban freight movements and therefore have common challenges for the future.

The City Regions will also have some specific sites that generate more strategic (mainly) road freight movements and also generate employment opportunities and prosperity, namely:

- Manufacturing: Most of the City Regions specialise in particular manufacturing sectors, such as aerospace in Bristol, steel in Sheffield and automotive in the West Midlands, Merseyside and Tyne and Wear. The manufacturing facilities related to these activities will have inbound movements of raw materials and components, with outbound flows of finished products as part of national or international transport chains.
- Port facilities, with inland distribution movements to a local, regional and even national hinterland depending on the type of traffic. Cities such as Liverpool and Newcastle have developed around their ports, so there is often an issue in relation to access for transit from port facilities to the strategic road network.
- Distribution parks, whether rail- or water-connected or more conventional sites with only road access. These act as the transfer points between inbound freight flows by road, rail or sea of retail goods, office and HoReCa supplies over medium to long distances and "last mile" deliveries by road into city centres.

Although only three of the City Regions included in the study are Port Cities, all City Regions will have issues related to manufacturing sites and distribution parks.

6 THE FUTURE OF FREIGHT IN THE CITY REGIONS

6.1 Introduction

Having established the existing issues related to freight in the City Regions, this chapter is more forward-looking, setting out likely future technological trends and providing some freight forecasts that have previously been developed by MDS Transmodal for Network Rail and for the DfT/ports industry. However, it begins with a discussion of the future for City Regions in general terms, which helps to provide context for the analysis that follows.

6.2 The future of cities

Demographic trends

The population of urban areas continues to increase throughout the world and it is estimated that by 2030 60% of the world's population will live in cities (UN Habitat 2008). Most City regions in the UK are also expected to see a sizeable population increase by 2021, as indicated in Table 6.1 below.

Table 6.1: Forecast change in population of selected English cities, 2011-21

	2011	2016	2021	% Change 2011-16	% Change 2011-21
Newcastle	279,092	291,799	298,729	+5%	+7%
Nottingham	303,899	318,078	326,311	+5%	+7%
Bristol	428,074	453,034	472,894	+6%	+10%
Liverpool	465,656	462,610	459,242	-1%	-1%
Manchester	502,902	520,875	532,183	+4%	+6%
Sheffield	551,756	573,000	589,460	+4%	+7%
Leeds	750,683	801,830	839,568	+7%	+12%
Birmingham	1,074,283	1,121,263	1,160,114	+4%	+8%
England	53,107,169	55,486,580	57,687,784	+4%	+9%

Source: ONS (2011)

The ONS forecasts suggest that Newcastle, Nottingham, Bristol and Leeds will grow faster than the population of England as a whole up to 2016 and Manchester, Sheffield and Birmingham will at least roughly match overall population growth.

As well as a growth in urban populations, the UK will also have an ageing population, which will in itself offer new challenges particularly in healthcare and associated services, as well as changes in housing needs and changes in transport solutions.

Policy direction & future urban economies

Most levels of Government in the UK and other interested parties tend to agree that overall policy and strategy for urban areas needs allow them to achieve their potential to compete on a global scale. One theme which occurs predominantly in policy thinking with regard to an advanced economy such as the UK is the use of technology.

In principle, the use of Information Technology systems and telecommunication networks would secure numerous benefits for a modern city; these include employment opportunities, traffic management, e-commerce, communication advancements, lower emissions, etc. These are some of the ideas which are being adopted by cities across the UK and the rest of the world. In terms of the economic future in most UK cities, the adoption of appropriate innovative technology is seen as being vitally important for the competitiveness of individual cities.

Heavy manufacturing industries that would have been the backbone of the traditional economy in many City Regions are much less competitive and so there has been a gradual shift towards the service sector and knowledge economy. In 1970 around a fifth of the UK workforce was employed in the knowledge economy and by 2020 this figure is expected to be around half of the workforce (Work Foundation 2011). Such a shift in the type of workforce will require different forms of education and training. This has seen an increase in the number of people going to University, creating higher student populations in cities and ideal talent pools for employment investment.

Digital Infrastructure

If cities continue to follow such innovative models, the infrastructure that is required to serve them will alter. The need for greater connectivity in the form of broadband and 4G communication systems is required, so that services which would have been provided by means of physical interaction are replaced by technology. For example, the growth of e-commerce could lead to less retail presence in city centres and a greater focus of employment on distribution centres situated outside city centres. Greater connectivity could also lead to more teleworking, reducing the need to travel to offices in city centres.

Sustainable development

One of the key aspects of present and future cities policy is the concept of sustainable development, which is seen as being vital to the future growth of cities and their economies. Reducing environmental impacts and improving the quality of life could be achieved through concepts such as greater collaboration between cities in providing services, greater localised energy production and less reliance on global supply chains. These factors have implications for the freight industry as it

may lead to shorter supply chains and more focus on national (and even regional or local) manufacturing and processing.

6.3 Future perspectives: technological trends

Road freight

EU legislation has forced manufacturers to develop more fuel efficient diesel engines that reduce emissions of particulates and other pollutants, so that the UK fleet of road freight vehicles has gradually become cleaner and more fuel efficient. This trend is likely to continue in the future, particularly as higher diesel prices are forcing hauliers to find ways to increase fuel efficiency.

However, a recent study by AEA Technology has reported that 75% of carbon emissions from road freight transport relate to HGVs providing long distance haulage services. At a national level therefore the key priority is to reduce carbon emissions from HGVs that are mainly using the strategic road network, but there does not seem to be any immediate prospect of using electrically powered vehicles for these flows due to current limitations in battery technology which requires very heavy batteries to provide the required torque. There may be scope for the use of hybrid vehicles, so that electric power could be used for deliveries in urban areas (although the battery will reduce the payload weight, efficiency and volume of the vehicle) and the diesel engine can be used for long-distance hauls.

The European Commission argues that the best immediate solution for reducing GHG emissions from HGVs over medium to long distances is likely to be the use of gas propulsion (bio-methane, LNG or LPG in the UK). While refueling infrastructure is already available for LPG, it would need to developed for LNG in the UK and the European Commission is proposing that LNG refueling stations should be developed every 400km on the Transport Trans-European Network (TEN-T).

There is an on-going debate about how freight vehicle size and weight should develop in the future. The EU was considering harmonising maximum vehicle heights in Europe at 4 metres, but this would have required the maximum height to be reduced in the UK and was strongly opposed by the UK Government and the UK road haulage industry. The proposal has now been withdrawn by the European Commission and so double-decker trailers that maximize the available height on the strategic highway network can continue to be deployed by hauliers to carry relatively light goods.

The DfT has no plans to increase the maximum gross vehicle weight for HGVs from 44 tonnes, but the DfT is running a trial of up to 1,800 semi-trailers that are two metres longer than the standard 13.6 metre trailers that are currently allowed on the UK road network. The DfT will collect evidence from the trial to establish whether the trailers reduce emissions per tonne km and therefore provide environmental benefits or whether they just reduce the private costs of the hauliers and lead to a loss of rail freight traffic.

Figure 6.1: Hybrid HGV in use at the Heathrow Consolidation Centre

Photo courtesy of DHL

For city centre deliveries from RDCs, smaller vehicles will often be used due to size and weight limits in many urban areas and it is more likely there will gradually be take-up of hybrid and electric technology. The major barrier to the greater take-up of emerging low emission technology by the road freight industry is the investment uncertainty involved, particularly during an economic downturn. The closer RDCs are to major urban areas, the more practical it is to use low emission vehicles for onward distribution given their current limited range. On-street recharging facilities are unlikely to be required for freight vehicles because they will be able to recharge their batteries at their depots at distribution centres.

Sustainable modes of transport

Rail freight technology is relatively stable, although all modes of transport are likely to be under greater scrutiny in relation to their emissions. The trend towards electrification of the rail network should lead to greater use of electric freight locomotives although take up will be slow as the rail freight operators have all invested in reasonably modern fleets of diesel locomotives and only 11% of current rail freight movements can complete journeys completely by electric traction due to the lack of electrified reception sidings at terminals. Extensive extension of the electrified network will be required to allow a significant switch from diesel to electric propulsion for rail freight services and there are no current plans for Network Rail to invest in the electrification of freight diversionary routes and freight-only lines. The 2012 High Level Output Statement from Government does, however, suggest that after 2019/20 conditions for a significant transfer to electrically hauled freight could be available.

Shipping is becoming subject to more stringent environmental regulations and a Sulphur Emissions Control Area (SECA) is being introduced on 1 January 2015 in the North Sea, English Channel and Baltic (not the Irish Sea and the Western Approaches as far as Lands End), which will force shipping lines that operate in the area (particularly ferries) to either:

- Burn cheaper high sulphur fuel, but to use "scrubber" technology to remove almost all the sulphur dioxide from their exhaust. The scrubber technology can be retrofitted but at a cost of between £2-3 million per vessel.
- Burn low sulphur fuel, which is more expensive per tonne;
- Use Liquid Natural Gas (LNG), but this is likely to only be an option for newbuild vessels as there have been no successful examples of retrofitting of LNG propulsion systems.

The increased costs involved for the ferry companies is likely to lead to either the closure or a cut in capacity of some longer distance ferry services from the east coast of GB (between the Forth and the Humber inclusive) to the Continental mainland and Scandinavia. This will lead to more freight being transported on the shorter crossings on the North Sea and the English Channel, with more HGV traffic on the strategic road network.

Although future energy prices are inherently uncertain, the current low cost of LNG compared to the oil-based fuels that are currently used makes LNG –powered ships an attractive option for shipping lines when they need to invest in new vessels. However this requires a network of LNG bunkering facilities at ports and the European Commission is proposing that such facilities should be developed at major EU ports by 2020.

Information Technology

Information and Communications Technology (ICT) will continue to be taken up by the freight industry as individual companies seek to maintain a competitive advantage by reducing costs and increase the quality of service. Improved levels of information, particularly on the final destination and required arrival time of goods can make rail and shipping modes more competitive by allowing for the extra planning they require as compared with road haulages.

It should be possible for the IT industry in liaison with the public sector to develop business models which will lead to the greater implementation of Intelligent Transport Systems (ITS) for freight, which will allow infrastructure providers to provide freight operators with real-time information on, for example, the status of the urban road network and the availability of loading and unloading bays. When this information is reliable and timely, it has value for freight operators so that a charge could be made.

6.4 Future perspectives: freight forecasts

Table 6.2 shows MDST's most recent rail freight forecasts, which will be used by Network Rail and the rail freight operators to plan for the future development of rail freight in GB. The forecasts have been produced using the GB Freight Model, which the DfT uses as its freight module in the National Transport Model. As in all transport forecasting exercises a number of assumptions have been made about future relative transport costs for road and rail in particular, but the two key assumptions are that:

- Sufficient capacity is available on the national rail network to accommodate the additional trains that are implicit in the 110% increase in rail freight up to 2033/34;
- A network of rail-connected distribution parks is developed around GB (including London and the South East) to improve the economics of rail freight so that international and domestic intermodal rail freight services can develop at the expense of road freight.

Table 6.2: Rail freight forecasts 2011/12 – 2033/34

Million tonne kilometres

	2011/12	2033/34	% change
Intermodal: ports & Channel Tunnel	5,258	18,102	+244%
Intermodal: domestic	1,196	15,775	+1,219%
Electricity supply industry coal	5,759	577	-90%
Construction materials	3,454	3,829	+11%
Other	7,249	9,776	+35%
Total	22,916	48,059	+110%

Source: MDS Transmodal (December 2012)

The availability of a national network of rail-connected distribution parks would facilitate a very significant increase in domestic intermodal rail freight, while other rail freight traffics would grow at much more modest rates. The anticipated 90% fall in the transport of steam coal reflects the closure of coal-fired power stations due to European emissions legislation. Implicit in these rail freight forecasts are forecasts for road freight tonnes and tonne kilometres to decline. Nevertheless, about 80% of all tonnes lifted are forecast to be by road in 2033/34.

MDST developed port traffic forecasts for the DfT in 2005-07 and these have been used by the Department in its Ports NPS (published in 2012) despite the impact on the economic downturn on may port market sectors. MDST has, however, up-dated its forecasts on two occasions since 2009 and the results have been presented at public conferences. The most recent forecasts are provided in Table 6.3.

Table 6.3: UK port traffic forecasts to 2030

Million

	2010	2020	% CAGR
Roll-on roll-off (units)	8.22	9.38	+1.3%
Containers (units)	4.96	6.16	+2.2%
Bulk (tonnes)	345	373	+0.8%
Total port traffic (tonnes)	498	553	+1.1%

Source: MDS Transmodal, 2012

Unitised traffic was expected to grow by about 3% p.a. prior to the economic recession, but the forecasts MDST produced for the DfT in 2005-07 did not anticipate the impact of a severe economic downturn. The recession has had the effect of reducing overall GB port traffic between 2007 and 2009 by 14%.

Bulk traffics are expected to increase up to 2020 at a slower rate than unitised traffic. Gas imports are forecast to rise strongly (imports of LNG) with a small fall in bulk liquids reflecting a marginal fall in petroleum consumption. Dry bulks fell sharply in the recession, partly reflecting the substitution of gas for coal for electricity generation.

Taking unitised and non unitised cargo together (assuming 11.6 tonnes per unit load), MDST's latest forecasts for port traffic are for growth at 1.1% p.a. between 2010 and 2020, which is consistent with the long term tonnage growth rate for port traffic between 1965 and 2010.

6.5 Conclusions for freight in City Regions

The increasing population of cities and the ageing of urban populations is likely to lead to significant changes in retail demand, with the growth of more local convenience store formats at the expense of large out-of-town developments and traditional city centre retail developments. At the same time, it seems likely there will continue to be growth in the e-commerce sector, which replaces passenger trips in their cars to city centres and out-of-town stores with "white van" deliveries to residential areas and places of work. City centres will become more focused on leisure and recreational activities, rather than retail activity. The trend towards teleworking may lead to less requirement for office space in city centres and fewer deliveries of office supplies.

Freight activity within City Regions could therefore become more fragmented in the way it is experienced in city centres and suburban areas, with smaller vehicles delivering food and other consumables to smaller, more local stores and HoReCa establishments in city centres and making e-commerce deliveries to residential and commercial areas. It may become even more important for city centres to provide attractive environments for foot loose leisure markets, raising the importance of ensuring freight is environmentally friendly.

Greater use of ICT by freight operators and ITS should greatly assist freight vehicles to operate more efficiently and sustainably in cities. This is most likely to be achieved by partnership working between local authorities as information providers on local highways networks and the private sector as data providers.

Technological advances and manufacturing economies of scale should gradually reduce the cost of low emission vehicles for use in urban areas, but an enhanced network of SRFIs will be needed to secure greater modal shift from road to rail for medium to long distance freight flows, given that at present some 75% of carbon emissions from road freight transport come from HGVs carrying out trunk hauls. It is likely that the sustainability of long distance road haulage can be enhanced by greater the adoption of gas as a fuel and, subject to the results of the on-going trial, the use of longer semi-trailers.

7 CITY REGION POLICY VISION & MEASURES

7.1 Relationship between local, national and European policies

This chapter provides a policy vision for freight in the City Regions, given the background, trends and forecasts discussed in Chapters 2-6. It also seeks to describe where policy initiatives at a national level are most appropriate and where local authorities and PTEs should take action in the City Regions.

The chapter then sets out a City Region Freight Policy Framework, which shows the relationships between categories of policy measures at a local level and the behaviour of the freight industry. Finally the chapter sets out some specific policy measures that can be adopted by City Regions (a "City Region Freight Toolkit") to influence the behaviour of the freight industry for the common good, illustrated with case studies from around Europe.

7.2 Policy vision for freight in the City Regions in 2030

Introduction

Until the economic recession in 2008-09, overall freight volumes had been stable for over a decade. The gradual de-industrialisation of the UK economy has reduced the amount of freight that moves between industrial plants, balancing the overall growth in goods that are eventually consumed. Total tonnages lifted between the height of the peaks in 1968 and 2007 grew by just 16% while GDP grew (in real terms) by 152%. Mean length of haul for all freight movements is around 100 kms.

It follows that most freight in any one City Region will have an origin or destination elsewhere. As a result, any policy vision for freight in the City Regions in 2030 needs to consider freight transport over medium and long-distances, where individual local authorities and PTEs are less able to influence the behaviour of the freight industry and the way in which it organises urban freight transport for deliveries and collections within the urban areas themselves. Policy development needs to recognise these factors.

Freight transport over medium- to long-distance flows: the role of rail freight

For freight transport over medium- to long- distances (i.e. in effect to deliver goods to RDCs in the vicinity of the City Regions), rail freight should be able to continue to grow and it is worth noting that most of the forces that led to a severe decline in rail's share of the market in the 50 years following the Second World War no longer apply:

- The development of the motorway network (now more or less complete);
- The release of adjacent (non-rail connected) land for new developments to replace industrial plant in urban areas;
- The liberalisation of the road haulage industry (completed in the 1970s);
- The decline of most traditional manufacturing industries;
- Clean Air Acts that more or less eliminated the domestic coal market.

Instead, there has been a trend towards a greater proportion of goods being imported, the rise of containerisation and the development of very large distribution centres by major retailers and manufacturers. While the anticipated decline in power station coal traffic is unlikely to be fully matched by growth in biomass by rail freight, rail freight volumes are still forecast to continue to expand at the expense of road freight, as long as existing warehousing continues to be replaced by rail-linked distribution centres at SRFIs. The Government commitment to continue to invest in the Strategic (rail) Freight Network appears to offer the network capacity required to match these forecasts. Rail's potential to 'deliver' is now well established for medium- and long-distance freight flows.

The role of warehouse location in dictating outcome

Nevertheless, the forecasts that MDST has recently completed for Network Rail still mean that four tonnes of road freight will be lifted per tonne of rail freight and the transfer of goods from road on the strategic highway network to the rail network does not necessarily lead to an immediate improvement in the quality of city life, particularly where people live close to SRFIs. The economic success of an urban area may be enhanced by reducing the cost of freight access (particularly in port areas) but will be adversely affected if its urban centres are rendered unpleasant by the intrusion of diesel-powered goods vehicles.

Although diesel engines are becoming cleaner under pressure from EU emissions legislation, the HGVs used for long distance trunking will in the future need to be powered by fuels that do not result in such high emissions of GHG. Such issues are, however, beyond the influence of the City Regions and will require policy measures at a national and European level.

The policy vision for strategic freight flows over medium to long distances for 2030 therefore is for significant volumes of freight switching to rail, but about 80% of freight still being carried by lower emission HGVs. Much of the freight that will be delivered to the City Regions will pass through distribution centres that will be located on SRFIs, Urban Distribution Centres or, for port cities, port-centric distribution sites. These distribution centres will provide significant amounts of employment (even if mainly displaced from other areas), but there will be an increase in freight traffic in the areas around the distribution parks.

Incentivising the freight industry to deliver sustainable urban freight transport (UFT) strategies

Local planning authorities and PTEs are responsible for transport policy, highway management and air quality in the City Regions at a local level and can have a significant influence over the behaviour of the freight industry in carrying out deliveries and collections in their urban areas. Together they have the means to have a positive impact on both the quality of the urban environment and the success of their City Region economies (with respect to freight) if they can combine their powers over planning policy and their ability to control and influence the management of transport networks in their areas. The key to success will be to identify strategies which:

(a) protect and enhance the local quality of life in the City Regions, yet simultaneously;
(b) recognise that for many areas of the economy, individual City Regions are engaged in a competition for private sector inward investment.

It is not in the interests of any City Region that its efforts to minimise environmental impacts lead to a wider loss of cost and competitiveness. Balance will always be required. Nevertheless, given that legislative frameworks effectively require the freight industry to operate in an openly competitive and almost entirely private sector environment, the opportunity is available to public sector policy makers at a local level to identify 'win-win' strategies through having a sound understanding of freight industry costs and competitive structures to encourage the freight market to change its behaviour for the common good. The freight industry is sensitive to measures that affect its operational costs, including changes to the charges it faces in using road and rail networks. This should be seen as an opportunity for positive and well informed action, regardless of any short-term complaints from operators that inevitably occurs where particular interests are concerned. In practice, the freight industry is responsive and adaptable.

Given such understanding, it should be possible for well-informed authorities in a City Region to provide leadership on developing successful strategies, particularly where PTEs provide the institutional frameworks to provide area-wide co-ordination. The UK is seen as offering an example of "best practice" throughout Europe with its industry consultation and practical action through Freight Quality Partnerships and in the inclusion of planning for freight within Local Transport Plans.

The vision for urban freight transport in 2030 would be for deliveries and collections to be made by ultra-low emission electric vehicles operating from rail- (and, in some cases, water-) connected distribution sites located on the outskirts of major city centres. Goods would arrive by rail or in low emission HGVs at the distribution sites for transfer within distribution centres to form consolidated loads for smaller electric vehicles. Through the use of electric vehicles and well-designed freight reception facilities at major retail outlets and larger offices in city centres, quiet night-time deliveries would be carried out so that fewer deliveries are required in peak hours of traffic congestion during

the day. The same vehicles would carry out deliveries of e-commerce goods in residential areas and to a network of e-commerce collection and drop-off points at local convenience stores and passenger interchanges.

For this vision for urban freight transport to be achieved will require policy measures at a European, national and local level to influence the behaviour of the freight industry. The following sections consider how policy-making at a European and national level should change to steer the market and policy environment in a direction which requires the freight industry to adopt more sustainable practices. It then focuses to a greater extent on policy measures that can be adopted by local authorities and PTEs in the City Regions to develop sustainable distribution, which is illustrated in terms of a City Region Freight Policy Framework.

7.3 European and national policy measures

Introduction

One of the main reasons for relatively inefficient UFT, characterised in the UK mainly by relatively low load factors and a low number of deliveries on delivery rounds, is that UFT operators and their customers are not sufficiently incentivized through transport pricing mechanisms to increase efficiency by, for example, consolidating loads or organising consolidated deliveries. Given that most of the freight industry and its customers are in the private sector, the most effective way to incentivize the development of more sustainable UFT practices is to use the pricing mechanism through the internalisation of external costs into the price of freight transport in urban areas and beyond that is charged to freight operators and then passed onto to customers.

Road user charging

In an urban context, this concept would be most relevant to road freight transport because it is the dominant mode for “last mile” deliveries and would need to reflect the different social and economic costs imposed by different types of vehicle at different times of the day and week and take into account the distance travelled. This means that ICT/ITS needs to be deployed to allow electronic monitoring of the movements of vehicles by the charging authority and to make payment and collection of the charges cost-effective. Given the complexity of such a system of road pricing and the implementation costs, ideally implementation of such as a system will be at a national level It is not current government policy in the UK to introduce road pricing for freight vehicles, although the Lorry Road User Charge introduces the “user pays” principle for use of the strategic highway network and also involves a radical change from the existing means of taxing road haulage in the UK. Nevertheless, the internalisation of external costs remains central to the European Commission’s policy approach and systems of road pricing for freight have been introduced for the motorway

network in Germany and Austria and will be introduced for freight vehicles on the motorway and trunk road network in France in 2013. The decline in fuel tax revenue in the UK and the likelihood of its continuing to fall as more fuel efficient vehicles are introduced is likely to encourage the Treasury to take a more positive attitude to the road pricing in the future. It could be introduced for HGVs before any extension to private cars.

Full-scale road pricing applied to urban areas, as well as to inter-urban and long distance transport, remains the most appropriate medium- to long-term policy measure to provide appropriate price signals to UFT operators and their customers to secure more sustainable UFT. Given the levels of road congestion that are often experienced in many urban areas in peak hours and the levels of air pollution and CO_2 emissions in urban areas, road pricing (based on the type of vehicle, the time of day, day of the week and the distance travelled on particular roads) is likely to lead to a significant increase in the variable cost per kilometre of road freight movements in urban areas. As the freight industry is highly competitive and responds to price signals through market mechanisms, this would have the effect of encouraging greater use of collaboration and consolidation to reduce the cost per unit of goods transported and encourage the use of more environmentally-friendly vehicles.

Through normal market mechanisms, any increase in costs would have to be passed on to customers, which would encourage them to adopt procurement and supply chain strategies that minimise their delivery costs. It would also have the advantage of removing the justification for direct or indirect public subsidies for UFT, which can distort freight markets, and would remove the need for other forms of charging and regulation such as congestion charging and even Low Emission Zones. Regulation would therefore be simplified, with regulatory measures being mainly deployed to ensure the safety of road users and limiting damage to the physical environment.

Finally, the introduction of a system of comprehensive nationwide road pricing is likely to encourage a switch of some strategic traffic to and from urban areas to rail and waterborne freight, which would help to increase the sustainability of the whole transport chain, not just for “last mile” deliveries.

However, the City Regions cannot easily influence whether road pricing is introduced in the UK for freight vehicles and so will need to adopt a range of measures in the meantime to encourage more sustainable distribution in urban areas. These are discussed in detail in sections 7.4 – 7.9 below.

Freight vehicles and loading and unloading equipment

The vehicle technology and the refuelling technology is also likely to be steered by policies at a European and national level, rather than at a local level. In particular, the EU will continue to apply pressure on manufacturers to reduce emissions from diesel engines and is actively seeking to facilitate the take-up of alternative fuels for freight vehicles. Local authorities may be required to

plan for the development of refuelling infrastructure for alternative fuels in the future, but this is likely to be guided by policy at a national and European level.

An area where the DfT is actively seeking to develop guidance is that of quiet night-time deliveries, but in the longer term there is also likely to be a European dimension because the standardisation regime could play a key role in effectively requiring that all freight vehicles, including loading and unloading equipment, meet the required standards for low noise operations at night (while also providing benefits during the day), which should reduce manufacturing costs. Further research is likely to be required at a European level to ensure that the benefits of such an approach strongly outweigh the costs to industry and to society as a whole.

Summary of European and national policy making

In summary, there are some key areas of policy, such as road pricing and vehicle technology and standards, where the City Regions will be unable to have a strong influence over long-term future developments. If appropriate policies are adopted at a European and national level, the City Regions should, however, see benefits in terms of the adoption of more consolidation of deliveries, the greater take-up of low emission freight vehicles and, subject to its acceptability by local residents, greater use of quiet night-time deliveries to create more road space for other users during the day.

7.4 City Region Freight Policy Framework

Introduction

We have developed a City Region Freight Policy Framework in an attempt to encapsulate the key measures where local authorities and PTEs can have a direct influence over the behaviour of the freight industry to secure more sustainable distribution, while helping to maintain the economic vitality of their City Regions.

The Framework illustrates how the City Regions can develop integrated and evidence-based freight strategies within the existing LTP and land use planning framework, with tailored packages of policy measures that influence the behaviour of the freight industry to achieve objectives that improve the quality of life for residents and visitors and support the local economy. These measures form a policy "toolkit" from which local authorities and PTEs in the City Regions can select the most appropriate measures to meet their local objectives and local economic and social context.

The measures within the policy toolkit can be categorised as being:

- Land use planning;
- Regulation;
- Pricing and incentives;

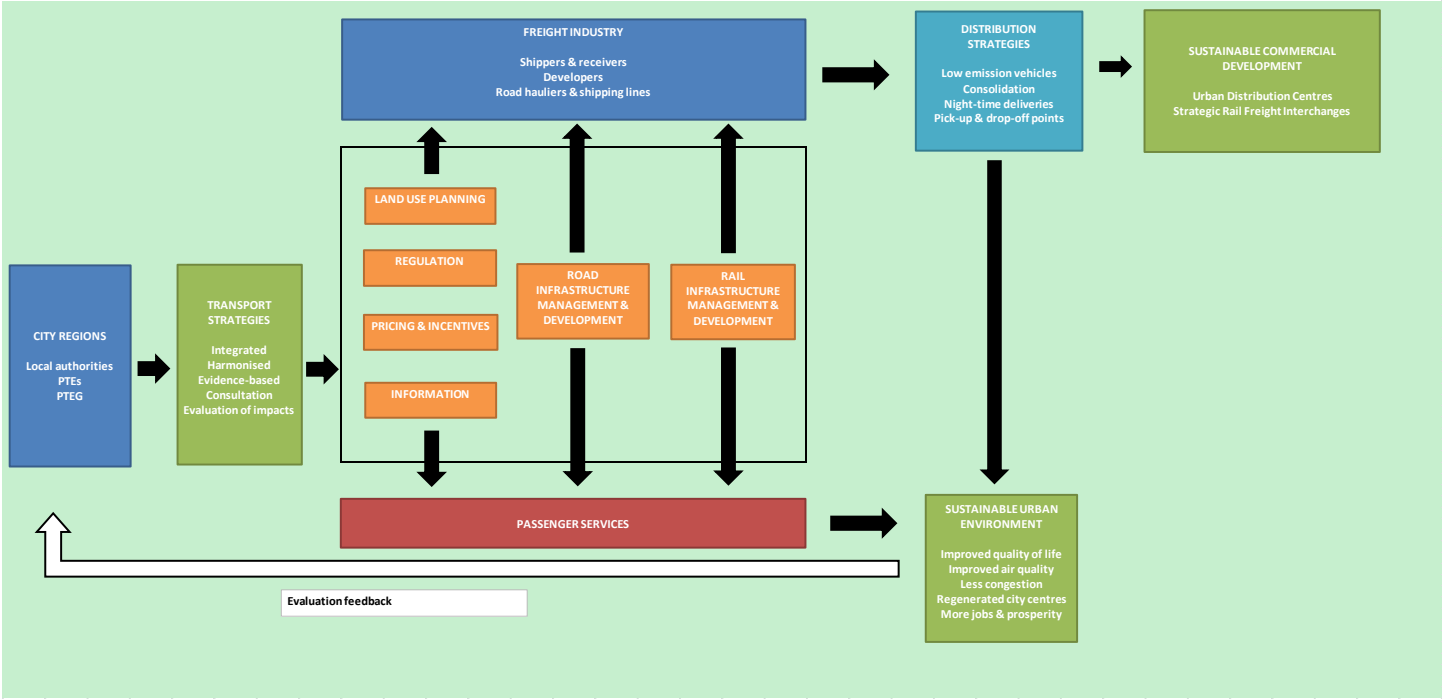
- Information;
- Road and rail infrastructure management and development.

Each of these categories of policy measure will be considered in more detail below.

Through these packages of measures, which must be developed specifically to meet the needs of individual City Regions, the public sector can influence the freight industry to adapt their distribution strategies to secure the sustainability and economic objectives of the City Regions and also secure appropriate development to facilitate the future growth of more sustainable distribution practices at both a local and strategic level.

Figure 7.1 seeks to set out how strategies and outcomes can be inter-linked, and how policies towards long distance freight (essentially encouraging a continuing switch to rail) can be integrated into more locally 'City-based' measures.

Figure 7.1: City Region Freight Policy Framework



Source: MDS Transmodal

Freight strategy development

The existing LTP processes already provide the structure for developing freight strategies, involving data collection, consultation, ex-ante evaluation of strategy options through modelling and then ex-post monitoring of impacts and outcomes of the policy measures that are adopted. Industry consultation will be an essential part of the process and can be achieved through Freight Quality Partnerships, which most if not all City Regions have already established.

The UK's transport planning and consultative processes are regarded at a European level as providing examples of best practice. However, our impression from working with local authorities in the UK is that there is a lack of high quality freight data and little freight modelling is carried out to establishing the impact of any policy measures. There may therefore be some room for improvement in in developing more evidence-based strategies for freight.

The freight industry adapts relatively quickly to a changing business and policy environment, but there is inevitably some degree of inertia as individual businesses have sought to "optimise" their existing operations to the current policy environment, while operating in a competitive market. There is therefore usually strong short-term opposition from the freight industry to almost any proposed change which does not provide it with clear and immediate benefits. Such opposition is inevitable because in an industry with low profit margins (market entry is relatively easy) any shift in position can threaten a company's viability and survival. Proposed policy measures need to be explained therefore based on strong quantified evidence, with clear policy objectives in mind and following consultation with all relevant stakeholders; if necessary, appropriate measures within a coherent strategy and following consultation should be introduced even in the face of freight industry opposition. Freight actors need to be confident that any new environment in which they find themselves can be profitable and commercially sustainable. Policy makers require the skills to provide the actors with that confidence.

Evaluating freight policy measures

Freight policy measures and public sector investment should be evaluated on the basis of standard methodologies applied on a consistent basis, while bearing in mind that external funding is unlikely to be available in the way in which, for example, public passenger transport is funded. The extent to which measures can be proposed will generally be limited to those which are self financing (hence the need for commercial skills to identify them)

The standard ways to evaluate freight policy measures and investments are based, in general terms, on cost-benefit analysis using the following measures:

- The value of non user benefits as a result of the measure where it removes or reduces lorry miles on the road network;

- The value of user benefits as a result of the measure in terms of time savings for freight vehicles and drivers;
- Wider economic benefits in terms of creating or safeguarding employment and generating gross added value.

When carrying out both ex-ante and ex-post evaluations it is essential to consider the benefits for passengers as well as freight. For example, night-time deliveries that do not disturb the sleep of local residents provide private cost savings for the freight industry and major retailers, but also reduce congestion and provide time savings for other road users in day-light hours; re-opening a freight line to provide a diversionary route for rail freight services can free up rail network capacity for more passenger services.

The value of non-user benefits, based on removing or reducing freight transport on the road network, should take into account congestion levels on particular sections of the road network, the cost of accidents, noise, air pollution, climate change impacts, infrastructure costs and also be net of existing taxation of road freight vehicles. The resulting net external cost per mile, which is also the price that a freight vehicle should in theory be charged under a system of road pricing, varies significantly according to DfT Guidance[2] from £0.07 per lorry mile on a low congestion motorway to £1.43/mile on a local road in an urban area. While these measures are usually applied to strategic freight movements, they could also be used to evaluate UFT measures such as consolidation schemes where they lead to a reduction in the number of vehicles on the roads.

The value of user benefits according to DfT guidance is based on the value of time drivers and their vehicles, but does not include an inventory cost for the freight being carried. For example, the value of time for someone driving in the AM peak period who could otherwise be working is much higher than the labour cost of an HGV driver; however, this measure appears to include the opportunity costs of the car driver's productivity while ignoring the inventory cost within the freight vehicle. This is an area that could require some more research.

Any freight specific investment or measures by the public sector in the City Regions should also include the wider economic benefits that freight infrastructure or measures can provide in terms of generating or safeguarding employment and creating prosperity. In this context, the potential for more efficient deliveries to retail outlets in city centres should not be ignored, given the competitive threat that "high street" retailers are experiencing from competition by on-line retailers and out-of town shopping centres.

[2] Mode Shift Benefit Values: Technical Report (DfT, April 2009)

7.5 Policy toolkit: land use planning

Introduction

Land use policies provide a powerful means of influencing behaviour without public sector funding. As a general rule transport planning for freight and land use planning benefits from being integrated and, while this is the objective of the LTP process, it may not be as well developed for freight as it is for passenger transport. Where freight transport policy and land use planning policy are integrated they are more likely to be able to maximise the overall benefits to society through the development of consistent policies over a long period.

Zoning of activities

The land use planning measures that have the most significant impact on UFT are those concerning the zoning of economic and non-economic activities, as well as the relocation of freight traffic generators (such as logistics or industrial activities) to non-urban locations. The concentration of, for example, commercial/retail activities might allow the rationalization of deliveries with positive benefits for the private sector operators as well as the whole community. For this reason, urban consolidation centres are only likely to be commercially viable where they are associated with concentrations of retail activities in shopping centres; in the UK, almost all UCCs have been developed to serve concentrations of retail activity, such as the Broadmead Shopping Centre in Bristol, Regents Street in London, Heathrow Airport and the Meadowhall Shopping Centre near Sheffield. This is because the number of small to medium-sized retail outlets is more likely to be sufficient to provide the necessary critical mass of traffic to justify the consolidation of loads. However, freight transport is only one of many issues that need to be taken into account in zoning economic activity.

Zoning, when applied to urban freight activities, can provide significant benefits because it concentrates activities in suitable locations on the outskirts of cities where there is sufficient land with good access to strategic routes. The UFT operators can also benefit from the economies of scale that are available from shared facilities such as distribution centres, HGV parking and intermodal rail and waterborne freight facilities that would be available at SRFIs or Urban Distribution Centres.

Land use planning for modal integration

The continuing economic health of urban retail centres will depend, in part, on the ability of retailers to receive deliveries efficiently from major RDCs. One such distribution centre may serve a radius of more than 100 kms and depend on large (and potentially intrusive) HGVs reaching city centre retail outlets. Typically, these distribution centres were developed between City Regions in rural locations

next to motorway junctions, generating limited local employment opportunities and requiring workers to commute long distances by car.

An innovative and (in the medium- to long-term) practical concept in the UK would be the development of a network of Urban Distribution Centres (UDCs) on the edge of urban areas, gradually shifting the distribution industry away from the present practice of locating regional Distribution Centres between City Regions. These would be 'Strategic Rail Freight Interchanges' (SRFIs) that would be close enough to urban centres to be within the range of a fleet of dedicated very low emission vehicles (probably zero emission electric vehicles) to make the short distance delivery rounds that would be required for deliveries into city centres. They can be located at suitable points on the rail network to allow direct intermodal rail freight services to link them with National Distribution Centres, providing there is adequate scale to justify the requisite volume (requiring shared site use by several retailers to justify train-load volumes). Their location could offer employment to urban communities and contribute to greater use of public transport (and can even offer contra-peak flows). Their location can be matched to dedicated "no-car lanes" for which freight users could even be charged (as they would achieve a benefit) or limited to zero emission freight vehicles and buses. They would also be ideal locations for the development of urban consolidation centres.

In practice, no UDCs have been explicitly established (although the 3MG site in Widnes could, for example, perform this role for Merseyside and Port Salford, when developed, could also act as a UDC for the Greater Manchester area). Examples in the UK and elsewhere of the components of UDCs are as follows:

- Sharing of distribution facilities: The largest distribution centre in the UK at Daventry (eventually planned to include 1.3 million square metres) has succeeded in attracting both Sainsburys and Tescos to share sites adjacent to a modern railway yard.
- Rail-based transport chains for retailers: in Scotland, both Aberdeen and Inverness host intermodal rail terminals that deliver containers direct to supermarkets.
- Low emission (electric) delivery vehicles: These are already being used in urban areas such as London and Rome.
- Rail-based flows between NDCs and RDCs for retailers: Tesco is now dispatching trains from its NDC at Daventry to regional sites for Central Scotland, Newport and even as close as East London, with more to follow.

The City Regions could play an active role in developing this concept further by:

- Encouraging SRFIs to be located in suitable locations so they are, in effect, UDCs through the land use planning system;
- Establishing where suitable sites are available in their City Regions, rather than leaving the initiative to private sector developers.

While rail freight will only ever address a minority of the freight market, its rapid growth and associated development of rail linked distribution parks provides a potential catalyst from which a wider set of measures can be implemented to develop land use strategies that will induce a private sector freight industry to follow environmentally friendly practices.

Safeguarding of sustainable distribution sites

Another land use planning measure that is effective in supporting the development of sustainable urban distribution is the safeguarding brownfield sites in urban areas for handling rail and waterborne freight against competing and more remunerative uses such as residential and office development. The most high-profile example of safeguarding for freight activity in Europe is the safeguarding by the Mayor of London of wharves on the River Thames from commercial development.

Consolidation of UFT demand: collaborative transport orders

The consolidation of orders for goods is a powerful potential means to reduce the number of deliveries and increase load factors in urban areas, but it requires a significant change in behaviour on the part of shippers, receivers (including households) and transport operators who are used to being able to order goods whenever they want and receive rapid deliveries of their orders within narrow time windows and with little appreciation of the implications for road congestion and the environment. Organisations are increasingly used to being able to order small volumes of goods such as stationery and receive them on a just-in-time basis. A key issue therefore is how best to encourage greater consolidation of orders by individual large organisations and encourage collaboration between SMEs in the procurement of transport services based on full loads.

In the UK TfL has been promoting the use of Delivery Service Plans (DSPs) to consolidate loads through more rational procurement that leads to lower costs for the organisation, while also reducing environmental impacts.

Good practice case study: Delivery Service Plans in London

Transport for London has been promoting the use by the public and private sectors of Delivery Service Plans (DSPs), which are, in effect, the freight equivalent of Green Travel Plans. DSPs encourage organisations to collect data on their deliveries of stationery, catering supplies and other goods and then examine where and how the number of deliveries can be reduced, leading to cost benefits for the organisation. This usually requires centralisation of procurement and TfL argues that by reducing the number of deliveries they receive organisations can reduce costs because delivery costs are in themselves lower and less staff time is required to make orders, receive deliveries and process invoices.

TfL has developed a DSP for one of its offices in London and secured the following benefits:

- TfL centralised its procurement and storage of stationery and negotiated with its supplier to reduce deliveries from twice a day to just three times a week;
- Catering supplies deliveries were reduced by 40%;
- The frequency of deliveries from off-site document storage was reduced from daily to three times a week.

TfL is hoping that local authorities will implement DSPs (the London Borough of Sutton has already, for example, for its own offices). TfL is also working with the British Institute of Facilities Management to promote DSPs to its members and a number of private sector businesses in London have secured cost benefits through the adoption of DSPs.

The city of Gothenburg also sought to persuade businesses to consolidate their deliveries in the Lundby area of the city and, in addition, a group of organisations in the Lindholmen area of the city have required their suppliers to deliver to an UCC which then delivers consolidated loads to the individual premises.

Good practice case study: Gothenburg: a mix of regulation & innovation

Gothenburg, the second largest city in Sweden with a population of about 500,000, has implemented a number of innovative measures in relation to urban freight transport, including:

- A scheme in the Lundby area of the city to encourage businesses to order goods so as to reduce the number of deliveries;
- A consolidation centre in the Lindholmen area of the city.

The city of Gothenburg has promoted the Lundby Mobility Management Centre, which has been responsible for a measure that informs and persuades companies in the Lundby area to consolidate ordering procedures for office materials and therefore consolidate orders into fewer deliveries. The aim was to reduce the number of deliveries and therefore the number of goods vehicles travelling to the Lundby area. Instead of ordering when a need arose, companies were persuaded to consolidate orders and reduce the frequency of restocking. It was a challenge to find companies at first that were interested in the concept but then the companies easily changed their behaviour and the measure has been considered to be highly successful. The companies do not incur additional costs for implementing the measure and they are able to exploit their involvement in the scheme for marketing purposes.

The city has also developed the concept of consolidation of loads by recruiting a number of organisations (mainly schools) in the Lindholmen area to participate on a voluntary basis in a consolidation scheme where the organisations instruct their suppliers to deliver goods to a consolidation centre, where the goods are unloaded and consolidated with other goods into loads for delivery by an electric vehicle. A third party logistics provider operates the consolidation service on a commercial basis, which also collects waste for the

participating organisations. Only food and loads larger than two pallets are excluded from the service. The service opened in 2008 and is still operational.

The main challenges faced by the consolidation scheme are of an organisational and commercial nature. The participating entities pay for the service and individual contracts are signed between each entity and the service provider. The greatest problem is the allocation of the cost of the service to individual customers. Currently, a mixture of criteria including floor space for offices and number of students for schools is used. The willingness to pay originates from the desire of the entities to remove goods vehicles from the area so that the area is more attractive environment in which to work or study. There is also the pride involved in having adopted a sustainable practice and the marketing opportunities it provides.

Delivery Service Plans, as implemented in both London and Gothenburg, provide an effective way to consolidate demand for UFT because they reduce the number of deliveries required but can also lead to cost savings for businesses. So far these initiatives have been voluntary, but there may be scope for City Regions to make them a planning requirement for new office and retail developments, just as in the UK new large-scale developments only receive planning consent once the developer has developed, and commits to implementing, a Green Travel Plan to reduce the impact of employees' travel patterns on the local road network.

Provision of off-street loading and unloading bays

The land use planning system can also be used to ensure that the developers of any new office or retail development over a certain size in city centres is required to plan for freight activity, with the development of off-street loading/unloading bays.

Port gateways & port-centric distribution

Over the period since the Second World War, the UK switched from being a net exporter of manufactured goods to a net importer. Disregarding basic building materials, these goods represent at least half of all tonnages moved in the UK by road and rail. Goods traffic has shifted towards the ports while port locations represent excellent locations for the onward international distribution of manufactured exports. However, the parallel introduction of containerisation and roll on – roll off traffic went generally to ports beyond the major urban areas. These ports, such as Felixstowe and Dover, were also normally outside the National Dock Labour Scheme, which acted as a market distortion. Before its closure almost a quarter of a century ago, importers and exporters sought to avoid locating their distribution centres in port estates. New port urban developments were typically built around port estates, reducing those ports' opportunities to further develop their own opportunities to extend into distribution activities.

That process is now being reversed, illustrated by the major initiatives to attract tenants for large distribution parks on port estates at London Gateway (Thurrock), at the Port of Liverpool (Seaforth Docks) and on the Tees (Tees Dock), as well as elsewhere. However, such opportunities for the development of so-called "port centric distribution" that return employment to where people live and provide sustainability benefits, face the challenge of congested networks and the lack of suitable areas for distribution development. Modern distribution centres will occupy areas of 100 hectares and this critical mass is required to allow rail freight services to fully develop their potential to and from the sites. Port centric strategies that force 'external' traffic through congested networks may not deliver net benefits.

The key for such developments to succeed and to create employment close to where people currently live (with all the sustainability opportunities that this offers) is identifying the means of adapting existing land uses and creating dedicated high capacity road and rail freight corridors that will minimise the impact on adjacent residential areas. City Regions can play a leading role in developing such infrastructure and providing the scope for key existing infrastructure hubs to be fully exploited via the planning system.

Good practice case study: Planning for port-centric distribution at Seaforth Docks

An example of this approach can be found on Merseyside, where a partnership of Sefton Council, Peel Ports and the Highways Agency (and other key stakeholders) has been working to consider the planning issues around the development of port-centric distribution at Seaforth Docks, probably involving the extension of the existing dock estate. Peel Ports has put forward some proposals for the development of distribution centres on an extended port estate through its Mersey Ports Master Plan and studies have been carried out to examine the potential for increasing the use of rail services and the Manchester Ship Canal for the distribution of freight inland from these distribution sites, particularly given the development of a new container terminal at the Port of Liverpool. Options are also being considered for enhanced road access from Seaforth Docks along the A5036 corridor to the M57/M58.

7.6 Policy toolkit: regulation

Introduction

Regulatory (or "command and control") measures are essentially a package of rules and prohibitions, supported by a control/enforcement system, that are designed to control private activity for the wider benefit of society. Many regulatory measures are not compulsory just for freight traffic but apply to all traffic within a city (such as speed limits, parking restrictions, one-way streets, etc.). These are not considered in this report because they are not specifically designed to control freight activity. However, the following specific measures are considered in more detail below:

- Time-based restrictions on access for freight vehicles;
- Volume or weight restrictions on access for freight vehicles;
- Emissions-based restrictions on access for freight vehicles.

Most freight-specific regulatory measures are implemented by introducing some degree of "differentiation", where freight vehicles that, for example, meet certain emissions standards are treated more favourably under the regulatory regime than those that do not. Differentiation to create incentives to change the composition of the vehicle fleet in operation in urban areas in the UK is mainly based on the environmental performance of the vehicles, which aims to create incentives to use less polluting vehicles or even to renew the vehicle fleet. Occasionally, differentiation relates to vehicles carrying out distribution services from UCCs; at Bristol's Broadmead Centre, for example, there is an exemption for UCC vehicles from time-window access restrictions.

Time-based access restrictions

There are two main types of time-based access restrictions for access to urban areas:

- Time windows for access to urban areas by road freight vehicles during the day;
- Restrictions on access to urban areas by road freight vehicles during the night.

Time windows are where access to specified urban areas is limited for freight vehicles to certain times of the day, such as between 07.00 and 09.00 in the morning and 18.00 and 20.00 in the evening. In the UK they are usually implemented to avoid conflicts between pedestrians (whether residents or tourists/visitors) and freight vehicles that need to load and unload goods and are particularly common in pedestrianised zones of urban areas that have retail and heritage centres, where local authorities want to maintain an attractive environment for shoppers and tourists.

Time windows are likely to increase the costs of distribution overall because of the need to deliver and collect all freight in the restricted area in a shorter space of time than would be possible if access was available at all times of day. The BESTUFS EU research project quoted an example of a parcels delivery company that needed eight vehicles to make its deliveries in an urban area with a 4.5 hour time window per day, compared to only three vehicles if there had been unrestricted access. However, pedestrianized zones help to increase the quality of urban life for residents and improve the visitor experience for shoppers and tourists. The policy of differentiation can then be used to allow some limited exemptions from time windows for vehicles (e.g. electric delivery vehicles) or delivery operations (e.g. from a UCC) where deliveries are demonstrably reducing externalities from freight activity.

Good practice case study: The Broadmead Shopping Centre in Bristol

At the Broadmead Shopping Centre in Bristol freight vehicles are only allowed access between 05.00 and 08.00 in the morning and between 18.00 and 20.00 in the evening to avoid conflicts with pedestrians and to ensure there is an attractive environment for shoppers. These time windows also avoid peak commuting hours, which helps the freight industry to provide an efficient delivery service.

However, the local authority has adopted a differentiation policy to provide an exemption from the delivery time window to allow vehicles operating from the shopping centre's urban consolidation centre (UCC) to access the city centre during the working day. This policy has maintained the shopping centre's attractive environment for shoppers, while encouraging use of the consolidation service by, in particular, the small and medium-sized retail outlets that are less likely to be able to justify deliveries in full-loads.

Night time delivery restrictions are where deliveries by freight vehicles during the night in urban areas are either banned completely or closely regulated. These restrictions are usually implemented over quite extensive urban areas to avoid loading and unloading activities that might disturb the sleep of residents. In England night time delivery restrictions are usually applied either:

- Under planning legislation when providing planning permission for a new development, such as a supermarket or shopping centre; the restrictions could be agreed on a voluntary basis between the planning authority and the developer prior to permissions being provided, perhaps in order to remove objections from residents who live close to the site, or imposed as a condition of consent by the planning authority.
- Under environmental legislation by placing a noise abatement notice on a site; this can be put in place at any time under existing legal powers following complaints about noise at night.

As well as these regulations that are applied at the origins and destinations of freight journeys all over the country, there is also the London Lorry Control Scheme that covers the city's road network.

Whilst night time delivery restrictions are effective in reducing the impact on residents from freight activity, night-time deliveries can reduce demand for scarce road network capacity during the day and operators can secure operational and cost efficiencies. A partnership approach between the public and private sectors can be effective in developing night-time deliveries. This concept has been pioneered by the PIEK scheme in the Netherlands, but similar schemes, usually based on the PIEK noise and equipment standards, have been implemented by retail chains in London (Sainsburys), in Belgium (Colruyt Group) and in Barcelona (Mercadona, Condis and Lidl) and in a number of French and Dutch cities.

Good practice case study: Implementation of night-time deliveries by a supermarket chain in Belgium

The Colruyt Group in Belgium makes some 800 deliveries a day to the group's stores and under the PIEK Programme pilot 'silent delivery' schemes have been running in seven cities in Flanders. These schemes have been independently monitored and are said to offer social, environmental and economic advantages. The reasons given by Colruyt for adopting the PIEK (low noise/night-time delivery) approach are:

- There is a need to avoid heavy daytime traffic congestion with its inherent costs and inefficiency.
- 97% of the Belgian population live in urban areas and the group's stores are often surrounded by housing.

More than €650,000 was invested to be able to make deliveries at night. Most of this money had to be spent because the original equipment manufacturers are said to have overlooked the benefits of night-time deliveries and the consequent need for noise-reducing measures when designing their products. The investment has included the purchase of hybrid (diesel/electric) truck tractor units and in some cases the provision of enclosed delivery bays at stores (whereas previously they were simply open areas alongside the main building). Adoption of the PIEK-standard measures is said to be producing energy savings of 5-30% and much greater efficiency in the distribution chain.

The major public benefit is that night-time deliveries help to reduce congestion during peak day time traffic periods, particularly as fewer deliveries are required when the roads are uncongested during the night. As long as staff are available to receive deliveries (or the infrastructure is in place to allow unattended deliveries), there can be significant benefits to transport operators and the receivers of goods:

- More predictable journey times and therefore arrival times for vehicles due to the lower levels of road congestion;
- Savings in driving time and increased utilisation of vehicles and drivers for the transport operators, which should lead to cost reductions for the stores;
- Improved product availability when the stores open, leading to more sales.

The success of night-time deliveries seems to rely on the willingness of transport operators and their customers to invest in low noise equipment, the adoption of and strict adherence to best practice (provided by the PIEK standards) and effective consultation with local residents. The measure can be risky for transport operators and their customers because of the up-front investment that is usually required and the highly localized issues that can be generated in relation to noise levels. For example, while a trial at a Sainsbury's supermarket in Wandsworth in South London in 2007 resulted in no complaints about noise from local residents, a very similar trial in Beckenham in South London (again by Sainsbury's) was abandoned after ten weeks following complaints from residents who had not been informed of the existence of and reasons for the trial.

Another factor is the availability of staff at night. This would not normally be an issue for logistics service providers (including drivers) as they are accustomed to night-time operating. It may be more of an issue for retail staff at larger stores where there is no precedent for night time working and for small to medium sized businesses. Any significant move towards night-time deliveries to secure more sustainable urban distribution would require consultation with social partners because of the impact on workers in the retail and transport industry.

In conclusion, night deliveries can be effective in reducing congestion during the day, while providing operational benefits and cost savings for transport operators and their customers (mainly major retailers). However, any such schemes need to be developed by the freight industry through close partnership working between with the City Regions and in consultation with local residents and their political representatives.

Volume- or weight-based access restrictions

Volume or weight restrictions are where access to specified urban areas is restricted to freight vehicles under a certain weight or size. These are usually total bans that are introduced to protect road infrastructure that is not suitable for heavy or large vehicles due to physical constraints or to

protect a sensitive environment from physical damage (e.g. a medieval city centre). Due to their greater size and weight, the restrictions are inevitably mainly targeted at HGVs.

Volume or weight restrictions are usually effective in eliminating the circulation of larger freight vehicles in the restricted areas of city centres. In some cities on the European continental mainland weight restrictions are in place over large areas of cities (e.g. Ljubljana, where there is a 3.5 tonne limit within the inner ring road), which has led to a restructuring of the urban distribution fleet in favour of large numbers of LGVs that probably contribute to greater congestion and environmental emissions; they can also contribute to the fragmentation of the supply of UFT, leading to sub-optimal logistics efficiency. However, we do not believe this is a major issue in the UK, where weight and volume restrictions are usually in place to protect specific structures, such as bridges, narrow streets or sensitive heritage city centres.

Emissions-based access restrictions: Low Emission Zones

Low Emissions Zones (LEZs) are where access to urban areas is limited to freight vehicles that meet certain emissions standards in urban areas where air quality is a particular concern. Access may be allowed for more polluting vehicles if the owner is prepared to pay a punitively high daily charge. LEZs are becoming increasingly common in major European cities as a practical means for city authorities to meet European air quality standards.

The only LEZ in the UK is in London, although other cities are considering whether they should introduce an LEZ to meet European air quality standards. This is becoming an increasingly significant issue because the EU can place fines on Member States with cities that have failed to meet air quality standards and the UK Government is threatening to make local authorities at least partly responsible for paying these fines.

LEZs are usually implemented to improve air quality in major metropolitan urban areas, with a focus on reducing Particulate Matter (PM) and Nitrogen Oxides (NOx) which are known to have a significant impact on the health of residents. A PwC/ISIS study in 2010 for the European Commission on Access Restrictions Schemes (ARS) reported that 91% of LEZs in the EU are introduced for environmental reasons, while 36% were also introduced to reduce road congestion and 18% for "other" reasons. In some cities LEZs specifically target freight vehicles because they are generally powered by diesel engines; 62% of the access restriction schemes examined in the PwC/ISIS study, covered both private vehicles and freight vehicles and 30% of schemes only targeted freight vehicles.

The impacts of LEZs are not always clear, mainly due to a lack of ex-ante or ex-post evaluation of outcomes by city authorities in Europe. The PwC/ISIS study concluded that, although information on outcomes from formal evaluations is quite limited, there are, "…consistently beneficial effects

of…implementation in terms of traffic reduction, improving of air quality and overall performance of the urban transport systems."

LEZs are likely to increase costs for freight transport operators either because they have to replace their vehicles before the end of their economic lives or because they avoid the LEZ restriction by splitting loads and transporting them in smaller vehicles; these costs will be passed onto shippers and receivers and ultimately onto consumers. As with many regulatory measures, LEZs are also likely to distort the market by favouring larger transport operators that have greater financial resources. A major issue which is highlighted in the PwC/ISIS study is the lack of harmonisation in LEZ schemes even within the same European region or country, which increases compliance and operational costs for UFT operators because they cannot adopt a consistent vehicle replacement strategy across the whole geographical area of their operations.

Good practice: LEZs in the Netherlands and Emilia Romagna

Many cities in the Netherlands have introduced LEZs for freight vehicles to improve air quality and each scheme was originally based purely on local needs. However, an initiative was developed by the local authorities to harmonise the regulations across the country so that air quality was improved , but freight operators were provided with a consistent regulatory environment in terms of vehicle emissions standards within which to invest in new cleaner vehicles that could be used flexibly throughout the country.

In the Italian region of Emilia Romagna, which has many heritage city centres protected by LEZs, the region has encouraged the city authorities to harmonize regulations for LEZs with positive impacts on the freight industry but without compromising air quality targets.

In conclusion, poor air quality is a major and urgent issue for many City Regions because of its impact on human health and the need to avoid fines from the EU. In this context regulatory measures that reduce emissions of particulates are urgently required in the absence of, for example, a radical move away from diesel engines to the use of low and zero emission vehicles in urban areas. LEZs are a means to reduce emissions from freight vehicles, based on the Euro engine standards, so that freight operators are encouraged to renew their fleets that operate in urban areas and reduce their emissions without affecting logistical efficiency. If LEZs are implemented in the City Regions, they should be harmonised as much as possible at a regional level (e.g. across the City Regions on the M62 Corridor or collectively across the East and West Midlands) or even at a national level to allow operators to plan effectively for fleet modernization and to use their fleets as flexibly as possible.

7.7 Pricing and incentives

Introduction

The freight industry will be highly responsive to measures that impact on their cost-base, but pricing measures can be complex and require the creation of administrative structures that can constitute a significant overhead for the public sector.

Congestion charges

Congestion charges are a pricing measure to charge road users for access to urban areas to encourage them to avoid "unnecessary" journeys and therefore reduce road congestion. However, the schemes usually also have secondary objectives such as improving air quality and reducing GHG emissions, which justifies the granting of exemptions or discounted charges to low and zero emission vehicles. Only a few schemes of this kind have been implemented in Europe, including in Trondheim, Oslo, Milan and London.

The charges are usually made when a vehicle passes a cordon and enters a particular area of the city centre. Charges can be levied every time the vehicle passes a cordon (as in Oslo) or on a daily basis (as in London). The basis for the level of the charge is not always clear, but is likely to be based mainly on the presumed elasticity of demand of road users. The level of charge for freight vehicles can be greater than for private cars (justified by the greater amount of road space that a freight vehicle requires) or the same as a private car (as in London). The schemes are enforced either by toll barriers that require payment before access is possible (Oslo) or by the use of automatic number plate recognition cameras linked to an official database of vehicle registrations and a system of fines if the charge has not been paid (London).

Congestion charging schemes are complex and expensive to implement for city authorities, can be very controversial politically and their impact on congestion levels and air quality does not appear to be clear. For these reasons, only the largest and most congested cities are likely to introduce congestion charging schemes. However, depending on the level of charge, these schemes are likely to be effective in encouraging sustainable distribution practices as they can encourage increased load factors and the more efficient use of vehicles. The Regents Street Urban Consolidation Centre, which has been promoted by the Crown Estate, is justified in part by the opportunity to reduce delivery costs by consolidating loads; Clipper has also introduced an electric delivery vehicle, which is therefore exempt from the London Congestion Charge.

However, the potential for promoting more sustainable distribution is, in itself, very unlikely to make the adoption of a congestion charging scheme a preferred policy measure for City Regions. In the long-run congestion charging would not be required if a system of road pricing was introduced.

Subsidies

The opposite of taxation and tolls is the use of subsidies to encourage the development of sustainable urban distribution. The direct provision of subsidies by local authorities to operators is not widely used in the context of freight transport because it is likely to be anti-competitive, may lead to state aid issues and is likely to be very expensive for the public sector. For these reasons indirect incentives, which provide cost advantages for the relevant private sector operators, are generally used in Europe to provide exemptions from regulatory provisions for behaviour that leads to sustainable urban distribution; examples include exemption from the congestion charge for low and zero emission vehicles in London and allowing vehicles operating from UCCs to enjoy wider time windows in Bristol and La Rochelle.

Subsidies have also been provided by the EU through the CIVITAS Programme, which has allowed cities in the UK to plan, implement and monitor innovative measures to promote sustainable urban distribution, while working in partnership with other European cities.

In the absence of full-scale implementation of road pricing in the UK, the use of indirect subsidies (regulations that commercially favour some activities over others) by City Regions is likely to be the most cost-effective way of incentivising transport operators and their customers to adopt sustainable distribution practices. Such policies as allowing low or zero emission vehicles, or vehicles operating from UCCs, to be exempt from time window restrictions or congestion charges (a policy of differentiation) is likely to be a more effective policy for City Regions than becoming involved in investing directly in, for example, urban consolidation centres.

Other charges for freight

Where freight operators are obtaining private benefits from the use of public goods, there is a case for introducing user charges for the use of public infrastructure. In a UK context, such charges could be for the use of “priority lanes” by freight vehicles to allow more rapid access for deliveries in city centres or payment for the use a dedicated network of on-street loading and unloading bays. Such initiatives would require effective enforcement.

7.8 Information

Introduction

Freight operations in urban areas can be quite complex because of the need to meet all regulatory requirements, while also providing an efficient and cost-effective service to customers. For this

reason, the public sector can make the regulatory landscape easier to navigate by providing information to the freight industry to improve regulatory compliance. The public benefits are likely to include fewer incidents involving freight vehicles (such as bridge strikes), fewer HGVs using inappropriate routes and generally greater compliance with the existing traffic and parking regulations which should help to reduce congestion. This can be achieved through several relatively cost-effective measures, which are outlined below.

Lorry routing and signage

Lorry routing and signage has been adopted quite widely in the UK and provides benefits for both transport operators and the wider economy by determining the most appropriate routes between the strategic road network and major origins and destinations of traffic located in urban areas, such as shopping centres, ports, intermodal rail terminals and industrial parks. The benefits of developing a lorry routing strategy are reduced use of roads that are not suitable for freight traffic (resulting in less road congestion) and reduced journey times for transport operators.

The information on the recommended freight routes can then be communicated to the transport operators (including, in particular, the drivers) and their customers in the following ways:

- The publication of maps, which can be available for download from the Internet;
- The use of physical road signage;
- The use of ICT to provide real-time information direct to drivers' cabs, particularly to warn them of congestion on parts of the urban road network and suggesting alternative routes.
- SatNav systems, where the base data specifically includes routes which are suitable for HGVs, and conversely roads which are unsuitable for HGVs.

Intelligent Transport Systems (ITS)

Efficiency of the overall urban freight distribution process can be improved by integrating the ICT solutions adopted by the individual freight operators with ITS solutions adopted by City Regions for traffic management. The use of ITS for automatic booking and enforcement of parking spaces for loading and unloading, and for the provision of information on traffic and incidents, with the concurrent sharing of information on travel times and length of delivery operations, would benefit both freight operators, who will gain from improved planning of their operations, and urban road users as a whole.

The ITS Directive of the European Union (Directive 2010/40/EU on the framework for the deployment of ITS in the field of road transport and for interfaces with other modes of transport) and the subsequent action plan (Action Plan for the Deployment of ITS in Europe, COM(2008)886) point in this direction. They have identified one action area related to the continuity of traffic and freight management ITS services across modes, operators, and urban and interurban interfaces. The

aim of the Action Plan is to benchmark and standardise the information flows between the relevant traffic centres and different stakeholders. One of the key services concerned is incident management.

The following good practice case study in Estonia shows how a city authority can develop an ITS application alongside more traditional measures to reduce road congestion caused by strategic freight traffic.

Good practice case study: lorry routing for strategic traffic in Tallin

Tallinn is the capital of Estonia, with a population of about 400,000, and is a major ferry port linking the Baltic States and Russia with Finland and Sweden. The city centre is located between a lake and the sea, a distance of less than 2.4km at one point, and this part of the city can be a traffic bottleneck. Although some two thirds of the total freight traffic passing through the city centre is estimated to be traffic between city districts, trucks passing through Tallinn Old Harbour to/from ferry services to Finland, Sweden and Russia can contribute to the congestion; this is likely to be the case in particular when ferry services arrive at the port. Some 65% of the port's ferry traffic is heading for the strategic road network.

The congestion caused by strategic ferry traffic is due to the limited availability of alternative routes between Tallinn Old Harbour and the strategic road network, exacerbated by the lack of clear signage, often leading to trucks taking wrong or unsuitable routes and causing additional congestion.

Measures were planned using CIVITAS funding to combine new signage for traffic to and from the port areas with, as an innovative aspect, the provision of regularly updated information via GPS in the event of any problems (due to accidents, bad weather or road maintenance). The measures are being implemented through a partnership of the city council, the University of Tallinn and the port.

The signage was designed to indicate directions for traffic leaving the port using the names of towns and cities in Estonia, while inbound signage indicates directions to Stockholm and Helsinki. The implementation of the signage was completed by summer 2011, although the city council will be seeking feedback from truck drivers so that, if necessary, adjustments can be made. Traffic flows will be monitored so that a comparison can be made with the ex ante position.

Following feedback on the routing and signage, the GPS application can then be developed and implemented. This will focus on the needs of truck drivers by providing easily accessible information to help achieve smooth traffic flows and avoid conflict between port traffic and other city traffic due to one-off events on the signed routes. Information about available truck routes and the GPS arrangements will be provided on the ferries (in the buffets, at reception, on notice boards and on leaflets), with instructions for downloading the free 'Navi' map into a truck's GPS. The 'Navi' map information will provide regularly updated information on the preferred routes for trucks when travelling to or from the port, taking account of special situations such as road construction and temporary restrictions etc. The measure is planned to benefit hauliers, local people and businesses, with less congestion caused by port traffic, improved road safety and some reduction in emissions.

"Single windows" for freight transport in City Regions

The development of an on-line single window for freight that, in particular, provides a single point of reference for regulatory information that the freight industry is likely to need to operate in a particular City Region can help freight operators and their customers to reduce compliance costs and increase the sustainability of their operations.

The single windows could:

- Provide information on all existing regulations in a single on-line location;
- Provide information on policies relevant to UFT and publish the Urban Logistics Plan;
- Allow for on-line payment of any charges and on-line registration of vehicles;
- Offer on-line maps and the preferred routes for freight and loading/unloading bays and areas;
- Provide an on-line forum for consultation exercises.

Such a website has been developed by TfL for London to help freight operators that have to manage deliveries in what is one of the most complex regulatory environments for freight in the whole of Europe.

7.9 Infrastructure management & development

Introduction

Infrastructure measures related to UFT, which are often integrated into land use planning measures, are the final category of measures usually implemented by public authorities or, in the case of ports and SRFIs in the UK, the private sector. While infrastructure measures have a strong impact on freight transport in urban areas, they are more expensive to implement than other measures. In the context of this study, infrastructure for freight mainly consists of:

- On-street loading and unloading spaces for freight vehicles;
- Urban Consolidation Centres;
- Sustainable freight transport facilities: the use of rail and waterborne freight for "near last mile" deliveries;
- E-commerce pick-up and drop-off points.

On-street loading and unloading spaces

Where private off-street loading and unloading spaces are not available, transport operators are forced to use on-street parking spaces. Where specified loading and unloading spaces are not available reasonably close to the final origin or destination the transport operators are forced to compete with other road users for on-street parking spaces, which can lead to illegal parking and increased road congestion.

In many European cities on-street loading and unloading is allowed in designated loading and unloading bays during delivery time windows, so that while freight vehicles may have to compete with each other for the use of the bays, they should not, in theory, have to compete with other road users if enforcement is effective. The loading bays can be allocated to other road users outside delivery time windows, as in Chester where they can be used by disabled drivers/passengers between 10.30 and 16.30, while in other cities the loading bays are exclusively for the use of freight vehicles. Schemes such as those in Chester are low cost in that they only require road markings and signage.

Good practice case study: Planning for on-street loading and unloading bays in Paris

In Paris the freight policy included in the city's Mobility Master Plan dedicates 15% of parking space to freight vehicles and the city has produced guidelines for its engineers on the design of its 10,000 on-street delivery spaces, taking into account the size of the vehicles that will need to use them. Between 2005 and 2009 the city's engineers re-designed and implemented 50% of the city's on-street delivery spaces. In Paris, therefore, freight is seen as having specific loading and unloading needs which the city seeks to accommodate to maximise the efficiency of deliveries and minimise road congestion due to illegal parking of freight vehicles while making deliveries.

Where dedicated loading bays have been provided for freight vehicles, a charge could be levied on freight operators for their use. The charges would be justified because public space is being provided to a specific industry sector and the development of dedicated bays is also likely to involve some capital investment by local authorities.

A network of freight loading and unloading bays in reasonable proximity to origins and destinations of traffic allows freight vehicles to park legally on the street in order to make deliveries and collections. If the bays are within a time window restricted area, they can be shared with other users and freight operators could also be charged for their use.

Urban Consolidation Centres

Urban Consolidation Centres (UCCs) are distribution centres on the edge of urban areas that receive freight from a number of different transport operators with loads for a variety of customers in the urban area and then consolidate the freight into "full" loads for "last mile" deliveries. There appears to be a degree of scepticism about the commercial viability of UCCs and one of the conclusions in a study for the UK Department for Transport in 2005 that examined available evaluations of 67 UCCs was that there is a need for public subsidy because, "… there is no strong evidence that any self-financing scheme yet exists." However, UCCs have been established at the Broadmead Shopping Centre in Bristol, for Regents Street in London and for the Meadowhall Shopping Centre near Sheffield.

There are two main types of consolidation centre:

- UCCs for the consolidation of (mainly) retail deliveries in city centres;
- UCCs for the consolidation of construction materials for development sites in urban areas (so-called Construction Consolidation Centres, which have been operated in London and in Utrecht), which are likely to be appropriate for only the largest of cities.

The primary objective of retail UCCs from the point of view of the public sector is to maximise load factors in delivery vehicles so that fewer trips have to be made in city centres and consequently vehicle kilometres, emissions and road congestion are reduced. For this reason UCCs in Europe have often been subsidised, perhaps by providing a grant towards the cost of low emission delivery vehicles or by providing short–term operating subsidy for an operator after a public tender process. Retail UCCs are seen as being particularly appropriate for heritage cities and it is not surprising therefore that Italy has been at the forefront in developing UCCs in Europe.

UCCs are most likely to provide benefits in terms of sustainable distribution where retail markets are fragmented or where there are a large number of small and medium-sized retail outlets alongside large chain stores. At the Broadmead Shopping Centre in Bristol, the UCC service is targeted at small and medium-sized outlets because the large chains already have sufficient volumes to justify full loads.

Indirect subsidies are often provided to UCC operations by allowing wider time windows for UCC vehicles to make deliveries, by exempting the UCC vehicles from congestion access charges and even, in the case of Vicenza in Italy, providing the vehicles with a monopoly on access to a relatively small area of the city centre. Bristol City Council has allowed UCC vehicles at its Broadmead Shopping Centre access to make deliveries at times when other vehicles are banned and has also provided some operating subsidy (although the amount of subsidy provided has gradually fallen as the service becomes more established). The ECOPORTO in Ferrara provides a consolidation service for perishable goods that are delivered into the city centre and uses 51 methane-powered vehicles;

the service receives an indirect subsidy as the UCC vehicles are allowed to make deliveries at anytime between 06.00 and 17.30 (compared to 06.00-11.00 and 15.30-17.30 for other vehicles) and through an 80% reduction in the city's congestion charge.

Long-term direct subsidies to consolidation operations may be anti-competitive in that they usually provide public funding to specific private sector operators and inevitably place a burden on the public purse. It is likely to be in the interest of all stakeholders if retail UCCs could be operated on a commercial basis with, if necessary, indirect assistance provided by the local authority through a policy of differentiation. This is the model that has been followed in Utrecht where a private sector logistics operator has started a consolidation service into the city centre using an electric vehicle without any direct public subsidy but with the indirect assistance of exemptions from the delivery time window.

From the point of view of the logistics companies that operate the UCC services, the key requirement of the UCC concept is that it provides a service that adds value for their customers, either by reducing overall costs or by providing added value benefits in terms of reliability of delivery, frequency of delivery, off-site storage, added value activities etc. Transport chains based on consolidation are competing with direct road deliveries and there are additional costs involved in transferring freight from an in-coming vehicle to the UCC-based vehicle, and in providing the consolidation centre, which have to be included in the price charged to the final customer. These additional costs need to be offset by benefits that are seen to be of higher value than the additional costs.

Key success factors for commercially viable retail UCCs appear to be:

- A concentration of retail activity in a relatively small area, so there is a critical mass of traffic available for consolidation on individual vehicles making frequent deliveries;
- A "promoter" of the service, which may be a private sector logistics provider and/or another organisation with an interest in developing consolidated deliveries (local authority, shopping centre manager, landowner);
- The provision of added value services at the UCC, such as off-store storage and pre-tail activities that can help to provide tangible benefits to outweigh the additional costs;
- An indirect subsidy which provides some tangible reduction in costs or increased benefits to the customers of the service while offering the same advantage to all private sector operators of UCCs.
- The availability of a warehouse in a suitable location to provide the physical infrastructure for the UCC.

In this respect the much-cited example of the Heathrow Consolidation Centre is the exception that proves the rule. It is likely to be operated on a profitable basis by DHL and meets all the criteria set out above, but enjoys a huge "indirect subsidy" as all retail goods have to be scanned for security

reasons at their off-site consolidation centre before being transported under secure conditions to the airport for delivery directly to the stores. DHL operates a highly regulated monopoly delivery service on behalf of its client, BAA, whereas other retail centres are unable to force their customers to use a consolidation service.

In conclusion, UCCs are, in theory, an effective means to improve the efficiency of deliveries in city centres where the freight market is fragmented, characterised by a large number of deliveries by vehicles with low load factors to a large number of different locations in an urban area. However, many UCCs have struggled to operate on a commercial basis without some degree of start-up funding and on-going operating subsidy, mainly because consolidation involves additional handling and additional cost for customers compared to direct (even inefficient) deliveries. In addition, consolidation involves a loss of control, brand recognition and market sensitive data for the logistics operators that use a consolidation service. In our opinion, the development of UCCs should be left as far as possible to the market to avoid market distortions and poor value for money, rather than being funded directly by the public sector. The development of UCCs should be based on the entrepreneurial initiative of operators (particularly offering added value services as well as consolidated deliveries), assisted by indirect incentives provided by City Regions rather than direct subsidies. The incentives provided by City Regions to assist the development of UCCs could be more generous time windows for deliveries, exemptions from access charging regimes and privileged use of priority lanes.

The example provided by the Cargohopper service in Utrecht is particularly interesting as it involves a private sector logistics provider that has been able to develop a “last mile” delivery service into the city centre using an electric vehicle with no direct subsidy based on an existing critical mass of traffic (provided by an existing pallet-load network, which gives the operator geographic exclusivity within the private network) and by taking advantage of incentives to use electric vehicles provided by the City of Utrecht (see Case Study in section 7.11 below).

A further indirect means to encourage the development of UCCs would be to require the developers of retail developments to include provisions for an UCC in their planning applications, so that the landlord would require lessees to use a consolidation service if they wish to open a retail outlet in that location. This is, in effect, the approach that was taken by BAA at Heathrow but in a highly regulated context.

Sustainable freight transport facilities

The use of goods yards located in city centres made rail a significant element of urban freight transport in the past, but the role of rail in an urban context has almost disappeared in the UK and elsewhere in Europe due to competition from road transport, with its greater flexibility and ability to offer a door-to-door service and development pressures in city centres. However, a few experiences

in European cities have suggested that heavy rail can still play a role for "near last mile" delivery. The experience of the Monoprix chain of stores in Paris is most notable. Wagons are loaded in the evening and are then moved by shuttle train to the Bercy terminal near the Gare de Lyon. The following morning the loads are transported to the final destination using LNG (liquid natural gas) powered vehicles. The freight is handled on pallets and consists of textiles, beauty products and soft drinks. It has been demonstrated that the scheme, introduced in 2007 and currently operating on a permanent basis, provides environmental benefits but it is not yet commercially viable. Monoprix cross-subsidises the service because of the positive publicity it provides and in the hope that rising road haulage costs will eventually make the rail-based chain commercially viable at some point in the future.

Infrastructure for the loading and unloading of waterborne freight is often available in cities that have rivers or canals passing through them, although it is unusual for waterborne transport to be used for "last mile" deliveries because final origins and destinations are not generally located adjacent to waterborne freight facilities. Exceptions to this rule are found in cities such as Utrecht, where there are hotels and restaurants that are immediately adjacent to the city's canal system, so that an electrically powered "beer boat" can deliver beverages and catering products (ambient, chilled and frozen) from a distribution centre to the city centre.

As a general rule waterborne freight facilities are operated on a commercial basis and therefore the land on which they are located is in competition with more remunerative uses such as residential development. This means they often need to be safeguarded through the planning system (see the example of London in the Land Use Planning section above). The major commodities that are likely to be handled on a commercial basis by waterborne freight close to city centres are construction materials for development projects. However, there is potential for their use for higher value commodities if distribution parks are located adjacent to the wharves or terminals (probably located outside city centres to provide sufficient land) and there is an inland waterway link to a deep sea container port. In Greater Manchester, Peel Holdings is developing the Port Salford SRFI, which will allow containerised goods from the Port of Liverpool to be distributed to Manchester via the Ship Canal. There might also be opportunities for greater use of canals for the distribution of goods in Leeds and Birmingham.

In conclusion, inland waterways could have some limited role for the transport of freight for "near last mile" deliveries in cities such as Manchester, Leeds and Birmingham, but are likely to be successful only in niche markets. Rail freight is also unlikely to be able to compete in the market for "near last mile" deliveries through, for example, the use of passenger stations in city centres for freight handling, which would create conflicts with passenger services. As a general rule therefore road freight transport will remain the most important mode for these deliveries and collections in urban areas due to its inherent flexibility. For this reason there needs to be an increasing emphasis

on providing cost-effective low and zero carbon technologies for road freight transport for city logistics rather than investing public funds in ambitious sustainable distribution schemes in cities.

Nevertheless, heavy rail can be very effective to transport freight over medium to long distances to SRFIs or Urban Distribution Centres on the outskirts of city centres, for subsequent "last mile" delivery by road. Integration of these two concepts - the 'regional' rail linked distribution park and the Urban Consolidation Centre on the edge of urban areas - appears to offer significant benefits. They can also benefit from incorporating lorry parks to discourage on-street parking because the distribution industry benefits from vehicles being based next to where cargo is actually generated. Inland waterways can offer similar benefits , particularly for construction materials and for high value freight where an urban area is linked directly by an inland waterway to international gateways such as sea ports.

Delivery networks for e-commerce goods

The rapid growth of internet trading has promoted a complementary expansion in 'white van' delivery services that add to local traffic volumes that are, arguably, inefficient in terms of the goods they carry (individual deliveries of very light packets) as well as being inconvenient for recipients that not 'at home'. Employees are increasingly having e-commerce packages delivered to places of work, therefore relying on the tolerance of this practice by their employers.

The private sector is beginning to identify solutions to this dilemma by developing networks of "pick up and drop off points", where the receiver can choose to have e-commerce deliveries made to a convenient third party location, such as a convenience stores, that have extended opening hours. John Lewis has just announced such a strategy for its e-commerce trade.

Good practice case study: Hermes Paketshop

The third party logistics operator, Hermes, has established a network of 13,000 "Packetshops" in Germany at convenience stores, video stores and petrol stations that can be used as locations to pick up e-commerce deliveries and leave packages that have to be returned. These locations are designed to be convenient for e-commerce customers, while requiring little additional infrastructure because the pick up and drop off points are located in existing retail outlets with extended opening hours.

It is unlikely that PTEs or local authorities in the City Regions could impose solutions on the market. However, PTEs may themselves find a synergy with their existing core business of providing mass transit services. Commuters using public transport may well often be absent from their homes when e-commerce deliveries are made and a network of 'PTE approved' drop-off and pick-up points at

stations or local shops adjacent to bus interchanges could also promote the use of public transport. This is an example of where synergies can be found between a consumer need (a convenient location to pick up e-commerce parcels), the needs of the freight industry (delivering more consolidated loads to single locations will more efficient and therefore reduce costs) and City Regions' passenger transport objectives.

PTEs and local authorities could therefore develop strategies to ensure that there is a network of well-publicised e-commerce pick-up and drop-off points at or adjacent to passenger interchanges in their City Regions.

7.10 Conclusion

The measures that have been outlined in the "freight policy toolkit" for the City Regions illustrate how PTEs and local authorities in the City Regions can promote radical change in the sustainability of urban freight transport within existing legislative frameworks. Each City Region will need to develop a package of measures that are most appropriate to meet local circumstances as there are no "one size fits all" solutions. The following case study for Utrecht in the Netherlands provides an example of how a city is seeking to address freight issues using a package of measures adapted to the needs of the local community and economy.

Good practice case study: freight issues & public policy responses in Utrecht

Introduction

Utrecht is the fourth largest city in the Netherlands, with a population of around 310,000 and is located 40km south of Amsterdam. The city of Utrecht consists of a historic centre surrounded by more modern residential, retail and industrial areas. Much of the historic centre of Utrecht is formed by a network of narrow picturesque streets, largely retaining the layout (and many buildings) from the Middle Ages. The narrow streets accommodate cafés/restaurants together with chain store retail outlets and boutique style shops. The suburban districts of the wider Utrecht municipality are served by more modern highway infrastructure capable of accommodating the larger goods vehicles in an efficient manner. A pedestrianised zone has been implemented in the historic centre to provide an attractive environment for tourists, visitors and residents.

Existing regulations for freight activity

Access for HGVs is only allowed between the hours of 06.00 to 11.30 and 18.00 to 19.00 and the maximum vehicle length is 9.0m to prohibit goods vehicle traffic during the main times when tourists and city residents are visiting the historic centre and to protect the historic features of the city from damage by large goods vehicles. Dedicated loading and unloading bays are provided at various locations on the historic centre's narrow streets to allow goods vehicles to park while allowing other road traffic to pass freely. Deliveries to adjacent establishments are then undertaken on foot. To improve the air quality in the historic centre, a low

emission zone was introduced in Utrecht in the city centre in July 2007. As a result of the scheme, within the centre of Utrecht only goods vehicles over 3.5 tonnes gross weight fitted with Euro 3 engines with diesel particulate filters and less than 8 years old or fitted with Euro 4 engines and above are permitted. From July 2013, only goods vehicles fitted with Euro 4 engines and above will be permitted entry to the zone. The restrictions are enforced using Automatic Number Plate Recognition (ANPR) cameras and violations result in a fine of €160.

On-going freight issues

Despite these measures there remain significant issues related to UFT in the centre of Utrecht. The main on-going issue in the centre of Utrecht relates to vehicle congestion and goods vehicles blocking the narrow streets of the historic centre, where it can take one to one and half hours to make a delivery. This is caused by the following factors:

1. There is a significant peak of goods vehicles entering the centre between 09.30 and 11.30 due to small- and medium-sized catering and retail outlets not having staff available to take deliveries before 09.30.
2. There are a large number of part-loaded vehicles entering the centre because many different suppliers are often delivering the same types of commodities to neighbouring establishments or their customers are using several different suppliers, each making deliveries in part-loaded vehicles.
3. As the roads in the city centre were not designed to be accessible by modern large goods vehicles, vehicles can sometimes block the narrow streets while undertaking deliveries. While this problem has been eliminated at some locations by the installation of loading bays, there are many other locations where such a solution has not been possible due to a lack of space or a requirement to protect historic features.

Another issue is the visual/environmental impact of goods vehicles making deliveries in the narrow streets of the historic centre, exacerbated by the short timeframe within which they are often carried out. This is important from the point of view of the Municipality in that protecting the historical heritage of Utrecht and enhancing the environment for tourists are key priorities for the city.

A further issue, not affecting the historic centre but residential areas (and the urban routes serving them), relates to the deliveries of goods ordered on the internet. Competition in the parcel courier sector between multiple operators means higher numbers of part-loaded vehicles (generally medium-sized goods vehicles up to 7.5 tonnes) are entering residential areas than would otherwise be the case were a more co-ordinated approach taken. Also, in many cases such goods cannot simply be posted into letter boxes due to their size. If residents are out at work, deliveries cannot be completed and the goods have to be returned to the depot of the parcel courier and re-delivery arranged. The need to undertake re-deliveries further compounds this problem.

Public & private sector response

The private sector has sought to address some of the above issues by planning and implementing a low emission consolidation service for the city centre called the Cargohopper. The Cargohopper is an electrically powered goods vehicle which since April 2009 has delivered lightweight ambient retail goods and parcels into the historic centre of Utrecht from a transfer site close to the city centre. It carries goods controlled by a single logistics operator, Hoek Transport, that are delivered to a suburban warehouse located some 11km from

the city centre; the goods are then delivered to a transfer site (a flat area of land off-street where goods can be transferred between vehicles) located some 300m from the start of the time window/length limit zone. The Cargohopper consists of an electrically powered 'tractor unit' hauling three trailers which are similar to those used at airports for transporting passenger luggage to/from aircraft. The total length of the Cargohopper is 16.0m and it is 1.2m wide, with a maximum weight (including cargo) of 3.0 tonnes; it is powered by an electric motor. Apart from a grant towards solar panels that can top up the battery charge during the Summer, the Cargohopper has received no direct public subsidy but does receive some indirect support from not being subject to the time window and length restrictions and being able to use Bus Lanes. Between April 2009 and October 2010, Hoek Transport estimates that Cargohopper has made more than 12,000 deliveries of around 66,000 parcels/boxes. On that basis, it is estimated that Cargohopper undertook the work of approximately 16,500 conventional goods vehicle trips into central Utrecht. This equates to a reduction of 122,000 vehicle-km and 34 tonnes of carbon dioxide. The success of the concept is such that Hoek Transport is introducing a new Cargohopper with a higher speed and greater range, which will allow deliveries to be made to suburban locations as well as the city centre.

The Cargohopper in Utrecht
Photo: MDS Transmodal

The city has also started distributing food and beverages to canal-side cafes and restaurants in the city centre, which is viable both technically and economically because of the availability of waterborne access and the very restricted access to the HoReCa establishments from the highway.

Planned freight measures

The City of Utrecht is considering implementing measures to reduce the number of vans and other goods vehicle movements in the city through two further measures:

- Merchandise Pick-up Points: The combination of the increase in the amount of goods being purchased on the Internet, the number of failed deliveries to residential addresses and strong competition between parcel operators has led to much larger numbers of deliveries by only part-loaded LGVs and small HGVs in

residential areas. The Municipality of Utrecht is therefore examining the potential that goods purchased on the Internet could instead be delivered to a number of collection points located at a variety of convenient locations, such as railway stations or Park and Ride car-parks. The Municipality is keen to launch a pilot scheme in the near future for Merchandise Pick-up Points targeted at both Internet purchases and city centre retailing.

- Consolidation: The Municipality is also considering developing a consolidation centre to consolidate the loads of small to medium scale suppliers of fresh produce to city centre catering establishments (cafés and restaurants) i.e. those operators currently entering the city with mostly part-loaded vehicles. The measure is at an early stage of design, and it would be for the private sector to implement/operate, although facilitated by the Municipality.

Conclusion

The city of Utrecht has implemented traditional regulatory measures to protect its historic city centre and to provide an attractive environment for tourists, visitors and residents through the implementation of time windows and length and weight restrictions. The Cargohopper service has been developed with some indirect assistance from the public sector, but is otherwise an almost entirely private sector initiative. The city is considering developing a network of e-commerce pick-up points at locations such as railways stations and park and ride facilities and may choose to promote use of a UCC for fresh produce.

Initiatives by the City Regions would be addressing a relatively blank canvas. Central Government has made few positive initiatives in the freight sector, having generally been encouraged by the freight industry to leave matters to the market. In so far as rail linked distribution parks are concerned, regional policies have been lost during this administration and the November 2011 SRFI policy guidance principally provides national guidance to developers. The only relevant guidance in the National Policy Statement on Ports is to provide forecasts that indicate a need to cater for future growth. The National Policy Statement on (road and rail) networks has yet to be produced so that coordination of infrastructure across modes is inhibited.

While the freight industry is concerned about ill-informed and uncoordinated public sector intervention, it is equally clear that the freight industry adapts rapidly and efficiently to new opportunities dictated by different land use policies or the re-emergence of the rail freight sector and, in other European countries, road pricing for freight has been absorbed by the industry despite initial objections. It follows that there is an opportunity for urban authorities to redefine realistic objectives for the movement of freight that address both sustainability and efficiency and there is considerable scope to reduce both user and non user costs by:

- accelerating the forecast switch towards rail freight for medium- to long distance flows via the development SRFIs/UDCs; and
- reducing the impact of road freight vehicles on the urban fabric through:

- the industry using low emission vehicles (requiring consistent policies at a European and national level);
- local collection and drop-off points for e-commerce deliveries;
- allowing quiet night-time deliveries (subject to ensuring that residents' sleep is not disturbed);
- encouraging consolidation of orders and deliveries by freight customers and operators respectively.

While road pricing for freight would make a considerable contribution to achieving more sustainable distribution, this is a policy that would need to be pursued by government at a national level. At a City Region level, the key instruments to achieve the objective of sustainable distribution are likely to be:

- Defining suitable locations for new Urban Distribution Centres (UDCs) in and around the City Regions.
- Providing indirect subsidies to favour certain vehicle types and delivery timings on the basis of nationally determined principles (for example, exemptions for low emission vehicles from time windows or allowing them to use priority lanes and encouraging quiet night-time deliveries).
- Requiring major city centre developments to adopt Delivery Service Plans and promoting their use by other businesses based in city centre offices.
- Requiring major city centre developments to plan for off-street loading and unloading bays and planning for a network of on-street bays (possibly provided on a user pays basis).
- Working with Network Rail and other stakeholders to define future rail infrastructure requirements for freight in the City Regions (e.g. re-opening of freight lines), capitalising on the fact that funds are already being allocated for the period 2014-19.
- Developing a network of pick up and drop off points for e-commerce parcels that are integrated with City Region public transport networks.
- Working with major 'industrial' stakeholders such as ports and manufacturers to develop shared visions in those sectors (e.g. port centric distribution and UDCs) where the City Regions can play a supporting role in economic regeneration.
- Providing information on regulations and routing for freight through signing, freight maps, information portals and, in the medium to long term, ITS.

The absence of nationally defined strategies for freight transport provides the opportunity for the City Regions to establish their own, using an evidenced-based and consultative approach that is already available via the LTP processes and working with existing FQPs.

GLOSSARY OF TERMS

Bulk freight	Large volumes of homogeneous freight are carried in specialised transport equipment between specialised terminals.
Bulk rail freight	Where freight is carried in railway wagons designed specifically for carrying particular types of bulk freight (e.g. coal and chemicals) and requires special facilities to transfer the freight between rail and storage.
Channel Tunnel through rail freight services	Non-bulk and bulk rail freight services using the Channel Tunnel en route between GB inland and Continental rail freight terminals; as opposed to the Eurotunnel Freight Shuttle, which is providing a short crossing of the Dover Straits.
Coastal shipping	The domestic movement of freight by sea between two UK ports.
Deep sea shipping	The international movement of freight by sea between a UK port and a port situated outside Europe and the Mediterranean.
Distribution centre	Warehouses where freight is stored; there are essentially two types of distribution centre – National Distribution Centres and Regional Distribution Centres.
Domestic freight transport	The carriage of goods with a first origin and final destination within Great Britain.
East Coast Main Line (ECML)	Important rail freight route between London, the East of England, West Yorkshire, the North East and the Central Belt of Scotland (Edinburgh).
Freight transport	Carriage of goods between an origin and a destination.
Heavy Goods Vehicle (HGV)	Goods vehicles over 3.5 tonnes gross laden weight (i.e. weight of vehicle plus load).
Intermodal rail freight	Freight carried in units (e.g. a container) on special flat rail wagons for the “trunk” haul between two intermodal terminals; collection and delivery is by road to provide a door-to-door service.
Intermodal terminal	Facility designed to transfer units between rail and road and consists of sidings to accommodate trains, special cranes for loading and unloading the units and space for storage of units.
International freight transport	The carriage of goods with a first origin or final destination outside the United Kingdom. However, for the purposes of this report it has been defined as including movements between Great Britain and Northern Ireland.
Just-in-Time (JIT)	Where goods are ordered from producers and suppliers when required rather than in anticipation of demand to reduce inventory levels.
Loading gauge	The cross-section of a railway line through which a rail freight service can safely pass without hitting structures such as bridges, tunnels and station platforms; the GB rail network is particularly restricted compared to much of the Continent and this is a particular issue for intermodal rail freight because of the size of unit loads that are increasingly carried.
Local Transport Plan (LTP)	Statutory transport plans developed by local authorities.
Logistics	Designing and managing “supply chains” for organisations, including purchasing, manufacturing and storage as well as transport.
Logistics providers	Organisations that undertake the movement and handling of goods on behalf of their customers; there are two main types of logistics providers – road hauliers and 3PLs (third party logistics providers).
National Distribution Centre (NDC)	Inventory holding points for imported and nationally sourced goods before re-distribution to other stages in the supply chain; serve the whole of the UK from one location.
Network Rail	Organisation responsible for the maintenance and renewal of the GB rail network.
Non-bulk freight	Freight carried in standard “box” units, mainly road trailers and containers.
Non-bulk rail freight	Freight carried in units (usually a container) on an intermodal rail freight service or in railway “box cars” or “vans” between specialist terminal facilities.

Rail-connected distribution park	Large distribution site, with an intermodal terminal serving on-site warehouses and the wider region; also called Strategic Rail Freight Interchange.
Regional Distribution Centre (RDC)	Re-distribution of inward supplies of goods to other stages in the supply chain, normally a retail outlet; they have a regional hinterland and are normally associated with retailers. Their primary role is to consolidate and re-distribute goods in short periods of time rather than to hold goods for long periods.
Road hauliers	Provide road transport services from one location to another at the direction of their customers.
Short sea shipping	The international movement of freight by sea between a UK port and a port situated in geographical Europe.
Strategic Rail Freight Interchange (Strategic RFI)	Large distribution sites (over 60 hectares), with an intermodal terminal serving on-site warehouses and the wider region; also called rail-connected distribution parks.
Third party logistics company (3PL)	Companies that sell comprehensive packages of supply chain management services in addition to road transport operations.
Tonne kilometres (tkm)	Tonnes lifted x length of haul.
Tonnes lifted	Weight of freight
Tonnes moved	The sum of tonnes moved and the distance it is moved; usually expressed in tonne kilometres.
Train path	A “slot” in the railway timetable that can be used by a rail freight service.
Transit traffic	Traffic traversing one or more regions without an origin or destination in the regions crossed.
Urban Distribution Centre (UDC)	A rail-connected regional distribution centre located adjacent to an urban area, from which low emission vehicles make deliveries to the city centre.
Vehicle kilometres (vkm)	Tonne kilometres divided by average load per vehicle.
West Coast Main Line (WCML)	Key route for GB rail freight services; the line links London with the West Midlands, North West England and the Central Belt of Scotland (Glasgow).

APPENDIX 1: MAJOR FREIGHT PROJECTS

Nationally Significant Infrastructure Projects (development consent order)				
	Infrastructure Project and Type	**Description of Project**	**Current Planning Status**	**Relevance to Pteg**
Road	A556 Knutsford to Bowdon.	Upgrade of the existing single carriageway road which links the M6 at Jct 19 with the M56 at Jct 7 (6.5km length). The A556 essentially forms the main highway route between Manchester and the M6 southbound. The current route is currently heavily congested through most of the day and is an accident black spot. The proposals include upgrading the route to dual carriageway standard throughout, using a mixture of on-line and new alignments, together with junction improvements where the route connects to the M6 and M56. The scheme is being promoted and funded by the Highways Agency.	Public consultation of preferred route undertaken during 2012. Application for a Development Consent Order expected to be made during early 2013.	The upgraded A556 will provide quicker and more reliable HGV journeys between the Greater Manchester conurbation and origins/destinations requiring use of the M6 south of Jct 19.
SRFI	DIRFT Phase III.	An expansion of the existing strategic rail freight interchange (SRFI) adjacent to the M1 Jct 18 at Crick, near Daventry, on the former 'Rugby Radio Station' site and served by the West Coast Main Line. The completed development will provide for large scale logistics warehousing (c750,000 sqm across a range of units with varying floor space) and an expanded intermodal rail terminal. The scheme is being promoted and funded jointly by BT, Aviva and Prologis.	Public consultation undertaken during 2012. Application for a Development Consent Order expected to be made during 2013	The development of rail-served warehousing increases the competitiveness of rail freight vs road haulage. Could potentially encourage flows from NDCs based at the development to RDCs in the city regions to switch to rail freight, particularly if those RDCs were themselves located at rail-served sites i.e. SRFIs.
SRFI	East Midlands Gateway Rail Freight Interchange.	A new SRFI near Kegworth and Castle Donnington, close to the M1 Jct 24a and served from the Midland Main Line (via freight only branch). The completed development will provide for large scale logistics warehousing (c600,000 sqm across a range of units with varying floor space)	Development is at an early stage of the DCO application process	The development of rail-served warehousing increases the competitiveness of rail freight vs road haulage. Could potentially encourage flows into the East Midlands city region (from ports, Channel Tunnel etc) to switch to rail freight.

		and a new intermodal rail terminal. The scheme is being promoted and funded by Roxhill.		
Road	Heysham to M6 link.	A new dual carriageway link road (4.8km). Located to the north of Lancaster the new road will link the A683 to the M6 Jct 34, including a fully remodelled Jct 34. The road will provide better access to the port of Heysham avoiding Lancaster city centre. The scheme is being promoted and funded by the Highways Agency.	All document and consultations completed, and application for a Development Consent Order being now considered by the Planning Inspectorate. A decision is due in Q2 2013	Will provide quicker and more reliable HGV journeys to/from the Port of Heysham (Ireland).
Rail (SFN)	Ipswich rail chord	A new dual track railway line (1.4km) connecting the Felixstowe branch line to the northbound Great Eastern Main Line. The new lines will allow freight trains from the Port of Felixstowe to access the 'cross country' route to the West Coast Main Line at Nuneaton via Ely and Peterborough (avoiding London) without the need to enter Ipswich freight yard and reverse. Expected completion 2014 (on-site works commenced October 2012). The scheme is being promoted and funded by Network Rail	Development Consent Order granted by Secretary of State for Transport in September 2012 following recommendation by Planning Inspectorate.	In conjunction with other schemes on the Felixstowe to Nuneaton route (Felixstowe to Nuneaton Phase 1, see below), this project will provide additional freight train capacity and capability to/from the Port of Felixstowe. Consequently, it will provide for greater freight train capacity and capability between the Port of Felixstowe and rail terminals/SRFIs in the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Doncaster North Chord.	The construction of a new chord and bridge over the East Coast Main Line (ECML). Will mean that freight trains to/from the Humber ports will be able to avoid the ECML, thereby releasing additional passenger train capacity between Doncaster and York	Development Consent Order granted by Secretary of State for Transport in October 2012 following recommendation by Planning Inspectorate.	Will provide additional freight train capacity and capability to/from the Humber Ports (and additional passenger train capacity on the ECML).
Road	Morpeth Northern By-pass.	A new single carriageway road (3.8km length) around the north of Morpeth, extending from the A197 to the A1 (including a new grade separated junction with the A1). The new road forms phase two of the A1 to South East Northumberland Strategic Link Road. The scheme is being promoted and funded by Northumberland CC.	Consultation phase completed during August and September 2012. Application for a Development Consent Order is planned by end of 2012.	Will provide quicker and more reliable HGV journeys to the north of the Tyne and Wear city region.
Rail	Ordsall Curve.	A new dual track railway line	An application for a	While primarily a passenger

		linking Manchester Victoria station to Manchester Oxford Road/Manchester Piccadilly stations. The project is one component of the 'Northern Hub' project (see below) and is primarily intended to provide additional capacity and improved network performance by removing conflicting crossing movements across the 'throat' of Piccadilly station. The scheme is being promoted and funded by Network Rail.	Development Consent Order is expected in 2013.	railway project, it may potentially provide additional freight capacity and capability for freight trains within the Greater Manchester city region.
Rail	Norton Bridge Junction.	The development of a grade separated junction to the north of Stafford (Norton Bridge Junction), connecting the northbound West Coast Main Line to the railway line to Stone and Stoke. It will replace the existing at-grade junction, where at present northbound trains potentially have to cross three lines (conflicting movements) to access the Stone/Stoke line, thereby restricting capacity and network performance. The new alignment would allow northbound trains to access the Stone/Stoke line without conflicting with trains on other lines. It is estimated that the project will provide one additional freight path on the West Coast Main Line in each hour. The scheme is being promoted and funded by Network Rail.	Consultation undertaken during April 2012. An application for a Development Consent Order expected by end of 2012.	While primarily a passenger railway project, it will provide additional freight train capacity and capability to/from and between the city regions.
Major Infrastructure Projects (other consent procedures)				
	Infrastructure Project and Type	**Description of Project**	**Consent Process and Current Planning Status**	**Relevance to Pteg**
SRFI	Port Salford	A new SRFI near Barton (Manchester), close to the M60 Jct 11 and served from the Chat Moss trans-Pennine railway line. The completed development will provide for large scale logistics warehousing (c150,000 sqm across a range of units with varying floor space) and a new intermodal rail terminal. The	Planning consent granted by Salford CC, albeit construction has yet to begin.	The development of rail-served warehousing increases the competitiveness of rail freight vs road haulage. Could potentially encourage flows into the Greater Manchester city region (from ports, Channel Tunnel etc) to switch to rail freight.

		SRFI also adjoins the Manchester Ship Canal, with a new container vessel wharf also planned for the project. The scheme is being promoted and funded by Peel Holdings.		
SRFI	3MG (Merseyside Multi Modal Gateway)	A new SRFI in Widnes (Ditton), close to the A562 and served from the West Coast Main Line (site is mainly former industrial land together with a plot removed from the greenbelt). The completed development will provide for large scale logistics warehousing (c330,000 sqm across a range of units with varying floor space) alongside an existing intermodal terminal. The scheme is being jointly promoted and funded by Stobart, Halton BC and Prologis.	Planning consent granted by Halton BC. Development in the process of being built-out.	The development of rail-served warehousing increases the competitiveness of rail freight vs road haulage. Could potentially encourage flows into the Liverpool city region (from ports, Channel Tunnel etc) to switch to rail freight.
SRFI	Parkside	A new SRFI in St Helens, close to the M6 Jct 22 and served from the West Coast Main Line and Chat Moss trans-Pennine railway (site of former Parkside colliery and land to east of M6). The completed development will provide for large scale logistics warehousing (c700,000 sqm across a range of units with varying floor space) alongside a new intermodal terminal. The scheme is being promoted and funded by Prologis.	St Helens MBC have drafted a new policy in its proposed replacement Local Plan Core Strategy which supports in principle the development of a SRFI at the site (which is currently Greenbelt) subject to conditions. Proposed Core Strategy was tested at Examination in Public during early 2012, was declared 'sound' and is likely to be adopted by St Helens by the end of 2012. NB. Prologis submitted a planning application for a SRFI at this site in 2006, but was subsequently withdrawn in 2010 citing market conditions.	The development of rail-served warehousing increases the competitiveness of rail freight vs road haulage. Could potentially encourage flows into the Greater Manchester and Liverpool city regions (from ports, Channel Tunnel etc) to switch to rail freight.
SRFI	SIFE (Slough International Freight Exchange).	A new SRFI in Slough (Colnbrook), close to the M4 Jct 5 and served from the Great Western Main Line via the Colnbrook branch line (former landfill site). The completed development will provide for large scale logistics warehousing (c200,000 sqm across a range of units with varying floor space) alongside a new intermodal terminal. The scheme is being promoted and funded by Goodman.	Planning application refused consent by Slough BC in 2011 (main reason for refusal being that the site is in Greenbelt and special circumstances were not demonstrated). Appeal to be determined by Secretary of State following a Public Inquiry (date to be determined).	The development of rail-served warehousing increases the competitiveness of rail freight vs road haulage. Could potentially encourage flows into the London city region (from ports, Channel Tunnel etc) to switch to rail freight.
SRFI	Radlett	A new SRFI in St Albans (Radlett), close to the M25 Jct 22 and	Planning application refused consent by St Albans BC in 2009	The development of rail-served warehousing increases the

		served from the Midland Main Line. The completed development will provide for large scale logistics warehousing (c330,000 sqm across a range of units with varying floor space) alongside a new intermodal terminal. The scheme is being promoted and funded by Helioslough.	(main reason for refusal being that the site is in Greenbelt and special circumstances were not demonstrated). Secretary of State refused Appeal in 2010 following a Public Inquiry, albeit that Inspector recommended consent. The High Court subsequently quashed the Secretary of State's decision in 2012 following Judicial Review. Secretary of State re-determination is now awaited.	competitiveness of rail freight vs road haulage. Could potentially encourage flows into the London city region (from ports, Channel Tunnel etc) to switch to rail freight.
	Doncaster Inland Port (Rossington)	A new SRFI in Doncaster (Rossington), close to the M18 Jct 5 and served from the East Coast Main Line (site comprises a former colliery). The completed development will provide for large scale logistics warehousing (c570,000 sqm across a range of units with varying floor space) alongside a new intermodal terminal. The scheme is being jointly promoted and funded by Helios Europe, Shepherd Developments and Segro.	Planning application granted consent in 2011 by Doncaster MBC (despite being in Greenbelt, plan was not called in for Secretary of State determination)	The development of rail-served warehousing increases the competitiveness of rail freight vs road haulage. Could potentially encourage flows into the Yorkshire city regions (from ports, Channel Tunnel etc) to switch to rail freight.
	Howbury Park	A new SRFI in Dartford (Howbury Park), close to the M25 Jct1 and served from the North Kent Line. The completed development will provide for large scale logistics warehousing (c200,000 sqm across a range of units with varying floor space) alongside a new intermodal terminal. The scheme is being promoted and funded by Prologis.	Planning consent granted by Secretary of State in 2008 following Public Inquiry and recommendation of consent by Inspector. Development has yet to commence.	The development of rail-served warehousing increases the competitiveness of rail freight vs road haulage. Could potentially encourage flows into the London city region (from ports, Channel Tunnel etc) to switch to rail freight.
SRFI	East Midlands Distribution Centre	A new SRFI near Castle Donnington, close to the A52 and M1 Jct 24a (site is a former power station), and served from the Midland Main Line and Derby-Birmingham Line (via freight only branch). The completed development will provide for large scale logistics warehousing (c200,000 sqm across a range of units with varying floor space) alongside a new intermodal terminal. The scheme was initially promoted by Wilson Bowden, but	Planning consent granted by Secretary of State in 2006 following Public Inquiry and recommendation of consent by Inspector. Development is currently under construction	The development of rail-served warehousing increases the competitiveness of rail freight vs road haulage. Could potentially encourage flows into the East Midlands city region (from ports, Channel Tunnel etc) to switch to rail freight.

		was purchased by Clowes Developments (currently funding its development).		
	'Electric spine'. Railways – Strategic Freight Network.	Full electrification (using overhead wires) of the freight routes serving the Port of Southampton from the Midlands and north east England. Will allow electric traction from Southampton to Nuneaton via Reading, Oxford and Coventry (where it will connect with the existing electrified WCML) and from Oxford to Bedford via the re-instated East-West railway (where it will connect with the newly electrified Midland Main Line, see below). Plan also proposes conversion of Southampton-Basingstoke to overhead electrification from the existing third-rail system. Proposed in the High Level Outputs Specification (HLOS, July 2012) and Statement of Funds Available (SoFA) for funding and completion during Control Period 5 (CP5, 2014-2019).	Likely to be delivered via Network Rail's permitted development rights.	Will allow electric traction of freight trains between Port of Southampton and the city regions. Electric traction is more efficient and reliable, meaning that it should enhance rail freight's offer to the logistics market, potentially delivering further modal shift to rail.
Rail	Midland Main Line electrification. Railways.	Full electrification (using overhead wires) of the Midland Main Line from Bedford to Sheffield (already electrified from St Pancras to Bedford). Proposed in the HLOS and SoFA for funding and completion during Control Period 5 (CP5, 2014-2019).	Likely to be delivered via Network Rail's permitted development rights.	While primarily a passenger scheme, it will potentially allow more freight to be hauled by electric traction to/from the city regions. Electric traction is more efficient and reliable, meaning that it should enhance rail freight's offer to the logistics market, potentially delivering further modal shift to rail.
Rail	Great Western Main Line electrification.	Full electrification (using overhead wires) of the Great Western Main Line to Bristol and Swansea. Proposed in the HLOS and SoFA for funding and completion during Control Period 5 (CP5, 2014-2019).	Likely to be delivered via Network Rail's permitted development rights.	While primarily a passenger scheme, it will potentially allow more freight to be hauled by electric traction to/from the city regions. Electric traction is more efficient and reliable, meaning that it should enhance rail freight's offer to the logistics market, potentially delivering further modal shift to rail.
Rail	North West regional electrification.	Full electrification (using overhead wires) of the Manchester-Liverpool (via Chat Moss) main line, Manchester-Preston-Blackpool via Bolton and Liverpool-Wigan via St Helens. Proposed in the HLOS and SoFA	Likely to be delivered via Network Rail's permitted development rights.	While primarily a passenger scheme, it will potentially allow more freight to be hauled by electric traction to/from the city regions. Electric traction is more efficient and reliable, meaning that it should enhance rail

		for funding and completion during Control Period 5 (CP5, 2014-2019).		freight's offer to the logistics market, potentially delivering further modal shift to rail.
Rail	Trans-Pennine electrification.	Full electrification (using overhead wires) of the Manchester-Leeds-York via Huddersfield railway line. Proposed in the HLOS and SoFA for funding and completion during Control Period 5 (CP5, 2014-2019).	Likely to be delivered via Network Rail's permitted development rights.	While primarily a passenger scheme, it will potentially allow more freight to be hauled by electric traction to/from the city regions. Electric traction is more efficient and reliable, meaning that it should enhance rail freight's offer to the logistics market, potentially delivering further modal shift to rail. However, shortage of Trans_Pennine rail freight capacity will remain a concern
Rail	East-West railway.	Re-opening of the railway line between Oxford and Bletchley (the western section of the former Varsity Line), where it will connect with the existing Bletchley to Bedford line. Will permit train services from Bedford and Milton Keynes (Bletchley) to Oxford without the need to pass through London. Will be electrified as part of the 'electric spine' (see above). Proposed in the HLOS and SoFA for funding and completion during Control Period 5 (CP5, 2014-2019).	Likely to be delivered via Network Rail's permitted development rights.	While primarily a passenger scheme, it will allow freight trains from Southampton to the north west city regions to access the West Coast Main Line at Bletchley and to the Yorkshire/north east city regions via Bedford (Midland Main Line), thereby avoiding Birmingham, and providing additional capacity and/or diversionary routes.
Rail	Northern Hub.	In combination with the Ordsall Curve (see above), this will provide for additional tracks for part of the route between Manchester Oxford Road and Manchester Piccadilly and two new additional platforms at Piccadilly (15 and 16). Will provide for additional capacity and improved network performance on trans-Pennine routes by removing conflicting crossing movements across the 'throat' of Piccadilly station (trains between Leeds and Manchester Airport will be routes via Victoria, Oxford Road and Piccadilly). Proposed in the HLOS and SoFA for funding and completion during Control Period 5 (CP5, 2014-2019).	Likely to be delivered via Network Rail's permitted development rights.	While primarily a passenger railway project, it may potentially provide additional freight capacity and capability for freight trains within the Greater Manchester city region.
Rail	Nuneaton North	A new grade-separated junction	Consent granted by means of a	Will provide additional freight

	Chord. Railways – Strategic Freight Network.	at Nuneaton allowing freight trains from Felixstowe to access the northbound West Coast Main Line (slow or freight track) without conflicting with train movements on other lines. Part of the Felixstowe to Nuneaton Phase 1 upgrade. Completed and open to traffic on 21st October 2012 Funded via CP4 Strategic Freight Network budget.	Transport and Works Act order in 2010	train capacity and capability to/from the Port of Felixstowe. Consequently, it will provide for greater freight train capacity and capability between the Port of Felixstowe and rail terminals/SRFIs in the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Felixstowe to Nuneaton loading gauge enhancement.	Upgrade to W10 loading gauge, thereby allowing the movement of high cube (2.9m/9'6" tall) containers on standard wagons. Part of the Felixstowe to Nuneaton Phase 1 upgrade. Completed 2011. Funded via the Transport Innovation Fund.	Delivered via Network Rail's permitted development rights.	Provides enhanced freight train capability to/from the Port of Felixstowe and the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Ely freight loops.	Installation of 2 x 1.6km freight loops at Ely Dock junction (south of Ely station) i.e. 755m train length capability, in order to increase freight capacity on Felixstowe to Nuneaton route and permit longer freight trains. Part of the Felixstowe to Nuneaton Phase 1 upgrade . Completion was expected 2013, however project now on hold for cost review – surveys have since determined that railway embankment has insufficient stability to accommodate two tracks. Likely to be delivered during CP5.	Delivered via Network Rail's permitted development rights.	Will provide additional freight train capacity and capability to/from the Port of Felixstowe. Consequently, it will provide for greater freight train capacity and capability between the Port of Felixstowe and rail terminals/SRFIs in the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Ely-Soham double tracking.	Installation of second track to provide double-track railway between Ely and Soham, in order to provide additional freight capacity. Part of the Felixstowe to Nuneaton Phase 1 upgrade. Completion is expected 2014-2015. Funded via additional funds allocated to the CP4 Strategic Freight Network budget (Chancellor's 2011 Autumn statement, National Infrastructure Plan).	Delivered via Network Rail's permitted development rights.	Will provide additional freight train capacity and capability to/from the Port of Felixstowe. Consequently, it will provide for greater freight train capacity and capability between the Port of Felixstowe and rail terminals/SRFIs in the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Kennett-Bury St Edmonds re-signalling.	Installation of new signalling, including shorter signal block sections, which has provided for	Delivered via Network Rail's permitted development rights.	Provides additional freight train capacity and capability to/from the Port of Felixstowe.

		additional capacity on Felixstowe to Nuneaton route. Part of the Felixstowe to Nuneaton Phase 1 upgrade. Completed.		Consequently, it will provide for greater freight train capacity and capability between the Port of Felixstowe and rail terminals/SRFIs in the city regions, thereby enhancing rail freight's offer to the logistics market.
	Felixstowe branch line – partial double-tracking. Railways.	Partial double-tracking of the Felixstowe branch line (7km from Trimley St. Mary to Derby Road). Provides for increased freight capacity on Felixstowe branch line. Promoted and funded by Hutchison Ports UK (HPUK, Port of Felixstowe). Project is a condition attached to the Felixstowe South re-configuration-Phase 2 (see below). Completion date TBC – HPUK yet to agree go-ahead for Phase 2.	Consent granted via Transport and Works Act order following Public Inquiry. Project is a condition attached to the Felixstowe South re-configuration-Phase 2 (see below).	Provides additional freight train capacity and capability to/from the Port of Felixstowe. Consequently, it will provide for greater freight train capacity and capability between the Port of Felixstowe and rail terminals/SRFIs in the city regions, thereby enhancing rail freight's offer to the logistics market.
Port/rail	Port of Felixstowe – new intermodal terminal. Railways/ports.	Development of third intermodal terminal within the port capable of handling 30-wagon trains. Completion expected 2013. Promoted and funded by HPUK.	Consent granted as part of Felixstowe South re-configuration consent, following public inquiry in 2006.	Provides additional freight train capacity and capability to/from the Port of Felixstowe. Consequently, it will provide for greater freight train capacity and capability between the Port of Felixstowe and rail terminals/SRFIs in the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Ely West Junction curve.	Ely West Junction curve - installation of bi-directional signalling and working into Ely station, in order to increase freight capacity on Felixstowe to Nuneaton route and permit longer freight trains. Part of the Felixstowe to Nuneaton Phase 1 upgrade. Completion expected 2013.	Delivered via Network Rail's permitted development rights.	Provides additional freight train capacity and capability to/from the Port of Felixstowe. Consequently, it will provide for greater freight train capacity and capability between the Port of Felixstowe and rail terminals/SRFIs in the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Tottenham and Hampstead line loading gauge upgrade.	Upgrade to W10 loading gauge, thereby allowing the movement of high cube (2.9m/9'6" tall) containers on standard wagons from Felixstowe, Tilbury and London Gateway (see below). Completed 2011. Funded via CP4 Strategic Freight Network budget.	Delivered via Network Rail's permitted development rights.	Provides enhanced freight train capability to/from the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail	Southampton to	Upgrade to W10 loading gauge	Delivered via Network Rail's	Provides enhanced freight train

(SFN)	West Midlands loading gauge upgrade.	(Southampton-Oxford-Coventry-Nuneaton), thereby allowing the movement of high cube (2.9m/9'6" tall) containers on standard wagons from Southampton. Completed 2011. Funded via Transport Innovation Fund	permitted development rights.	capability to/from the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Port of Liverpool to West Coast Main Line loading gauge enhancement.	Upgrade to W10 loading gauge (Seaforth-Earlstown and West Coast Main Line), thereby allowing the movement of high cube (2.9m/9'6" tall) containers on standard wagons from Port of Liverpool. Completed 2011. Funded via CP4 Strategic Freight Network budget.	Delivered via Network Rail's permitted development rights.	Provides enhanced freight train capability to/from the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail	Chat Moss railway line loading gauge enhancement.	Upgrade to W12 loading gauge (from Earlstown to Manchester via Chat Moss route) as a 'by-product' of the line electrification (see above), thereby allowing the movement of high cube (2.9m/9'6" tall) containers on standard wagons from to Manchester and Port Salford SRFI. Completion by 2016.	Proposed in the HLOS and SoFA for funding and completion during Control Period 5 (CP5, 2014-2019). Delivered via Network Rail's permitted development rights.	Provides enhanced freight train capability to/from the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Peterborough to Doncaster via Spalding loading gauge enhancement.	Upgrade to W12 loading gauge (Doncaster-Spalding-Peterborough), thereby allowing the movement of high cube (2.9m/9'6" tall) containers on standard wagons from Felixstowe to Yorkshire. Funded via CP4 Strategic Freight Network budget. Completion expected March 2014.	Delivered via Network Rail's permitted development rights.	Provides enhanced freight train capability to/from the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Birmingham to Doncaster loading gauge enhancement.	Upgrade to W12 loading gauge, thereby allowing the movement of high cube (2.9m/9'6" tall) containers on standard wagons from south coast/Midlands to Yorkshire. Funded via CP4 Strategic Freight Network budget. Completion expected March 2014.	Delivered via Network Rail's permitted development rights.	Provides enhanced freight train capability to/from the city regions, thereby enhancing rail freight's offer to the logistics market.
Rail (SFN)	Doncaster to Berwick loading gauge enhancement.	Upgrade to W12 loading gauge, thereby allowing the movement of high cube (2.9m/9'6" tall) containers on standard wagons from south coast/Midlands to Scotland via ECML. Funded via	Delivered via Network Rail's permitted development rights.	Provides enhanced freight train capability to/from the city regions, thereby enhancing rail freight's offer to the logistics market.

		CP4 Strategic Freight Network budget. Completion expected March 2014.		
Rail (SFN)	Teesport to ECML loading gauge enhancement.	Upgrade to W12 loading gauge between Teesport and ECML at Northalerton, thereby allowing the movement of high cube (2.9m/9'6" tall) containers on standard wagons. Funded via CP4 Strategic Freight Network budget. Project on hold for cost review, due to undiscovered Victorian sewer below track bed.	Delivered via Network Rail's permitted development rights.	Provides enhanced freight train capability to/from the city regions, thereby enhancing rail freight's offer to the logistics market.
Road	A1 Dishforth to Leeming – upgrade to motorway standard.	New section of three lane motorway (35km) from Disforth to Leeming (replacing existing sub-standard dual carriageway. Completed 2012	Consent granted by Secretaries of State (Transport and Communities) under Highways Act and Acquisition of Land Act following public inquiry .	Will provide quicker and more reliable HGV journeys between the city regions.
Road	A11 Fiveways to Thetford Improvement. Highways	New section of dual carriageway (15km) from Fiveways to Thetford (A11 London to Norwich), replacing existing single carriageway. Expected completion 2015.	Consent granted by Secretaries of State (Transport and Communities) under Highways Act and Acquisition of Land Act following public inquiry .	Will provide quicker and more reliable HGV journeys between the city regions.
Road	M1 Jct 10-13. M1 Jct 28-31. M1 Jct 39-42. M4 Jct 19-20 and M5 Jct 15-17. M62 Jct 25-30. M6 Jct 5-8. M3 Jct 2-4a. M25 Jct 5-7. M25 Jct 23-27. M6 Jct 10a-13 M60 Jct 8-12 M62 Jct 18-20 Highways.	Managed motorway schemes, comprising variable speed limits and hard-shoulder running at times of congestion. M1 Jct 10-13 – expected completion 2013. M1 Jct 28-3 – expected start of works 2013. M1 Jct 39-42 – expected start of works 2013/14. M4 Jct 19-20 and M5 Jct 15-17 – expected completion 2014. M62 Jct 25-30 – expected completion 2014. M6 Jct 5-8 – expected completion 2014. M3 Jct 2-4a – expected start of works 2013. M25 Jct 5-7 – expected start of works 2013/14. M25 Jct 23-27 – expected start of works 2013/14. M6 Jct 10a-13 – expected start of works 2014/15. M60 Jct 8-12 – expected start of works 2014/15. M62 Jct 18-20 – expected start of works 2014/15.	Delivered within existing highway boundary.	Will provide quicker and more reliable HGV journeys between the city regions.

Road	M60 Jct 15-12 M25 Jct 16-23 M25 Jct 27-30 Highways.	Widening of motorway from three to four lanes. M60 Jct 15-12 – expected start of works 2014/15. M25 – both completed 2012	Delivered within existing highway boundary.	Will provide quicker and more reliable HGV journeys between the city regions.
Port	Liverpool 2 riverside container terminal & port – centric distribution	A new deep sea container terminal will be constructed outside the lock gates at Seaforth Docks to accommodate the largest deep sea container ships. Peel Ports is also planning to develop port centric distribution on an expanded port estate, which will combine deep sea and short sea traffic with RDCs and NDCs for major freight owners and inland distribution by inland waterway and rail as well as by road. These developments are key to the Liverpool Superport concept, which is being taken forward by the LEP.	Planning consent granted for Liverpool 2 and Peel Ports has announced its development. Peel Ports has included the development of PCD in its Mersey Ports Master Plan.	Liverpool 2 will provide for additional deep sea container port capacity to serve a national market and this, plus the future development of PCD, would provide significant economic benefits for Merseyside.
Port	Felixstowe South re-configuration.	The re-configuration and extension of the southern deep-sea container quay, together with associated gantry cranes and hardstanding storage areas. The new quay, when fully completed, will provide a total of 1,400m of new deep-sea container quay, an additional 900m compared with the previous infrastructure layout at the south terminal. Project being delivered in two phases, Phase 1 providing around 730m of new quay (balance being Phase 2). Partial re-doubling of Felixstowe branch line has to be delivered ahead of Phase 2 (see above).	Planning consent granted by Secretaries of State (Transport and Communities) following public inquiry.	Will provide for additional deep-sea container port capacity to serve city regions.
Port (PCD)	London Gateway. Port and port centric logistics.	A new deep-sea container port being constructed at the site of the former Shell oil refinery on the north bank of the Thames estuary near Stanford-le-Hope (Shelhaven). When fully completed, around 2,000m of new deep-sea container quay will be provided, capable of handling 3.5million TEUs per annum. A new port centric logistics warehousing development will be developed (around 850,000 sqm of floor space)in conjunction with the quay and new intermodal rail	Planning consent granted by Secretaries of State (Transport and Communities) following public inquiry.	Will provide for additional deep-sea container port capacity to serve city regions.

		terminal facilities.		