Department for Transport

Delivering A Sustainable Transport System: The Logistics Perspective

December 2008

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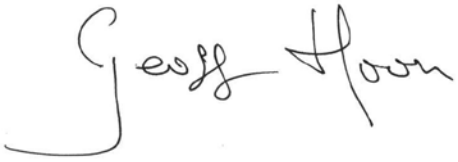
Foreword

We are fortunate in having a world-leading logistics industry, both in terms of its effectiveness and environmental performance. Almost everything we use every day has been moved by a freight operator – be it the food on our plate, the chair we sit on, or the clothes we are wearing. With many businesses relying on just-in-time methods, effective and predictable movement of goods is important, contributing to economic growth and stability. Manufacturing relies on components being supplied at the right time. Power stations and construction sites need materials delivered promptly. Retailers need to get their goods to the store ready to meet customer demand – and increasingly deliver our purchases to our homes at a time when we are available to receive them.

But freight transport is not without environmental and social cost in terms of noise, congestion, air pollution and accidents, as well as greenhouse gas emissions. Addressing these impacts, whilst maintaining effective services, will require better knowledge of freight movements and increasingly sophisticated solutions. In the current economic climate, it is more important than ever to focus on the needs of freight and its customers. During this difficult period, we need to work together to deliver efficient operations and strong businesses, ready to make the most of future opportunities when they arise.

This document provides the first detailed analysis by the Department of the movement of major freight commodities on our national transport corridors. It sets out our understanding of the issues across freight modes and considers how government and industry can work together to facilitate effective freight movement and to mitigate its impacts.

We shall be considering the issues raised with the users and providers of freight transport in the months ahead, ensuring that the needs and impacts of freight are considered in the Department's investment, regulatory and policy decisions. But we would welcome also the views and comments of the wider community.



Rt Hon. Geoff Hoon MP
Secretary of State for Transport

Executive summary

1 Freight is important and matters to everyone. Everything in our shops, offices, factories and homes has been transported at some stage. The efficient movement of freight is important to our economic wellbeing and central to the Department's goal to 'support national economic competitiveness and growth, by delivering reliable and efficient transport networks'.

2 However, the industry not only supports us – it also creates impacts upon us. Fossil fuels power most freight transport in the UK, with significant effects on air quality and a substantive contribution to domestic greenhouse gases. Emissions, noise and accidents can all impact on us as individuals. And – at certain times and locations – freight both experiences and contributes to congestion, which not only impacts on competitiveness but can also compound other environmental impacts. These issues, too, are reflected in the Department's goals to: 'reduce transport's emissions of carbon dioxide and other greenhouse gases', 'contribute to better safety, security and health' and 'improve quality of life for transport users and non-transport users, and promote a healthy natural environment'.

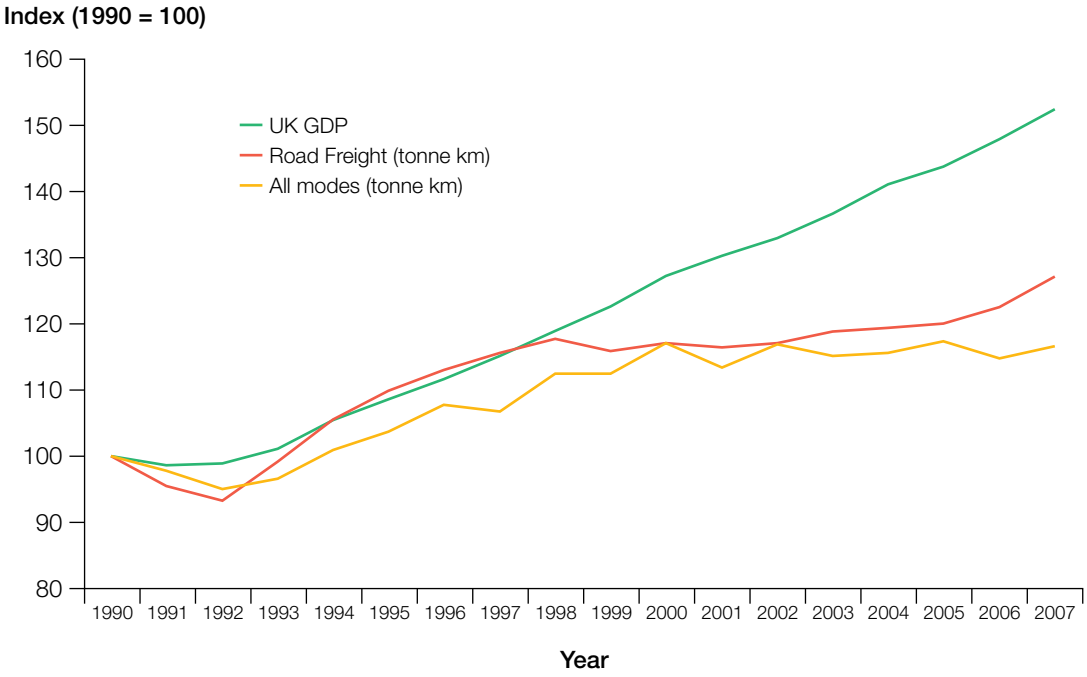
3 The document follows on from *Delivering a Sustainable Transport System (DaSTS)*,[1] published recently by the Department. It looks in more detail at the issues concerning the movement of freight within Great Britain, across modes, including the nature and composition of freight flows on the major corridors, and discusses how Government and industry will need to work together to ensure that freight benefits from and contributes to the Department's goals. The position set out is very much a 'work in progress' and reflects the Department's current views. In particular, much of the material in this document predates the current economic downturn. We will keep this analysis under review and ensure that we plan, together, for an uncertain future.

1 www.dft.gov.uk/about/strategy/transportstrategy/dasts/

The nature and impacts of freight and logistics

4 The quantity of freight transported in the UK has continued to increase over time – with distance travelled increasing more quickly than the volume of goods transported. There must be uncertainty about future growth patterns in view of the economic downturn, but, as Figure 1 shows, over the last ten years this growth has been at a lower rate than Gross Domestic Product (GDP), indicating a decoupling of UK GDP and freight activity. This trend is not generally seen elsewhere in Europe.

Figure 1 UK GDP and tonne kilometres, 1990–2007



Source: DfT, Transport Statistics Great Britain (2008); National Accounts (2008)

5 Road transport dominates freight movements – carrying two-thirds of goods moved. But in recent years the mix of road freight traffic has changed – the number of Heavy Goods Vehicles (HGVs) has reduced, while the number of vans has increased markedly. Despite the dominance of road freight, there has been substantial growth in rail freight, up by almost 50 per cent over the past decade, to a level not seen since the 1970s. This growth has particularly been in the existing bulk and unitised markets, and much has involved the transport of imported goods, but some has been traffic previously carried by road.

6 One of the reasons for road's high freight market share is the relatively short distances that much freight travels. Analysis of the origins and destinations of goods shows that, on average, around 70 per cent of road freight has its origin and destination within the same region of the UK. The East and West Midlands are significant destinations for freight (given their agglomeration of national distribution centres).

7 These key origins and destinations lead to concentrations of freight traffic on particular parts of our national networks. Key road routes include the M25 (particularly the north eastern section), the M1 (particularly south of Nottingham), the M6 south of Manchester, and parts of the M62, A1 and A14. The routes used by most rail freight services broadly follow the same spatial patterns, with the East and West Coast Main Lines carrying the bulk of the traffic. Partly because freight is ultimately travelling to and from major population centres, these key routes are also important for commuting, business and leisure traffic, and so there appears to be some commonality with the routes of most importance to other traffic. Across the road network as a whole there is an overall average of 16 cars and vans travelling for every one HGV.

8 Traditionally, the Department has focused on mode, rather than commodity – how many HGVs or trains there were rather than on the logistical detail of what freight moved where. But we are now looking more closely at the composition of freight traffic on these key routes and seeking to understand more fully the factors generating freight demand on them.

Figure 2 Container flows from: Felixstowe: road, 2007

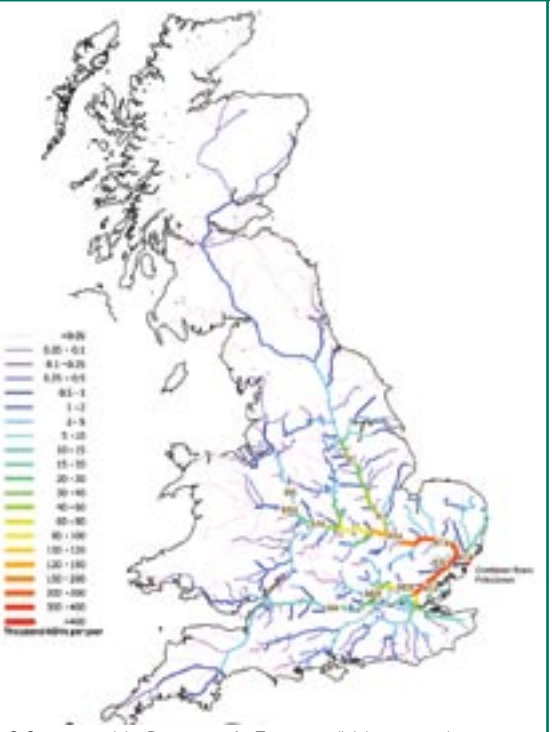
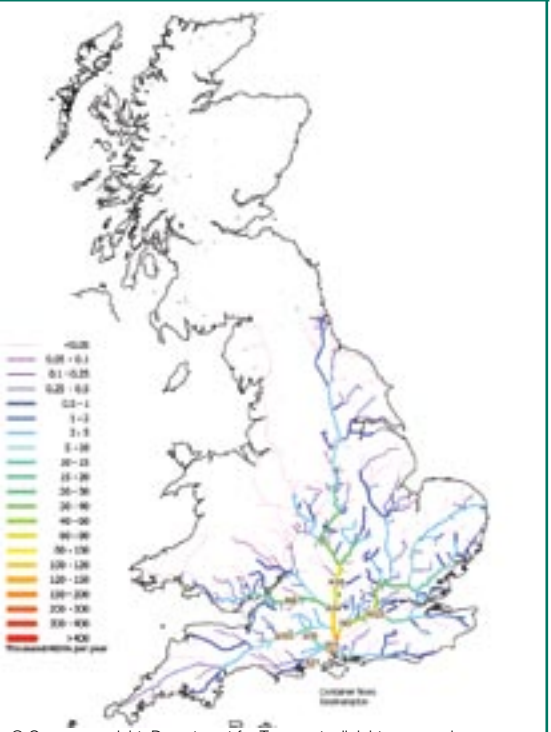


Figure 3 Container flows from Southampton: road, 2007



9 Initially this new analysis has focused on HGVs, because that is how most freight moves. It has looked particularly closely at containers, because of high predicted growth (around 180 per cent by 2030 on current forecasts, prepared before the current downturn) and the potential for modal shift to both rail and coastal shipping. Work is continuing, but early findings indicate that container freight between ports and the origin or destination is a major issue for some key parts of the road network located close to international gateways (Figures 2 and 3) but is not currently a significant component of HGV traffic across the road network as a whole. HGV container traffic through the major container ports rapidly disperses and, when aggregated, the flows make up only a small percentage of HGV traffic on the national motorway routes. The analysis is being extended to other categories of freight, and will look at the rail picture more fully.

10 Congestion is not freight's only impact on others, and in the past decade some of freight's impacts have reduced considerably. For example:

- emissions of local pollutants from new HGVs have more than halved;
- rail produces around 0.05 kg of CO_2 per tonne km compared to around 0.17 kg of CO_2 per tonne km for road transport; and
- accidents involving HGVs and injuries have reduced by 26 per cent since 1997, with serious injuries and fatalities reduced by 42 per cent.

11 However, a number of key issues remain. Freight continues to contribute to congestion on our road networks; rail capacity issues arise from increases in freight services; noise (particularly for out of hours freight deliveries) remains a concern; and the overall fuel efficiency of HGVs is still at around mid-1990s levels (mainly because of trade-offs with improved air quality standards).

Working with the industry today

12 Freight is primarily a commercial, market-driven activity. Most investments are made by the private sector in accordance with normal commercial criteria. The lorries, locomotives, ships and aircraft that carry freight, and the distribution centres and most ports through which freight flows, are owned and operated by companies seeking to meet market demand on a commercial basis. The Government does not specify what services run where and at what time. These are commercial decisions taken by freight and logistics companies in partnership with their customers.

13 The Department's focus is on the outcomes that arise from freight transport. It is concerned to ensure that freight is able to move as efficiently as possible, reducing costs to business and consumers, and also to see its impacts on others (for example in terms of safety, climate change and quality of life) maintained at an appropriate level. These objectives are not necessarily mutually exclusive, but they do sometimes demand choice or compromise.

14 The main levers that the Department uses to influence these outcomes are:

- investment;
- regulation (both domestically and internationally);
- our strategy for ensuring compliance with regulations;
- our ability to create a long-term planning framework; and
- funding, incentives and the promotion of best practice.

15 It is important to note that many of the Department's activities deal with both freight and non-freight issues at the same time. This is particularly true from an investment perspective. Because of the commonality of key routes between passengers and freight (see paragraph 7 above), freight has to be integrated into wider decision making processes; a motorway investment appraisal, for example, will take account of the benefits to freight and non-freight users. Even so-called 'rail freight' projects have wider benefits for passenger services, which are taken into account in reaching investment decisions. For example, the freight schemes for the East Coast Joint Line and at Shaftholme Junction on the East Coast Main Line (ECML), for which funding was confirmed on 30 October, will have the effect of freeing up capacity on the ECML for additional and faster passenger services.

16 Alongside taking a medium and long-term view of the sector's needs and impacts, the Department also recognises the importance of current issues – such as the cost of world oil and fuel prices and the economic downturn – to the sector. The Department appreciates these concerns and the potential difficulties arising. We continue to work closely with colleagues in other Departments, sharing the views of the industry across Government and continuing to discuss and consider effective policy solutions in the context of the Department's goals.

Responding to future challenges together

17 DaSTS confirmed the five high-level goals which the Department has committed to working towards. These are:

- to **support** national **economic** competitiveness and **growth**, by delivering reliable and efficient transport networks;
- to reduce transport's emissions of carbon dioxide and other greenhouse gases, with the desired outcome of **tackling climate change**;
- to **contribute to better safety, security and health** and longer life expectancy through reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health;
- to **promote** greater **equality of opportunity** for all citizens, with the desired outcome of achieving a fairer society; and
- to **improve quality of life** for transport users and non-transport users, and to promote a **healthy natural environment**.

18 For convenience, we refer to these goals subsequently as the 'competitiveness and productivity', 'climate change', 'safety, security and health', 'equality of opportunity' and 'quality of life' goals.

19 Looking forward, there are also a number of key trends that are currently expected to shape the future nature and impacts of freight. These include:

- sustained growth in imports, although possibly at a lower rate than of late, arising from more global sourcing of supplies, placing significant demands on key international gateways and the links to and from them;
- a continued increase in numbers of light goods vehicles, where growth of around 65 per cent is forecast to 2025 (with their total share of overall traffic increasing from 12 per cent to 15 per cent). In part this is likely to arise from expansion of online retailing;
- a further decrease in local emissions from new road vehicles, although the technology required may limit the scope for increased fuel efficiency and carbon dioxide (CO_2) savings in the short term;
- continued reliance on air freight for the transport of goods of high value or great urgency (but with the potential for consumer choice and the cost of greenhouse gases to decrease their use for the transport of food); and
- increased return of reused or recycled products from consumers (which are not necessarily in standardised packaging and so potentially less efficient to transport).

20 These trends contribute to current growth forecasts of:

- 4 per cent for HGV traffic (vehicle km) from 2007 to 2015; and
- 30 per cent for freight to be lifted by rail from 2007 to 2015.

21 Given this backdrop, the Department considers that, for freight transport to play its full part in tackling – and benefiting from the achievement of – these goals, a closer partnership with the sector is required. We have already started to deliver this through:

- giving the Department's Freight and Logistics Division a clear mandate to take a cross-cutting view of the needs and impacts of freight across all modes;
- establishing a clear responsibility for freight at board level;
- holding major 'listening to industry' events – the first of which last February was opened by the Secretary of State for Transport;
- establishing an informal 'sounding board' of around 20 businesses and trade associations in the sector; and

- publishing six studies of 'end-to-end journeys' in the freight sector, which were the result of working with around 30 businesses to understand their use of networks and key issues in greater detail.

22 These developments, and the Department's increasingly pro-active role, are already making a difference. Engagement so far has identified the key strategic issues for the sector, summarised below, and allowed us to ensure that freight's needs and potential contributions were fully reflected in DaSTS and the supporting consultation on planning for 2014 and beyond. The latter included a matrix summarising the key challenges for transport for each of the Department's five goals on our national and international networks and in cities and regions. These Departmental challenges were informed by our engagement with logistics sector stakeholders, which identified a number of themes of concern to the industry. These are as follows:

Climate change

- Appropriate incentives (and/or disincentives) and market mechanisms need to be in place to influence the behaviour of companies and their customers to achieve desired climate change outcomes.
- Appropriate technological options to contribute to greenhouse gas reduction should be available at an appropriate cost and with a clear business case for adoption, to companies and organisations.
- There needs to be clear, consistent and accepted methods for calculating, and accountability for delivering, emissions reductions.

Competitiveness and productivity

- Networks and gateways need to provide appropriate capacity for the efficient operation of freight services, and freight operators and their customers need to make the most effective use of the available capacity in order to maximise journey reliability.
- Networks and gateways used for the movement of goods and services will need to have sufficient contingency built in to adapt to climate change factors and should have appropriate resilience for effective handling of incidents and delays.
- A consistent and effective framework is needed to support the competitive and efficient operation of the UK logistics industry, with the required investment (private and public) and consistent planning decisions to support strategic development of freight infrastructure.
- Freight users need to have access to globally competitive levels of international connectivity.

Equality of opportunity

- There needs to be a clear understanding of the skills and numbers of employees needed to support a competitive and effective industry, both now and for the future.
- There is a need to promote a positive image of the industry to the public in an effort to broaden the appeal of the sector to a wider, more diverse range of potential recruits.

Quality of life

- There needs to be an appropriate and fair treatment of the impacts of freight and logistics operations on society, having regard to both the economic and environmental factors and with proper appreciation of both the benefits and issues.

Safety, security and health

- The impact of freight services on the health of logistics employees and others is maintained or improved in relative terms;
- There is wide and genuine consultation on introduction of new health and safety measures and that they are comparable with, or at least do not introduce competitive disadvantage when compared to, best practice and standards abroad.

Cross-cutting themes

- There is a perceived need for opportunities for modal shift that are both competitive and available for those wishing to pursue them.
- There is a need to ensure that the options for and potential costs, benefits and mitigations of, changing working practices (such as night time deliveries) are understood and are considered alongside other (e.g. local) concerns;
- To ensure that the expected increase in non-UK HGVs does not have a negative impact on the achievement of our goals – particularly for safety, productivity and competitiveness and emissions reduction; and
- To ensure that there is a much greater understanding of the role of vans in the achievement (or otherwise) of our goals and that this is factored into decisions on option selection.

23 Annex A provides further details of these themes and identifies which of the challenges in the DaSTS consultation document each has fed in to. We welcome the views and opinions of industry stakeholders on the findings in both the main document and also the themes in Annex A.

24 We have already begun to work with industry to address these issues together. On some we can make rapid progress. For example, we have recently announced additional funding of £67 million over three years to 2014 for the Sustainable Distribution Fund. The money will be targeted at increasing the use of rail and water transport to reduce emissions and cut road congestion. It will also be used to help hauliers and freight operators cut costs and be more fuel efficient. A new Van Best Practice scheme will also be funded, to 2011, with thousands more drivers and companies set to benefit from efficiency best practice information. Since starting this work we have also announced £24 million of additional funding to the Vehicle and Operator Services Agency to improve the effectiveness of its enforcement of vehicles on high-risk journeys – including non-UK HGVs.

25 Other areas will be tackled over the coming months as part of the Department's ongoing approach to policy development and engagement with the logistics sector. Action here is likely to include the development of National Policy Statements as part of the planning process, closer engagement with Skills for Logistics to develop a clearer skills agenda for the sector and working with colleagues in Department of Energy and Climate Change (DECC) to ensure the clarity of greenhouse gas emissions reporting processes in the sector.

26 The remaining issues will influence decisions, expected over the next 2–3 years, which will set the future direction for transport for the period to 2020 and beyond. The process the Department proposes to follow is set out in detail in the consultation that accompanied DaSTS. In line with the recommendations of the Eddington Transport Study,[2] the Department will be considering the full range of policy options across all modes, to address the challenges that we have identified.

27 Detailed work is already under way within the Department to ensure that the needs and impacts of freight services are incorporated fully into this work stream. In particular, we are seeking to understand the nature of the commodities and traffic on the key transport corridors and the locations where the challenges we have identified have particular impacts. These are likely to include:

- areas where freight suffers from, or contributes to, network congestion;
- the places where accidents involving freight are more likely to occur; and
- locations where there are other issues which freight can contribute to addressing (such as skills shortages).

2 www.dft.gov.uk/about/strategy/transportstrategy/eddingtonstudy/

28 These 'hotspots' will be reviewed alongside other priority locations for action and wider options for addressing the challenges. The types of action that the Department expects to consider in relation to freight will probably remain similar to the levers we use today. But the decisions to take them will be based on a more sophisticated understanding of the sector and the potential impacts of the actions. We expect they *could* include:

- investment in network infrastructure and technology (generally benefiting both passengers and freight);
- managing networks in a different way so as to improve capacity of traffic within existing facilities;
- regulatory changes – such as limited changes to the dimensions of vehicles;
- adapting our strategy for ensuring compliance with regulations – perhaps through revisions to levels of, and relative priorities for, enforcement;
- adapting the coverage of logistics issues in National Policy Statements, in order to influence the configuration of supply chains;
- providing modal shift grant funding in a more targeted manner so that schemes which benefit a particular part of the network are prioritised and adapting the level of funding to meet overall needs; and
- the introduction of new areas of best practice, either alongside or as part of the Freight Best Practice scheme.

29 All of these actions have the potential to contribute to the outcomes we will be seeking from freight. But the Department alone cannot address the DaSTS challenges from the logistics perspective. We will need the freight industry to play its part to the full. We therefore intend to continue to work closely with stakeholders to ensure that the packages of measures we develop are realistic and to understand the industry's likely reactions to our approach.

30 In parallel with the early stages of this work, UK and EU targets will set the context for the scale of reductions in greenhouse gas emissions from those sectors of the economy not covered by an emissions trading scheme (the non-traded sector), including transport. On 1 December, the Committee on Climate Change (established by the Climate Change Act 2008) provided its advice to the UK Government on the optimum level of the five-year 'carbon budgets' covering 2008–2022. The Government will set the level of these carbon budgets alongside Budget 2009. The UK is also playing a central role in the EU 2020 Climate and Energy package. As it currently stands, the Commission's proposals would require a 16 per cent reduction by 2020 (on 1990 levels) of greenhouse gas emissions from the UK non-traded sector. However, if international agreement can be reached, this required reduction would be increased.

31 Whatever the outcome of these negotiations, freight will have a part to play. Again, the Department alone cannot make all the changes needed to deliver freight's contribution to these targets; we will be reliant upon changes in the configuration of supply chains and operational decisions made by freight customers, carriers and forwarders. However, we will work closely with colleagues in the DECC and elsewhere in Government to seek to deliver appropriate incentives to ensure that greenhouse gas impacts are a key factor for business decisions.

Conclusions and next steps

32 The Department's approach to freight has evolved considerably over the past year. We are now:

- engaging with the industry in a different way to better understand the key issues for the sector relevant to the Department's goals and to define the main areas of challenge;
- focusing our approach more on the movement of different freight commodities, rather than on freight modes;
- taking a more active view of future freight demand, its sources and impacts, including on key routes; and
- considering how we might target support for the logistics sector in a more specific manner to achieve the outcomes we are seeking.

33 We would welcome feedback, particularly from the logistics sector, on the analysis contained, and approach proposed, in this document. Please send any comments to:

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We will also be holding a further 'listening to industry' event in early 2009 to discuss these issues with stakeholders from across the logistics sector.

1. The nature of freight and logistics

Overview

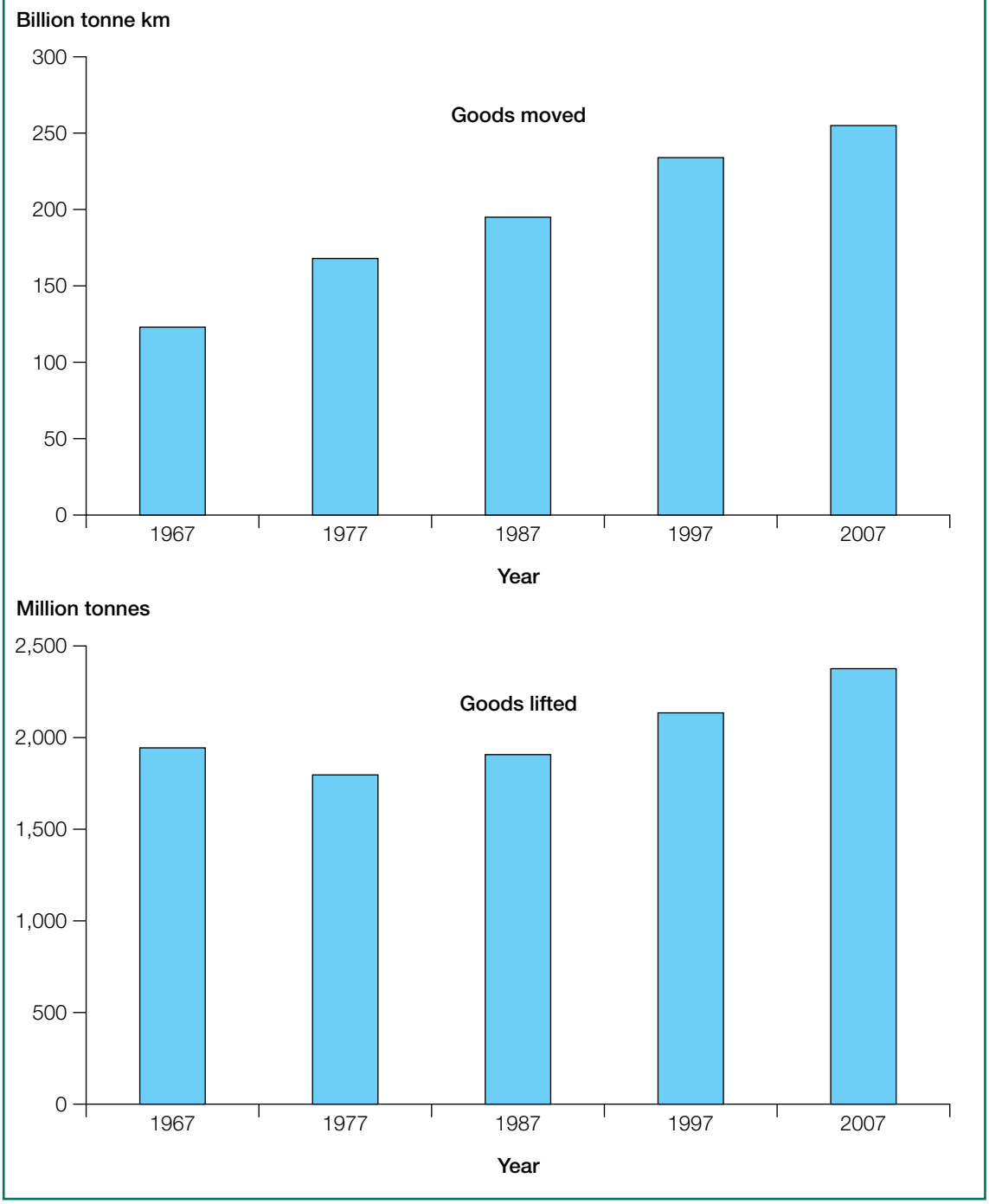
The logistics industry serves all sections of industry and society: producers, consumers, importers, exporters, service industries, agriculture, extractive industries and manufacturing. Our economy and our way of life are highly dependent upon effective freight activity. Equally, the freight and logistics sector is a significant industry in its own right. It is worth £74.5 billion to the economy and employs 2.3 million people across 190,000 companies.[3] Freight activity has risen with the lengthening of supply chains in the increasingly global economy. Our international gateways generate major freight flows. While freight transport has continued to grow, it has been doing so at a slower rate than the recent growth in GDP. Economic growth has therefore not been directly linked to increased greenhouse gas emissions due to freight activity. Road transport continues to dominate, but the mix of traffic has changed – the number of HGVs has reduced, while the number of vans has increased substantially. Despite the dominance of road freight, rail freight has grown significantly – by almost 50 per cent over the past decade.

Domestic freight activity and growth

1.1 Domestic freight lifted in Great Britain has increased by 22 per cent between 1967 and 2007, from 1,944 million tonnes lifted to 2,376 million tonnes. There was an 11 per cent increase in the last decade. In terms of goods moved, freight has also increased, by 108 per cent between 1967 and 2007, from 123 billion tonne km to 255 billion tonne km. There was a 9 per cent increase in the last decade (see Figure 1.1).

3 *Skills for Logistics* (2008).

Figure 1.1 Domestic freight transport in Great Britain, 1967–2007



Source: DfT, Transport Statistics Great Britain (2008)

1.2 In 2007, 84 per cent of goods lifted were by road (Figure 1.4). The growth in freight activity and tonnes lifted, however, has not been reflected in growth in the number of licensed HGVs. In fact, the number of HGVs on the road diminished by 24 per cent between 1967 and 2007; from 593 thousand vehicles to 446 thousand vehicles (see Table 1.1). This is believed to be due to an improvement in HGV payload and the introduction of larger HGVs between the 1960s and 2000s.

1.3 Van numbers increased by 140 per cent between 1967 and 2007, from 1.36 million vehicles to 3.26 million vehicles. However, vans are multi-purpose vehicles, and the Commission for Integrated Transport has estimated that only 35 per cent of vans are used to carry freight.[4]

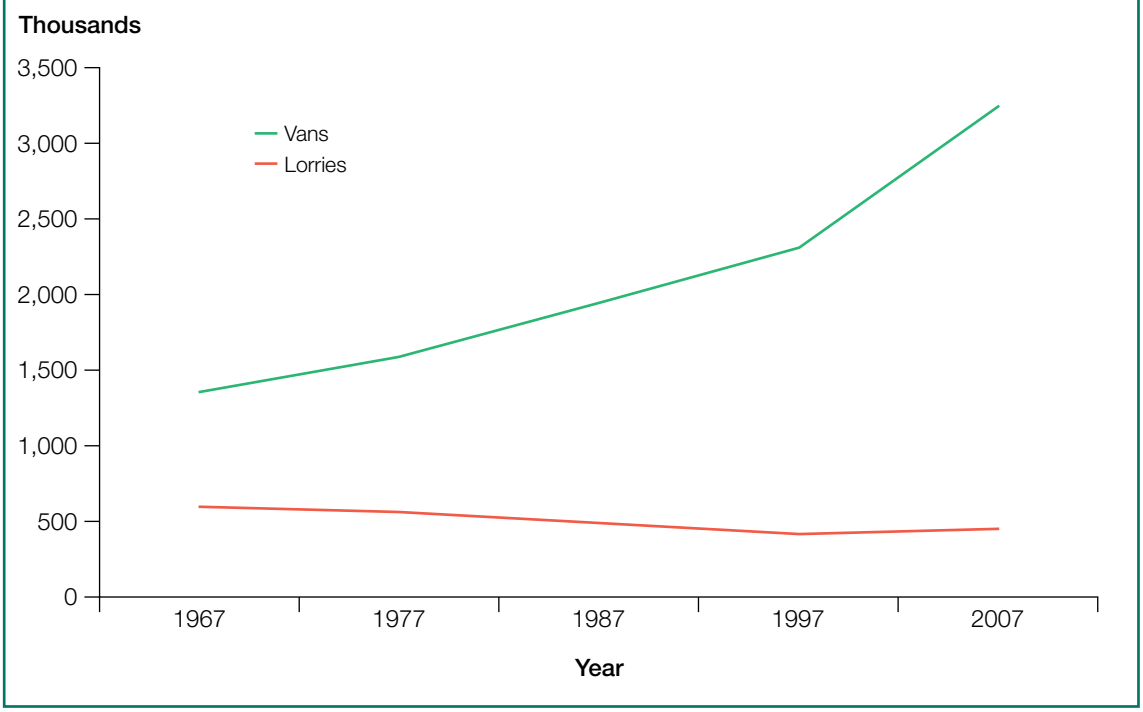
Table 1.1 Motor vehicles licensed at end of year, 1967–2007 (thousands)

Year	Cars	Vans	HGVs	Motor cycles	All vehicles	Vans (%)	HGVs (%)
1967	8,882	1,358	593	1,190	12,760	10.6	4.6
1977	13,220	1,591	559	1,190	17,345	9.2	3.2
1987	17,421	1,952	485	978	22,152	8.8	2.1
1997	21,681	2,317	414	626	26,974	8.6	1.5
2007	26,878	3,261	446	1,133	33,957	9.6	1.3

Source: DfT (2008) Transport Statistics Great Britain

1.4 Figure 1.2 compares the growth patterns of HGVs and vans in the 1967–2007 period.

Figure 1.2 Vans and HGVs licensed at end of year, 1967–2007



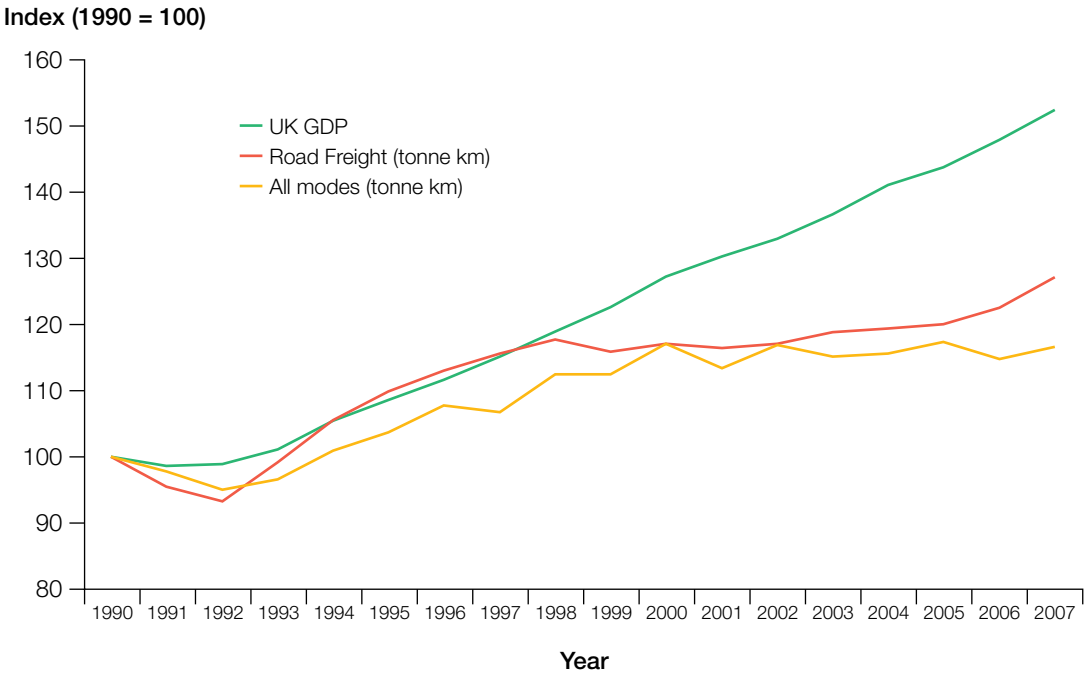
Source: DfT, Transport Statistics Great Britain (2008)

4 UK Commission for Integrated Transport (2008).

Freight activity and UK GDP

1.5 Freight tonnage has increased in absolute terms, but since the late 1990s freight transport activity (measured in tonne kilometres) has decoupled from economic growth: UK GDP increased by 32 per cent between 1997 and 2007,[5] yet the quantity of freight moved by all modes has risen by just 11 per cent.[6] This indicates a decoupling of UK GDP from freight transport in the last decade that is represented in Figure 1.3.

Figure 1.3 UK GDP and tonne kilometres, 1990–2007



Source: DfT, Transport Statistics Great Britain (2008); National Accounts (2008)

1.6 The decoupling demonstrates that the economic growth in UK GDP is not currently reliant on freight tonne kilometre growth and therefore economic growth is not directly linked to increased greenhouse gas emissions due to freight activity. This trend appears to be unique to the UK and is not seen elsewhere in Europe. A range of factors is likely to be contributing to this positive development. Possible explanations for the decoupling include:

- the nature of recent UK GDP growth, of which service industries are an increasing part;[7]
- the UK's island status means that it does not receive significant transit traffic from other countries where GDP growth remains more driven by manufacturing;[8] and
- freight vehicles for all modes being used more intensively.

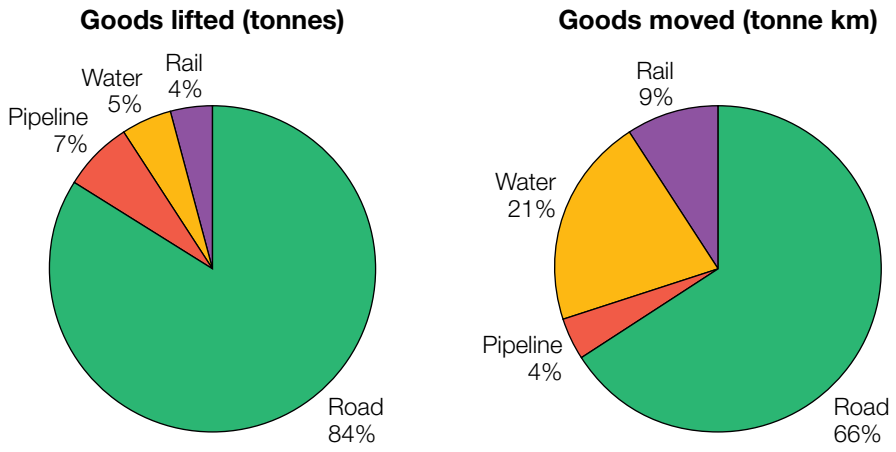
5 National Accounts (2008).
6 DfT (2008) *Transport Statistics Great Britain*.
7 McKinnon (2007).
8 McKinnon (2007).

Modal split

1.7 Each mode of freight transport has attributes and costs that reflect strongly the markets they serve. Rail, inland waterways and coastal shipping tend to suit larger loads (such as aggregates, liquids or consolidated goods such as containers), whilst road favours loads that are smaller or consolidated at a smaller scale (e.g. pallets of goods).

1.8 Figure 1.4 shows the mode share of surface freight activity in the UK in 2007. (Significantly less than 1 per cent of goods is moved by air.)

Figure 1.4 Mode share of domestic freight activity, 2007*



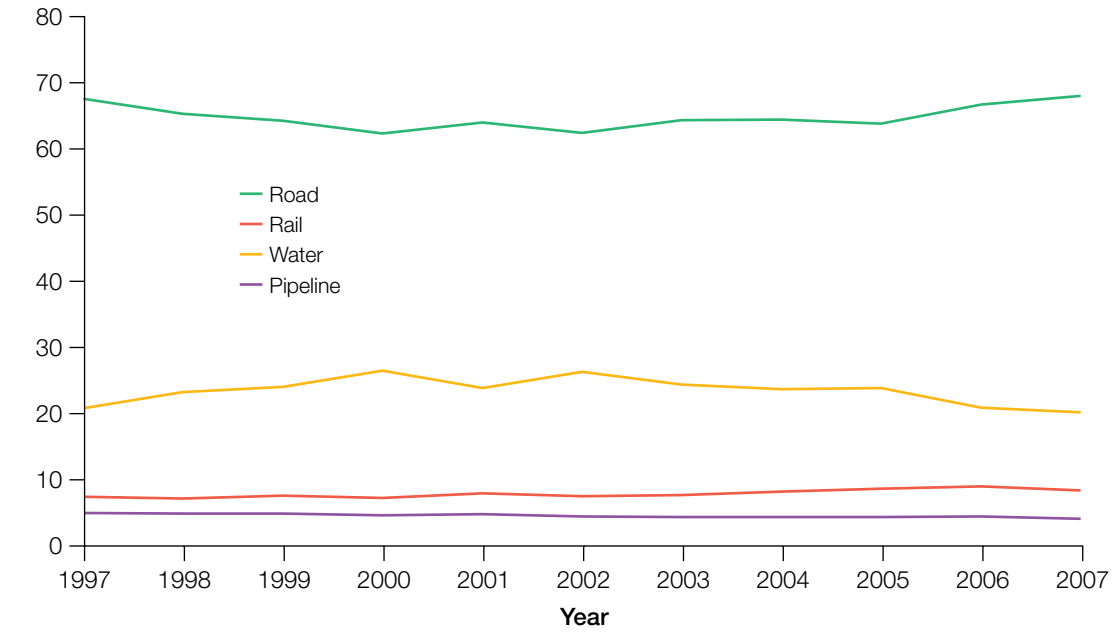
*Surface transport only: excludes air.

Source: DfT, Transport Statistics Great Britain (2008)

1.9 There is scope to modify the markets for each mode. However, there are some roles that are unlikely to change significantly. Deliveries to shops are almost exclusively the preserve of road transport, while the movement of coal from port to power station is dominated by rail. Inland waterways are used regularly to move aggregates and waste, much oil is moved by coastal shipping, while air is often used for urgent materials over longer distances and high-value goods.

1.10 Figure 1.5 shows the medium-term trends in modal share between 1997 and 2007. It covers domestic traffic only, including products such as North Sea oil transported from locations within UK territorial waters.

Figure 1.5 Mode share of domestic surface freight transport, GB, 1997–2007: percentage of goods moved*†



*Figures for rail are for financial years (eg 1997/98).
†Figures for water are for UK traffic.

Source: DfT, Transport Statistics Great Britain (2008)

1.11 Since 1997, rail freight has grown 23 per cent (to 2007). Road freight has grown by a much lower amount while domestic waterborne freight traffic has grown by 6 per cent in the same period. Rail freight traffic is now at a level not seen since the 1970s. Last year the Department's revenue support for rail freight removed around 900 thousand HGV journeys from GB roads.

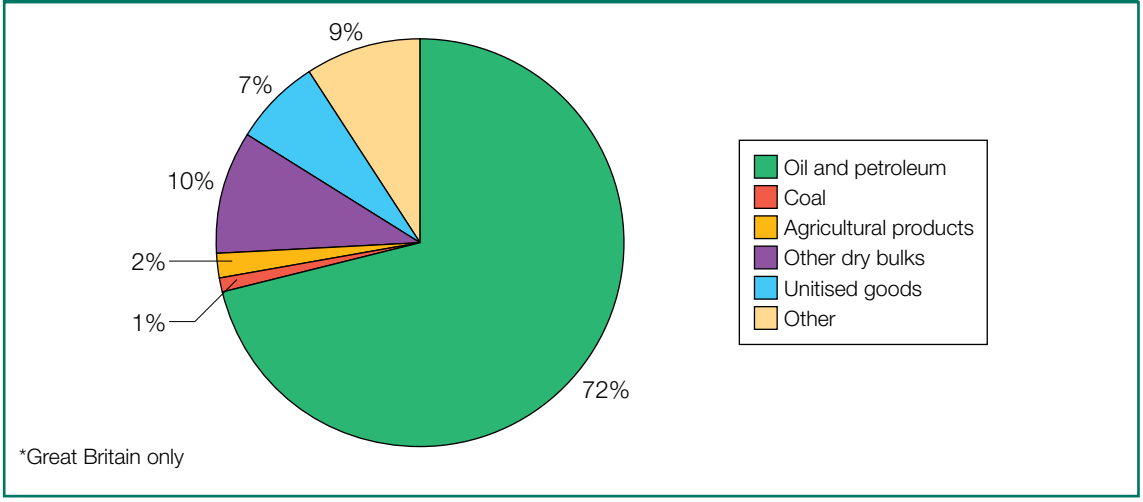
What domestic freight moves (and how)

1.12 As outlined above, each mode tends to specialise in moving goods that suit that particular sort of transport. Figures 1.6–1.8 illustrate the main commodities moved by each mode. As can be seen, there are substantial commodities where some modes are much more effective than other competing modes.

Water freight

1.13 Liquid bulks in the oil and petroleum sector constitute the largest share of domestic waterborne freight. This is highly dependent on volumes of North Sea oil and gas brought ashore and the availability of pipelines. The extent of construction and associated demand for aggregates and building material is also an important component in the overall water freight statistics. The mix of commodities that use water freight is reflected in Figure 1.6.

Figure 1.6: Waterborne transport within the United Kingdom by cargo category: goods moved (tonne km), 2007

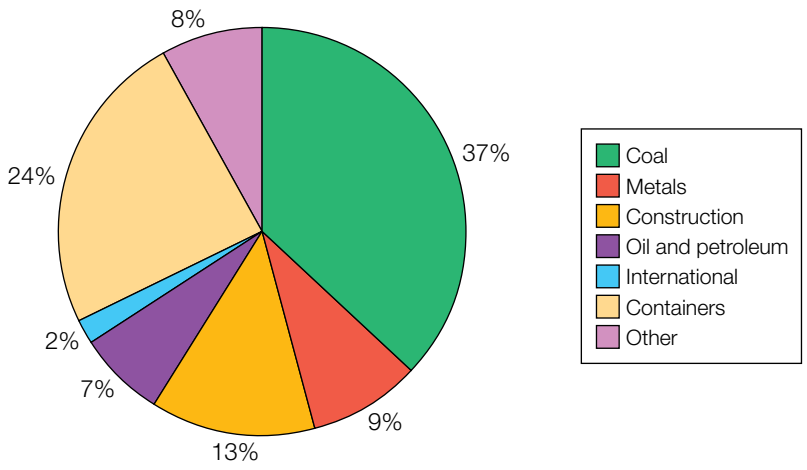


Source: Transport Statistics Bulletin, Waterborne Freight in the UK (2007)

Rail freight

1.14 The rail freight market is dominated by traffic that moves in large quantities. Full trains of coal, containers, construction material and metals dominate the mode. The mix of commodities that use rail freight is reflected in Figure 1.7. For some sectors, such as coal, rail is the mode of choice. For others, such as containers, much of the traffic is dependent on grant funding from the Department to equalise the costs of road and rail transport.

Figure 1.7 Goods moved by rail: billion net tonne km, 2007*

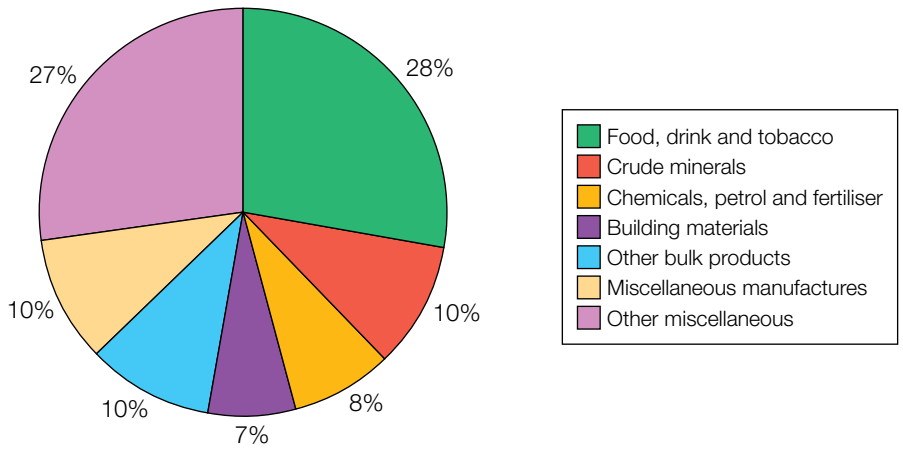


Source: Office of Rail Regulation, National Rail Trends (2008)

Road freight

1.15 Food and drink distribution dominates road freight. This reflects the need to deliver goods as close as possible to the final point of consumption and the size of loads. It should also be noted that, for many journeys that use rail, water or even pipeline, the final leg to the end customer is often conducted by road. The international container market is a good example of this – almost every container moved by rail to and from inland terminals will have an additional final road leg. The mix of commodities that use road transport is reflected in Figure 1.8.

Figure 1.8 Goods moved by road: billion tonne km, 2007



Source: DfT, Transport Statistics Bulletin, Road Freight Statistics (2007)

1.16 The nature of road freight reflects the segment of the distribution channel the commodity is moving through. Supply chains vary depending on the distribution model, but they can generally be understood as follows:

- *primary distribution* is the transport of goods from the point of production or port to the wholesaler, primary consolidation or import centre;
- *secondary distribution* is the transport of goods from the wholesaler, primary consolidation or import centre to the Regional Distribution Centre (RDC) or local warehouse; and
- *tertiary distribution* is the transport of goods from the RDC or local warehouse to local store or customer delivery.

1.17 Each segment of the supply chain has its own vehicle requirements. Primary journeys commonly require the bulk movement of goods over long distances, often of a single commodity, and favour larger HGVs and rail. Secondary journeys are more likely to be mixed commodities with large to medium HGVs, although there is more likely to be a sharing of vehicle types with primary distribution. Tertiary distribution is commonly more time-sensitive, responsive to customer-critical delivery time requirements and undertaken by smaller HGVs and vans.

How international freight moves – the main market sectors

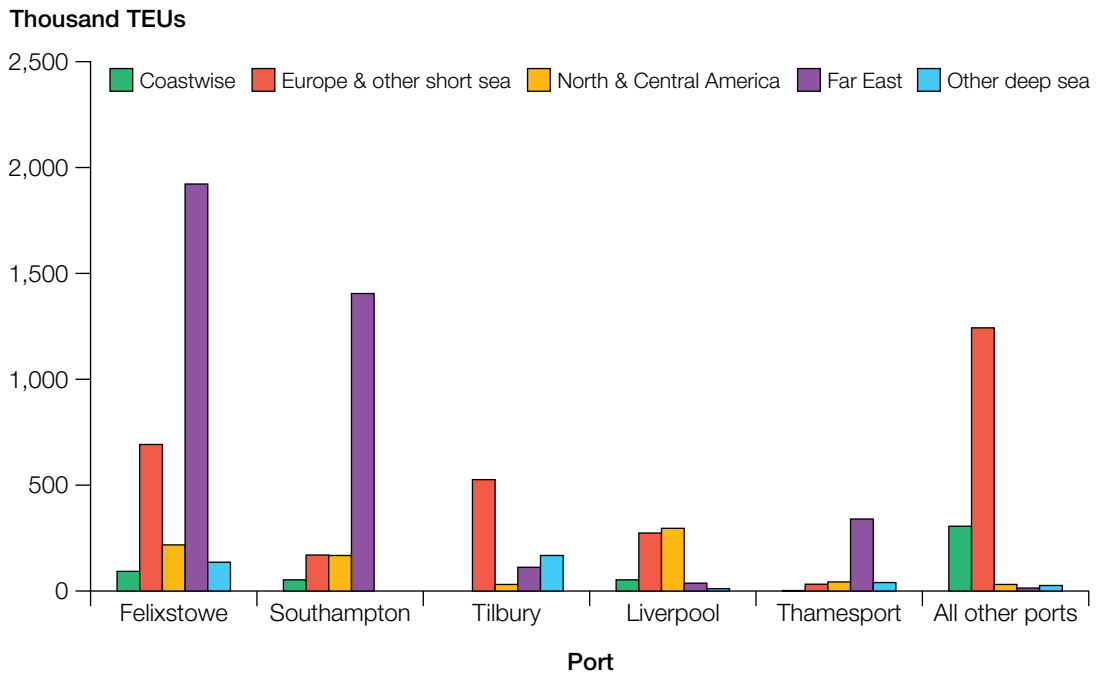
1.18 There are four main transport services used to move freight in and out of the UK:

- container traffic,
- roll-on roll-off ferry traffic (ro-ro),
- bulk maritime traffic; and
- air freight.

UK container traffic

1.19 Historically, the transport efficiency provided by containerisation, combined with the prospect of lower manufacturing and purchase costs, has resulted in more goods being sourced from other parts of the world – notably India and the Far East. The large increase in distances travelled adds to the product cost, but this can be offset by the ability to purchase at lower unit costs.

Figure 1.9 UK container ports by main trading area, 2007: thousand TEUs



Source: DfT Maritime Statistics

1.20 Since the early 1990s, world container traffic has grown at almost three times the rate of world GDP. UK container traffic is primarily handled at lift-on lift-off (lo-lo) terminals, though they may also be carried on general or specialised ro-ro services. Growth in UK lo-lo container traffic has mirrored the global trend.[9] All port container traffic in the UK has increased from about 3.5 million Twenty-foot Equivalent Units (TEU) in 1990 to nearly 9 million TEU in 2007. The growth in container traffic has been driven by increased trade with the Far East and India. The five largest lo-lo container ports in the UK are Felixstowe, Southampton, Tilbury, Thamesport and Liverpool (Figure 1.9). UK ports handled over 5 million containers in 2007. Felixstowe, the leading container port, handled 2.1 million containers in 2007, a 10 per cent increase on 2006.

1.21 The container market is divided into two primary sectors: deep-sea and short-sea. In 2007, nearly 21 million tonnes of container traffic entered the UK from deep-sea origins and more than 15 million tonnes of container traffic was sent from the UK to deep-sea countries.[10] Over 13 million tonnes of container traffic entered the UK from short sea destinations (the EU and Mediterranean Sea), and more than 10 million tonnes of container traffic was sent from the UK to short sea destinations.[11]

9 MDS Transmodal, World Bank figures.

10 DfT, Maritime Statistics (2007).

11 DfT, Maritime Statistics (2007). In this instance, short sea traffic includes UK domestic container traffic.

1.22 Shortly the Department will be publishing *The container freight end-to-end journey: An analysis of the end-to-end journey of containerised freight through UK international gateways*. This publication will look in more detail at the movement of containerised cargo through key UK international gateways across all parts of the end-to-end journey. It will also set out the current and future improvements that will help improve these journeys.

UK ro-ro traffic

1.23 Ro-ro ships carry wheeled cargo such as cars, trailers or HGVs and are designed with ramps to enable vehicles to 'roll on and roll off' at the port, as opposed to cargo that is 'lift-on and lift-off' by crane (lo-lo). More international freight enters and leaves the UK via ro-ro than by lo-lo containers. It is primarily European traffic, which is in addition to the short-sea container traffic described above.

1.24 Ro-ro freight services mostly divide into two distinct markets: driver-accompanied cross-Channel traffic (mostly to and from northern France and Belgium, and with the Republic of Ireland, but also including operations between south west England and western France and Spain), and unaccompanied trailers (generally operating between ports further north along the east coast of Britain across the North Sea and the Baltic). In addition, a significant volume of goods is also carried on ro-ro services using specialised port-to-port trailers, rather than road-going HGVs or trailers, again largely at east coast ports. There is also a significant amount of ro-ro traffic with Northern Ireland.

1.25 In 2007, 7.2 million road goods vehicles and unaccompanied trailers passed through UK ports by ro-ro, of which 2.4 million units passed through Dover, while a further 1.4 million road goods vehicles used the Channel Tunnel shuttle service. Dover and the Channel Tunnel together account for over 60 per cent of the UK ro-ro market and underline the importance of the Dover Straits corridor for freight and logistics in the UK.

1.26 The principal commodities through Dover are foodstuffs, manufactured goods, machinery and chemicals.[12]

1.27 Following this publication the Department will be publishing *The roll-on roll-off freight end-to-end journey: An analysis of the end-to-end journey of roll-on roll-off freight* with a focus on the Port of Dover and the Channel Tunnel. This publication will look in more detail at the movement of ro-ro freight across all parts of the end-to-end journey. It will set out the current and future improvements that will help improve these journeys.

12 DfT, Continuing Survey of Roads Goods Transport.

UK bulk maritime traffic

1.28 The bulk sector consists primarily of services transporting either liquid bulk (predominantly oil, but also including liquefied gas) or bulk solids (such as coal, ores or other raw materials).

Oil

1.29 Oil is the largest commodity moved, by volume, in the UK international freight market. In 2007, crude oil (140 million tonnes) was equal to 25 per cent of the UK's port traffic, of which Forth (16 per cent) and Tees and Hartlepool (15 per cent) were the dominant ports. Oil products (86 million tonnes) were equal to 15 per cent of the UK's port traffic, of which Milford Haven (21 per cent) and Grimsby and Immingham (17 per cent) were the dominant ports.[13]

Coal

1.30 Over 70 per cent of the UK's coal supply is now imported. In 2007, 47 million tonnes of coal passed through UK ports, of which the busiest were Immingham (15 million), Clyde (6 million) and Bristol (4 million). As referred to above, rail is the dominant mode of choice to transport coal, over 85 per cent of which is for domestic electricity generation.[14]

Aggregates

1.31 Aggregates comprise crushed stone, gravel, sand and other quarried materials or materials dredged from the sea. Uses include road building, cement, ready-mix concrete, concrete products and asphalt. We consume over 200 million tonnes of aggregates annually, importing over two million tonnes.[15]

1.32 Some 3 million tonnes of aggregates a year are transported from UK quarries to domestic destinations by sea, primarily in the south east of England. A further 15 million tonnes of aggregates were dredged in UK waters and also landed at UK ports.[16] Most aggregates moved by water are processed port-side and then transported by road to their next destination.

1.33 In July 2007, the Department published a series of freight case studies, including *A coal end-to-end freight journey* and *A construction end-to-end journey*. This publication looks in more detail at the movement of coal by rail for electricity generation and the shipment of aggregates by barge for concrete production in the construction industry.

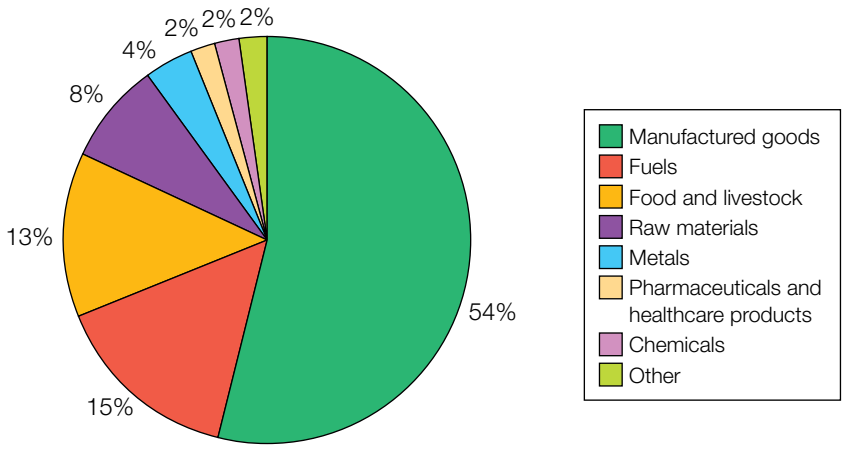
13 DfT, Maritime Statistics (2007).
14 DfT, Maritime Statistics (2007).
15 DfT, Maritime Statistics (2007).
16 DfT, Maritime Statistics (2007).

UK air freight traffic

1.34 Air freight is an important factor in supporting the UK's international trade. About a third of UK visible trade by value goes by air and, in 2007, UK international air freight transported 2.2 million tonnes of cargo.[17] (Although tonnage lifted by air freight is nominal compared to goods transported by sea.)

1.35 Air freight rates can be expensive relative to alternative modes, in particular sea freight (see Table 1.2), and for this reason the market tends to be restricted to goods that have high perceived value for the customer. While air freight accounts for only 0.5 per cent of international freight by volume, its share in value terms is around 35 per cent.[18] There is also a significant section of the air freight market where, independent of the intrinsic value of the goods, air shipment becomes desirable for a customer, for example where a low-value spare part is needed urgently, or highly perishable goods can justify the cost of air transport. The mix of commodities is reflected in Figure 1.10.

Figure 1.10 UK air freight commodity, 2007, by weight*



*Non-EU air freight data only.

Source: HMRC (2007)

1.36 Air freight moves in two distinct ways. Most of the traffic, notably long-haul air freight, is transported in the holds of scheduled passenger services. (Many short haul and low cost services do not carry freight.) This means that larger airports around London (especially Heathrow) dominate the air freight volumes. However, a significant amount of air freight is carried on dedicated air freight services. A large proportion of this business is focused on express door-to-door traffic that is consolidated at hubs for distribution worldwide.

17 CAA Airport Statistics (2007).
18 HMRC (2006).

1.37 The Department's end-to-end journey case studies included *An air freight end-to-end journey*. This publication looks in more detail at the collection and return of an electrical device by air courier. The Department is undertaking a more detailed end-to-end analysis of the movement of air freight scheduled for publication in 2009.

1.38 Diversity within the freight market is reflected in the range of values per tonne of freight across bulk traffic, containers, ro-ro and air freight, as shown in Table 1.2.

Table 1.2 UK international freight types: values per tonne*

Freight type	Value (£/tonne)
Bulk liquids and solids	220
Lift on/Lift off	1,800
Roll on/Roll off	3,900
Air	51,400

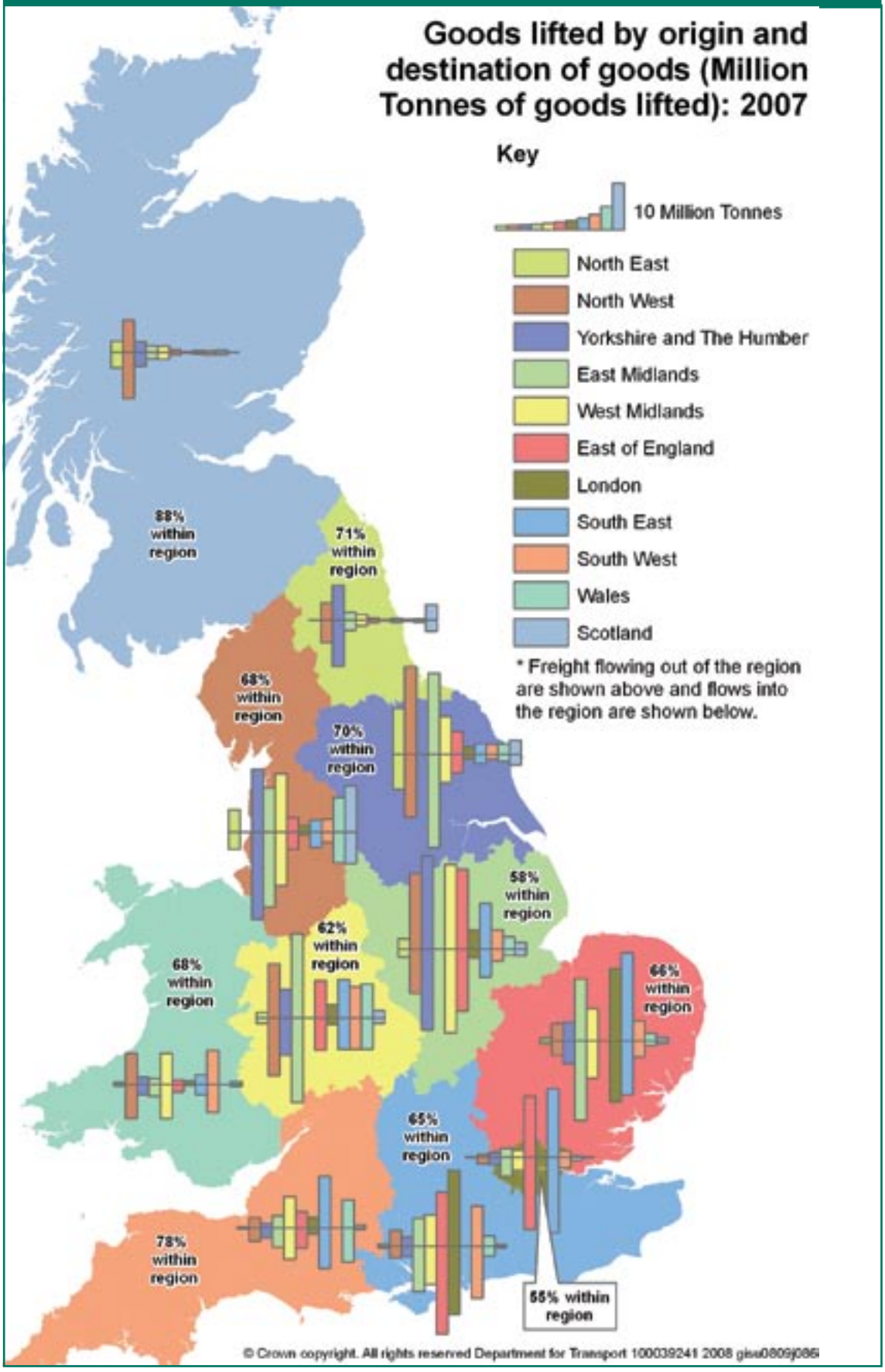
*Non-EU trade only.

Source: UK Port Demand Forecast to 2030, MDS Transmodal for DfT (2006)

Routes to market – where freight moves to and from

1.39 Freight traffic is driven by the needs of people and industry, and so is highest where industries are based, where goods are sourced and where people live. Figure 1.11 shows road freight lifted by origin and destination between GB regions in 2007. Freight flowing out of the region is shown above the line and freight flows into the region are shown below the line.

Figure 1.11 GB domestic road freight flows, 2007



Source: DfT, Road Freight Statistics (2007)

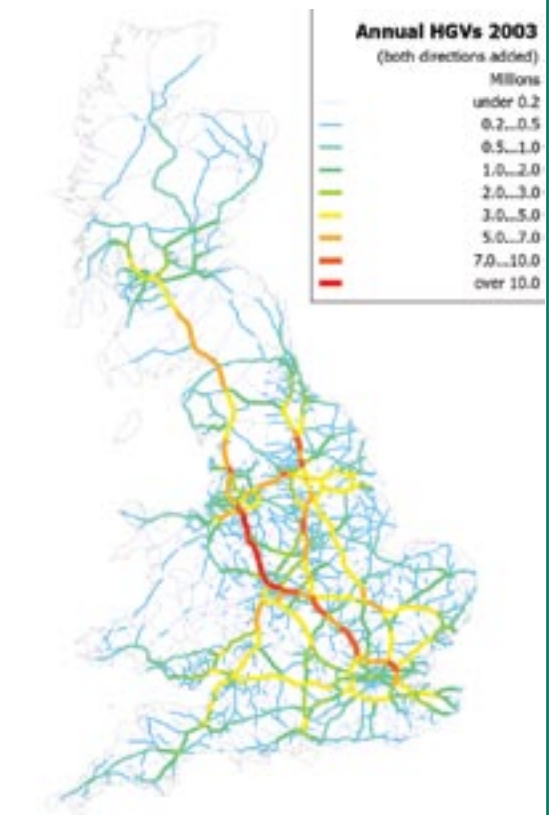
1.40 Given road freight's dominance, Figure 1.11 gives a broad indication of overall freight traffic flows. Certain regions, such as London, may have relatively low destination figures because the survey is road freight only and does not include traffic line-hauled by rail (for instance, it excludes significant tonnages of aggregates traffic moving into London). The data are also drawn from weight data, so do not necessarily indicate the frequency or value of goods transported. Nonetheless the following conclusions can be drawn:

- Sixty-eight per cent of all road freight moves within the same region.
- Regions with the most goods lifted by origin are the North West (233 million tonnes lifted), Yorkshire and the Humber (216 million tonnes lifted), East Midlands (203 million tonnes lifted), East of England (200 million tonnes lifted) and the West Midlands (194 million tonnes lifted).
- Regions with the most goods lifted by destination are North West (240 million tonnes lifted), South East (208 million tonnes lifted), Yorkshire and the Humber (204 million tonnes lifted) and East of England (194 million tonnes lifted).
- Regions with international gateways (for example Dover, the Channel Tunnel and Southampton are located in the South East) have high levels of freight lifted.
- The East and West Midlands have become the logistics centre of the UK and are commonly used by retailers and goods owners to store imported goods or consolidate freight before onward distribution to regional distribution centres or stores. This is in part due to the Midlands' proximity to population centres, well-connected infrastructure and traditionally cheaper land and labour costs.

1.41 The manufacturing of goods also has a significant impact on where freight is being moved to and from. The East Midlands, for example, remains a footwear, clothing and manufacturing centre, while the West Midlands contains car and tyre manufacturing. The processing and distribution of food is also a major generator of freight demand.

1.42 Figures 1.12a and 1.12b show the main freight flows on the road and rail networks (the rail flows are described in trains per day in a single direction).

Figure 1.12a HGV freight flows



Source: DfT, Great Britain Freight Model 5 (2006)

Figure 1.12b Rail freight flows

Source: Network Rail Freight Route Utilisation Strategy (2007)

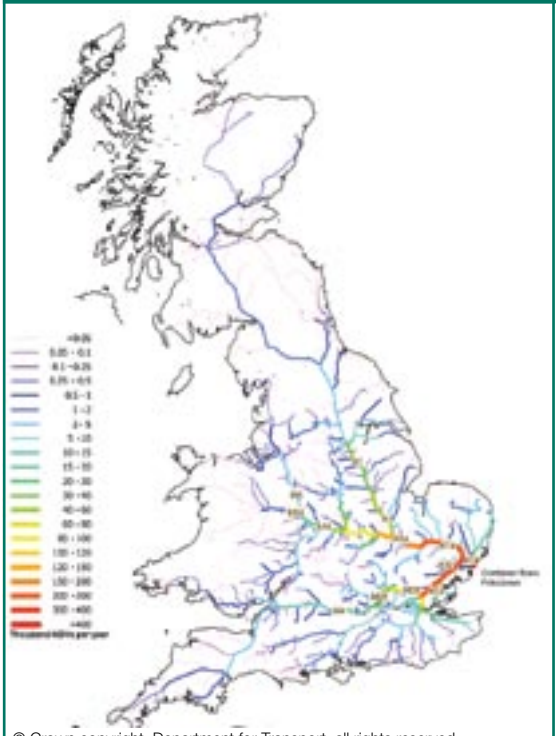
*Busiest weekday average used (Thursday), highest direction shown.

1.43 There are significant flows – both on road and rail – that link the regions with each other and the main container and ro-ro ports with the Midlands and the North. Road routes include major motorways: M2 and M20 from Dover, M25 around London, M4 west, M1 and M40 to the Midlands and on to the M6 north, A14 from Felixstowe to Midlands and A34 from Southampton. Rail freight services broadly follow the same spatial pattern, with services from Felixstowe on the high cube container gauge-cleared line around London to West Coast Main Line (WCML) to the Midlands and the north, Peterborough to the East Coast Main Line (ECML), Southampton to WCML and the Great Western Main Line (GWML) to the west.

1.44 The Department is currently looking closely at the composition of these flows. Traditionally, the Department has thought about mode, rather than commodity. We knew how many HGVs or trains there were, but had little insight on the logistical detail of what freight moved where. We are now focusing more on different commodities and their origins and destinations.

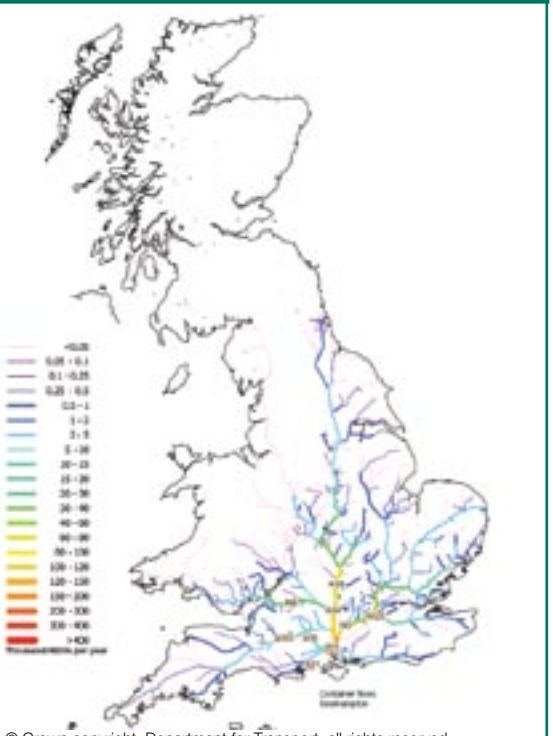
1.45 The work is ongoing, but this document provides two case studies for illustrative purposes. The first looks at the movement of containers. Our initial analysis has focused on HGVs – because that is how most freight moves (Figure 1.4). We have looked particularly closely at container traffic because of current high predicted growth (around 180 per cent by 2030) and the potential for modal shift to both rail and coastal shipping. Work is ongoing, but early findings indicate that container freight between ports and the origin or destination is not a significant component of HGV traffic across the road network as a whole. Figures 1.13 to 1.16 show, with the exception of Felixstowe, the comparatively regional nature of HGV container traffic through the largest container ports and the way in which the traffic rapidly disperses. When aggregated, these container flows make up only a small percentage of HGV traffic on some of the national motorway routes.

Figure 1.13 Container flows from Felixstowe: road, 2007



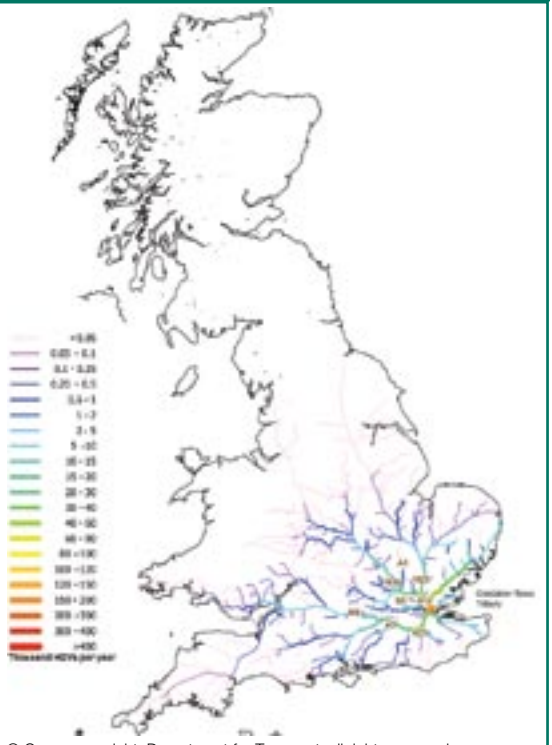
Source: DfT, GB Freight Model 5 (2008)

Figure 1.14 Container flows from Southampton: road, 2007



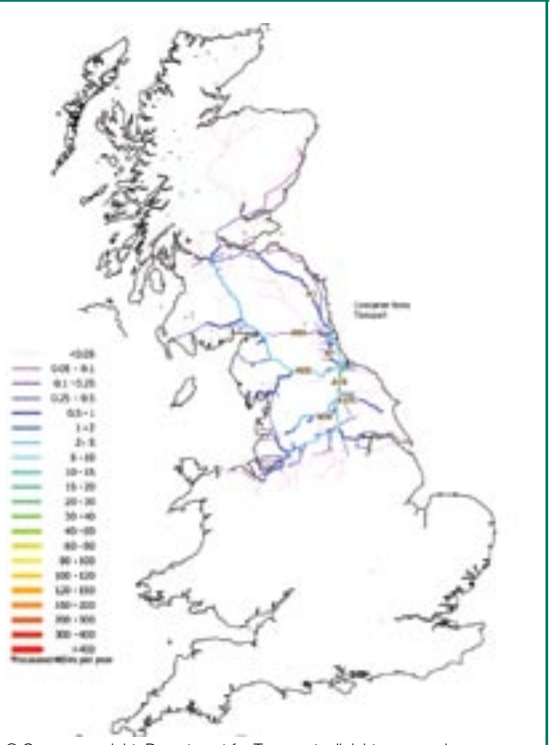
Source: DfT, GB Freight Model 5 (2008)

Figure 1.15 Container flows from Tilbury: road, 2007



Source: DfT, GB Freight Model 5 (2008)

Figure 1.16 Container flows from Teesport: road, 2007



Source: DfT, GB Freight Model 5 (2008)

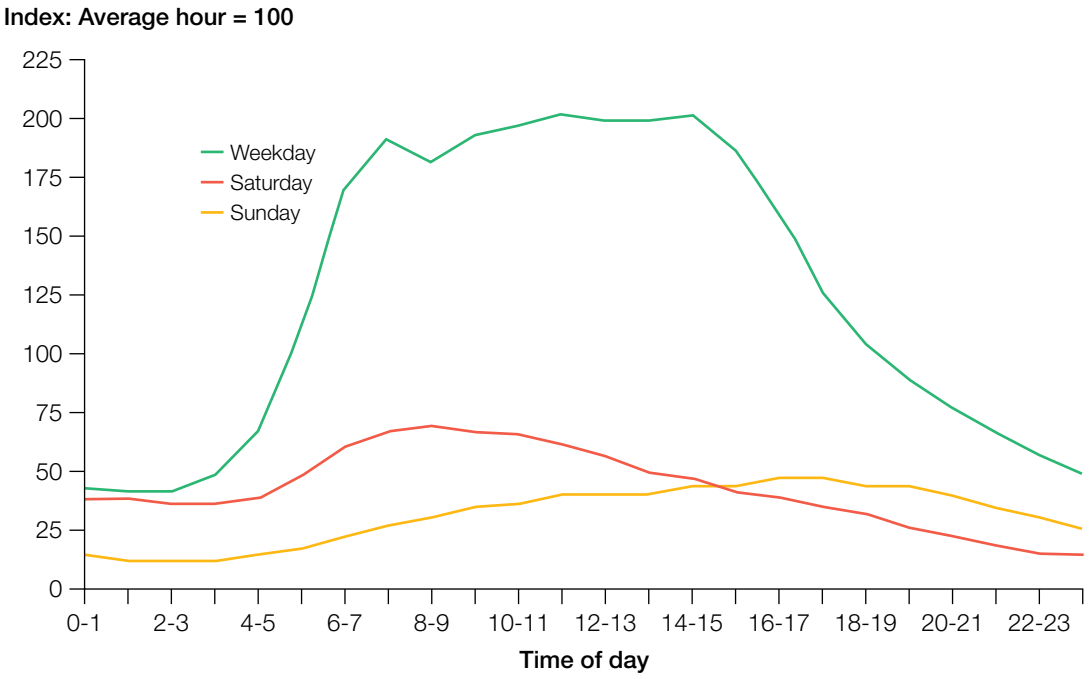
1.46 We recognise that this analysis does not tell the whole story. It does not yet reflect the impact of container movements by rail. Nor does it deal appropriately with the wider impact of imported goods, including their movement from the distribution centre to consumers. But what it does do is illustrate the need to think in a different way about freight.

1.47 The second example seeks to move the debate forward by looking in detail at the use made by freight of our road and rail networks between Rugby and Manchester. This is discussed in detail at Annex B, an initial study of freight movements on the Rugby, Birmingham and Manchester transport corridor.

1.48 We intend to work with industry to develop this analysis further for the most significant networks for freight so that our decisions on policy and investment choices for the 2014–19 period (and beyond) can reflect the different natures of freight movements and roles of corridors.

1.49 Because goods are delivered to people – in shops, warehouses, building sites, distribution centres, etc. – the time of freight deliveries is skewed to reflect preferred working times. Figure 1.17 shows that HGV movements are concentrated on weekdays and peak slightly earlier than business and commuting periods.

Figure 1.17 Profile of time of day of HGV movements



Source: DfT, Eddington Transport Study (2006)

Key trends

1.50 Increases in international freight movements are expected to be found in increased container and ro-ro traffic. Table 1.3 sets out the current forecast growth of container and ro-ro traffic to 2030.

Table 1.3 Current container forecast growth to 2030

	2005	2010	2015	2020	2025	2030
Ro-Ro (million tonnes)	85	99	115	133	153	171
Containers (million TEUs)	7.2	10.0	12.1	14.2	16.6	19.7

Source: MDS Transmodal (2007)

1.51 Forecast increases[19] in container traffic through the two largest container ports of Felixstowe and Southampton to 2030 are shown in Table 1.4.

Table 1.4 Port traffic forecast: Felixstowe and Southampton: million TEUs

Port	2010	2015	2020	2025	2030
Felixstowe	4.5	5.5	6.5	7.7	9.4
Southampton	2.6	3.4	4.0	4.7	4.9

Source: MS Transmodal and DfT analysis

19 UK Port demand forecasts MDS Transmodal 2007

1.52 UK weights and dimensions legislation usually limits road vehicles to carrying one loaded container. If the mode share for road traffic remains constant, it would be expected that significant growth in container and ro-ro volumes will translate to growth on the road network. Growth in rail traffic to move containers has also occurred in recent years, which is discussed at more length in 'Promoting and incentivising behavioural change' in Chapter 3.

1.53 As discussed in Chapter 2, there is increasing use of vans. Figure 2.5 in that chapter shows both an historic increase and a large projected increase in van usage – significantly larger than in the use of private cars and HGVs. Van activity has increased through several mechanisms. The increase in internet, home deliveries and multiple parcel operators has helped to drive up the number of vans. In addition, the change in driver licensing categories introduced in the late 1990s now requires an HGV licence above 3.5 t, whereas previously car driving entitlement extended to vehicles up to 7.5 t. That seems to have resulted in the lower weight HGVs being displaced by the largest vans.

Understanding the sector further

1.54 This chapter has described some of the key future trends in the logistics sector. A recent survey by Heriot-Watt University, as part of the Government-funded Green Logistics research consortium, sought views from key players in the logistics sector on likely changes to 2020. The survey identified the following key changes as being the most likely to occur:

- significant growth in online retailing;
- increased return of reused or recycled products from consumers (which are not necessarily in standardised packages and therefore as easily transported in an efficient manner);
- increased concentration of trade through key hub ports and airports;
- increased consolidation of goods being delivered to distribution centres or factories (for example at or near ports or airports); and
- more global sourcing of supplies (in contrast to more localised sourcing, which was seen as one of the least likely trends to develop).

1.55 If trends are to develop in this way, we could expect even further increases in demand on those parts of the national networks linking to our international gateways, and the predicted increase in van and light goods vehicle traffic would appear entirely justified.

1.56 The Department intends to continue to work closely with others to understand the trends and impacts more fully and to ensure that these trends are reflected in its analysis and modelling.

2. Impacts of freight and logistics

Overview

Important as freight transport is, it needs to be acknowledged that the transport of goods impacts negatively, as well as positively, on everyone in society: road vehicles contribute to congestion, they emit pollutants and greenhouse gasses, they are involved in accidents, create noise and, in areas where they dominate the traffic, can divide communities. Rail transport too generates noise and emissions, and operational problems arise from the mix of freight and passenger trains. General disturbance can be an issue, especially for night-time freight operations. Fossil fuels power most freight transport in the UK, with significant effects on air quality. Freight contributes to greenhouse gas emissions, but improvements in HGV fuel efficiency have limited the increase that would have resulted from the increase in road freight activity. Overall rail CO_2 has improved since the 1990s; the road transport trend is less consistent. Accidents caused by road freight vehicles continue to decrease, despite recent increases in goods vehicle traffic. But HGVs tend to be involved in accidents that result in more serious injury.

Congestion

2.1 Congestion is an important impact of freight movement. Freight transport both contributes to congestion and is affected by it. It occurs at pinch points on road and rail networks and at some major interchanges such as ports and airports. By its nature it tends to be localised and sporadic, and so it is difficult to form a national picture. Freight's contribution to road congestion is difficult to evaluate in absolute terms.

2.2 The very nature of large goods vehicles means they are highly visible and so often perceived as central to delays on roads. However, there are some 60 cars registered for each HGV, and, even on the most heavily freight trafficked motorways, the ratio of cars to HGVs is in the range of 3–5:1, so that congestion caused by insufficient capacity of the route is likely to be as much due to the volume of cars as HGVs. HGVs, and in many cases vans, have a disproportionate effect on congestion where they are stationary, for example when parked for loading or unloading purposes in urban areas or having suffered a breakdown on single carriageway roads. In these conditions a vehicle can reduce road capacity by 50 per cent overall and 100 per cent in

one direction, causing considerable congestion. On single carriageway roads subject to national speed limits, the lower speed limits applying to HGVs (40 mph compared with 60 mph for cars) can contribute, or again be perceived as contributing, to congestion and slow-moving traffic flows. On the railways, the speed differential between passenger and slower-moving freight trains results in reduced track path availability.

2.3 Congestion causes delay for freight operators, but stakeholders have consistently highlighted the resultant unpredictability of journey times as being an issue of greater importance than overall journey time. In response to these concerns, the Department is undertaking work to identify the main bottlenecks for freight (regardless of mode) on our national networks and to gain a better understanding of journey reliability for HGVs. We are also seeking to understand more fully whether the Highways Agency's data on journey reliability for all vehicles accurately reflect the position for freight, and HGVs in particular.

Air quality

2.4 Nearly all of freight transport vehicles in the UK are powered directly by fossil fuels. The process of combustion produces significant emissions of carbon dioxide (CO_2), and emissions of the pollutants carbon monoxide (CO), hydro-carbons (HC), oxides of nitrogen (NO_x), oxides of sulphur (SO_x) and particulate matter. These pollutants affect local air quality in particular, both directly and through combining with other atmospheric components to form other pollutants. Air quality pollutants are responsible for many thousands of early deaths and hospitalisations each year as a result of their effect on the respiratory system. The smallest elements of particulate matter are also implicated in cardio-vascular disease.

2.5 Road freight vehicles are almost entirely diesel engined – with only a relatively small number of petrol engined vans in active use. The rail freight industry predominantly uses diesel traction, as this gives them the greatest flexibility for normal routing and diversions when necessary. Coastal and inland shipping uses heavy fuel oil or in some cases diesel/gas oil.

2.6 Air quality standards to control the primary pollutants from transport vehicles have been established and progressively tightened over the past 20 years. In the case of road freight vehicles, early construction standards that focused on visible smoke have been amended to include other pollutants, notably CO, NO_x, HC and particulates, and tightened several times, with yet tighter standards currently expected for introduction around 2013. Although road diesel fuel is not regulated at a vehicle level, tighter standards on its sulphur content – introduced to reduce particulate emissions – have also reduced SO_x and other sulphur based emissions. As local traffic comprising HGVs often makes up a significant proportion of the nitrogen dioxide (NO_2) concentration in areas of exceedance, measures aimed as those vehicles could have a big impact in helping the UK meet its legally-binding EU targets. Rail locomotives are now subject to the Non Road Mobile Machines standards, with controls over the same list of pollutants, but do not currently operate on low sulphur content fuel.

2.7 Polluting atmospheric emissions from ships are regulated via Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL), which places limits upon SO_x and NO_x emissions. Annex VI of MARPOL specifies tighter controls on sulphur emissions within the boundaries of a SO_x Emission Control Area (ECA), and the North Sea SO_x ECA (which came into force in 2007) covers most of the east coast of Britain as well as the English Channel. At the meeting of the International Maritime Organisation's Marine Environment Protection Committee in October 2008, amendments to Annex VI of MARPOL were adopted which will provide more stringent limits on the maximum sulphur content of marine fuel and on the emissions of NO_x. In particular, the maximum sulphur content of marine fuel oil will be reduced to 0.1 per cent in ECAs from 2015, unless an approved exhaust cleaning system or other methods are used to sufficiently limit SO_x emissions.

2.8 The fleet replacement cycle for road vehicles is such that new vehicles enter service at a high rate, and therefore changes in standards are reflected in local air quality quickly. Registration data indicate that around half of the HGV fleet is five years old or less, and around two-thirds is seven years old or less. Table 2.1 details HGV exhaust emission standards for new vehicles, which have been introduced in stages since 1993.

Table 2.1 HGV exhaust emission standards for new vehicles: Euro I–V

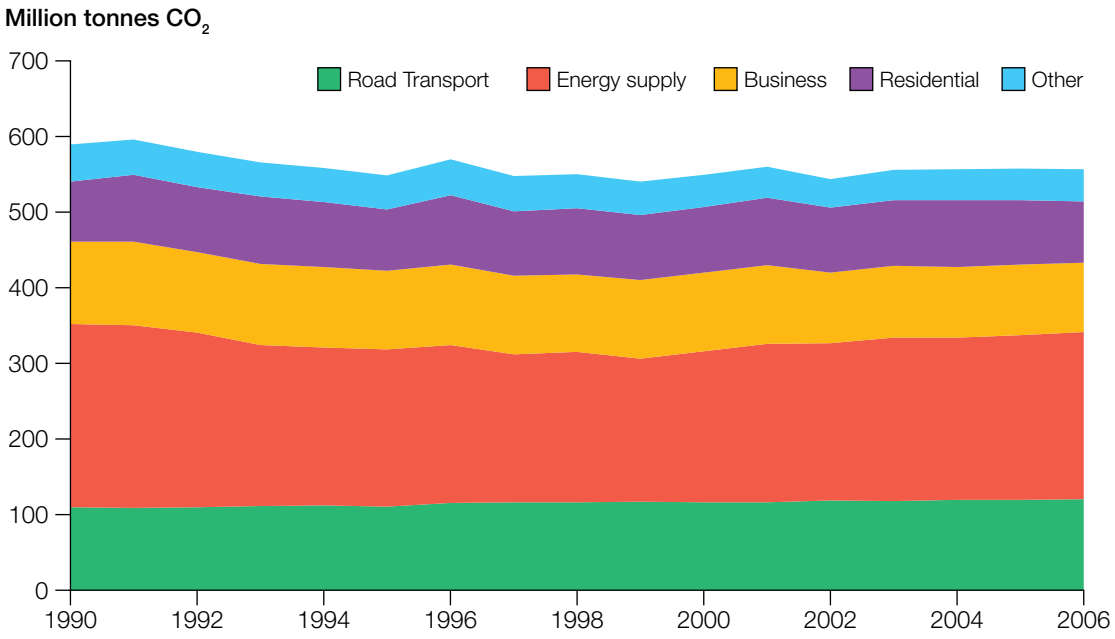
Euro standard for heavy diesel vehicles	Pollutant emission limit (grams/kilowatt hour)			
	CO	HC	NO_x	PM
Euro I (October 1993)	4.9	1.23	9.0	0.40
Euro II (October 1996)	4.0	1.10	7.0	0.15
Euro III (October 2001)	2.1	0.66	5.0	0.10
Euro IV (October 2006)	1.5	0.46	3.5	0.02
Euro V (October 2009)	1.5	0.46	2.0	0.02

2.9 The rail locomotive replacement cycle is longer, with typical operating lives of 20 to 30 years. The rail freight industry has invested heavily in new rolling stock following privatisation in the mid-1990s, and we estimate that at present around 70 per cent of diesel locomotives in the freight fleet are less than ten years old. This has two effects: the fact that the fleet is relatively new means that the locomotives are likely to be better performing, from an emissions point of view, than the older ones they displaced, but that, as the economic life of a locomotive is longer than that of an HGV, tighter environmental standards for this sector will take longer to impact on local air quality.

Carbon dioxide emissions

2.10 The transport sector accounts for around 21 per cent of UK domestic greenhouse gas emissions. Of these, at least 96 per cent are CO_2. Figure 2.1 shows the CO_2 contribution of various sectors, including road transport. Figure 2.2 shows, in turn, the CO_2 contribution of the different transport sectors. Main freight activities account for 30 per cent of transport emissions.

Figure 2.1 UK emissions of carbon dioxide by national communication source category, 1990–2006*



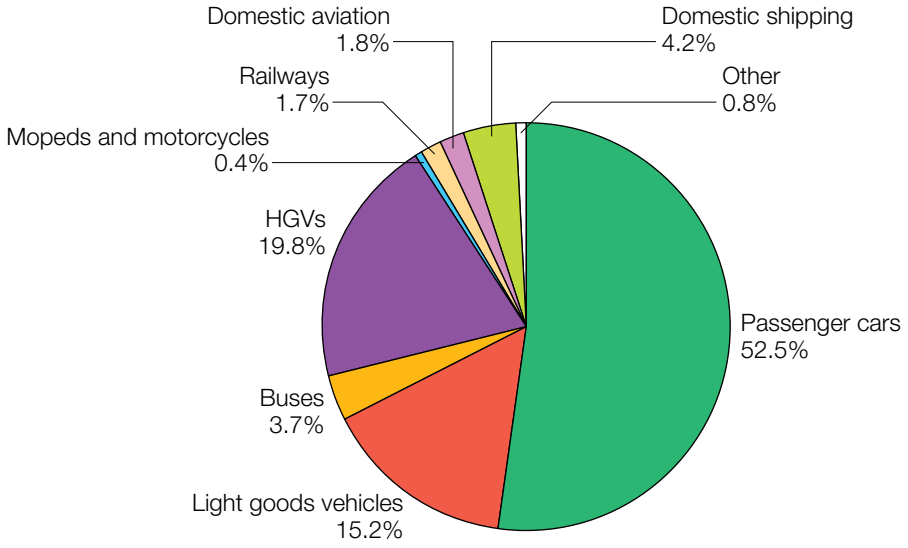
*Available on the Defra website at: www.defra.gov.uk/environment/statistics/globatmos/.

Source: AEA Energy and Environment

2.11 Last July the Department published, for the first time, a multi-modal analysis of freight's CO_2 impacts. This section expands on that analysis, although, because of data quality issues, the extent of the conclusions has to be taken with a caveat. For example, it has been necessary to compile trends from sources of data that have been accumulated for different purposes. In particular, data have been used which have been recorded for either GB or UK wide sources (given the relatively small contributions from the 'non GB' sources, this should not change overall conclusions, but does mean that precise numbers may not be fully accurate). In addition, it is sometimes difficult to identify pure 'freight' data from vehicle sectors that include some passenger transport, such as the operation of vans, or Light Goods Vehicles (LGVs), and working assumptions have had to be made. We will continue to develop and refine this analysis as more evidence becomes available.

2.12 Figure 2.2 puts the freight and logistics contribution to the UK CO_2 inventory in perspective. Both rail and domestic aviation include passenger and freight elements. Around 41 per cent of the total diesel rail emissions and around 4 per cent of domestic aviation can be attributed to freight.

Figure 2.2 Relative contributions of total domestic transport CO_2 emissions, UK, 2006*†



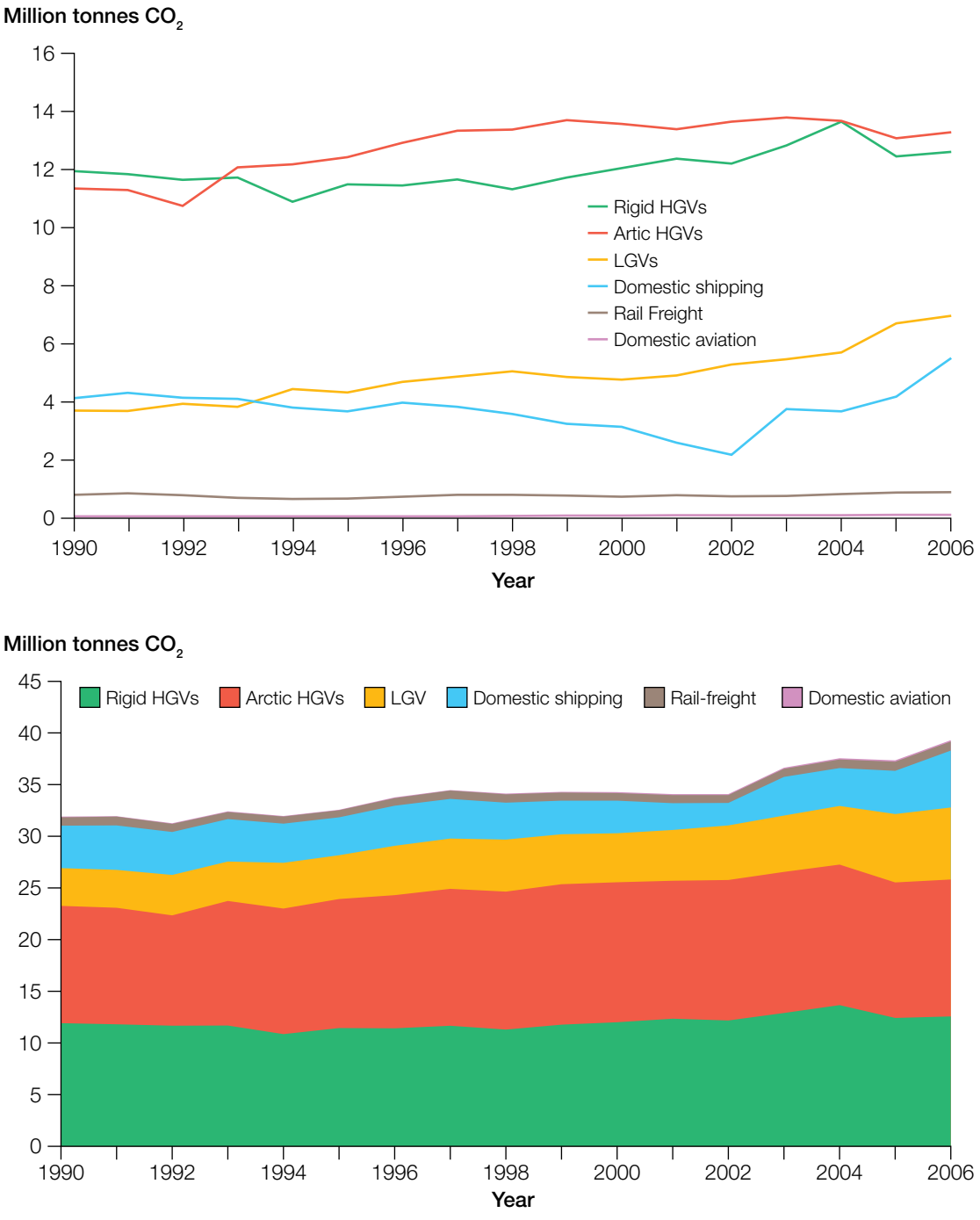
*'Other' includes Liquid Petroleum Gas emissions (all vehicles); other road vehicle engines, and other mobile sources and machinery.
†The emissions from rail given above are from diesel trains only, consistent with the UNFCCC reporting guidelines.

Source: National Atmospheric Emissions Inventory (NAEI) 2006 – AEA Energy and Environment

2.13 Figure 2.3 breaks down the trend of CO_2 emissions from within each freight sector from 1990 to 2006. It is based on National Atmospheric Emissions Inventory (NAEI) data and uses assumptions that 35 per cent of light goods vehicle operations,[20] 4 per cent of domestic aviation movements[21] and 100 per cent of domestic shipping[22] are applicable to freight. It shows that CO_2 emissions from the movement of freight are dominated by the road sector, whilst emissions from rail and domestic aviation assigned to freight movements are very low.

20 Estimate from McKinnon in report for Commission for Integrated Transport (2006) www.cfit.gov.uk/docs/2007/climatechange/pdf/2007climatechange-freight.pdf
21 Estimated from Civil Aviation Authority Airline Statistics, Tables 1.7.4 and 1.8.4.
22 In reality, this figure is likely to be just under 100 per cent. However, 100 per cent is assumed here for simplicity.

Figure 2.3 Estimated historic CO_2 emissions from domestic freight (all modes), 1990–2006



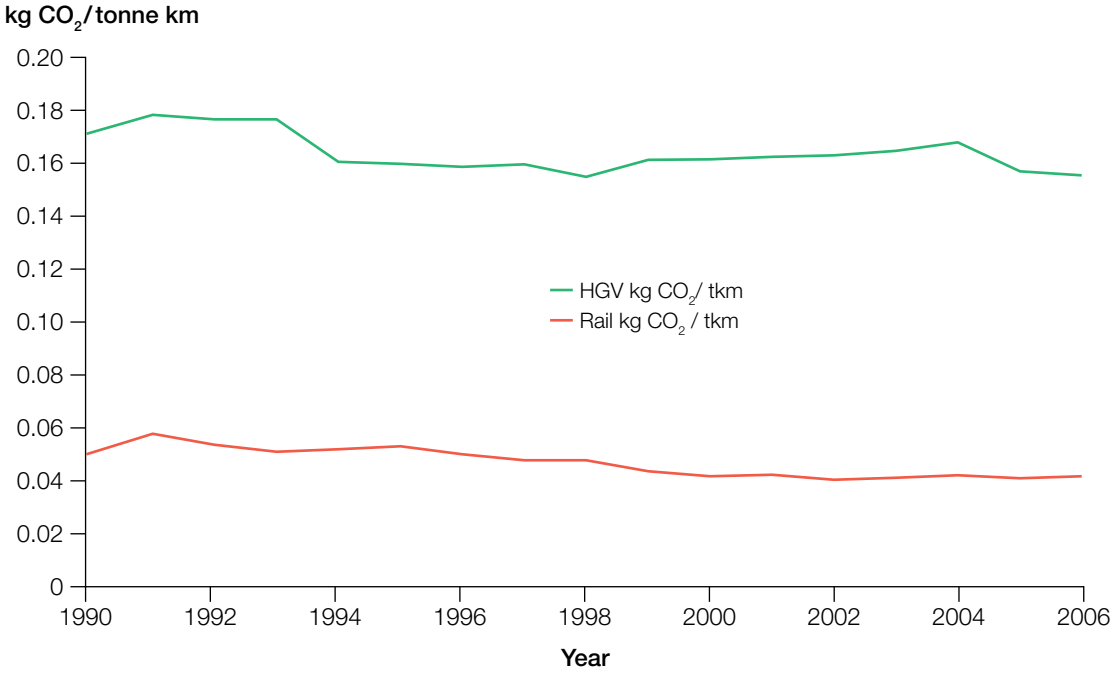
Note 1: Vans – based on NAEI data and uses assumption that 35 per cent of van operations is for freight.
Note 2: Aviation – based on NAEI data and uses assumptions that 5 per cent of tonne km flown is for freight.
Note 3: Water – based on NAEI data and assumed that freight is responsible for 100 per cent of total.

Source: National Atmospherics Emissions Inventory (NAEI), 2006 – AEA Energy and Environment

2.14 There appear to be two inconsistencies in the trends. The trend for water freight shows significant changes from 2002. This is largely due to global shipping market effects and changed methods used in calculating the data. The trend for rigid HGVs shows an uncharacteristic rise in 2004 as a result of lower recorded fuel consumption (mpg) in the Department's data for the lighter vehicles in that year. Work is currently under way by the NAEI to incorporate the new fuel consumption time series data for all HGV categories and will be published early in 2009.

2.15 Figure 2.4 shows CO_2 and freight intensity. The trend shows that rail CO_2 efficiency has improved throughout the 1990s – which reflects the steady improvement in rail efficiencies and replacement of older rolling stock. The road transport trend is less consistent, with improvements in the early 1990s reflecting better fuel economy, probably related to operator pressure for economy and engine changes brought on through emissions legislation. However, these early fuel economy trends were harder to maintain, particularly when coupled to later air quality standards that introduced changes with a negative or neutral effect, reducing the rate of improvement shown between 1990 and 1994. The sharp rise in 2004 may be due to the same issue of lower recorded fuel consumption that year, noted above.

Figure 2.4 CO_2 Intensity of road and rail transport, 1990–2006



Source: DfT analysis of NAEI emission data and Traffic Statistics

2.16 In comparison, the Department for Environment, Food and Rural Affairs (Defra) has published factors for dedicated air freight services that show emissions per tonne km up to 10 times road transport emissions and 43 times rail transport emissions (see Table 2.2).

Table 2.2 Extract from Defra's carbon offset methodology: revised average CO_2 emission factors for air freight*

	All air freight	Dedicated cargo flights
Mode	**kgCO_2/tkm**	**kgCO_2/tkm**
Domestic flights	1.90	1.85
Short-haul flights	1.32	1.32
Long-haul flights	0.61	0.60

*Available on the Defra website at: www.defra.gov.uk/environment/business/envrp/pdf/passenger-transport.pdf

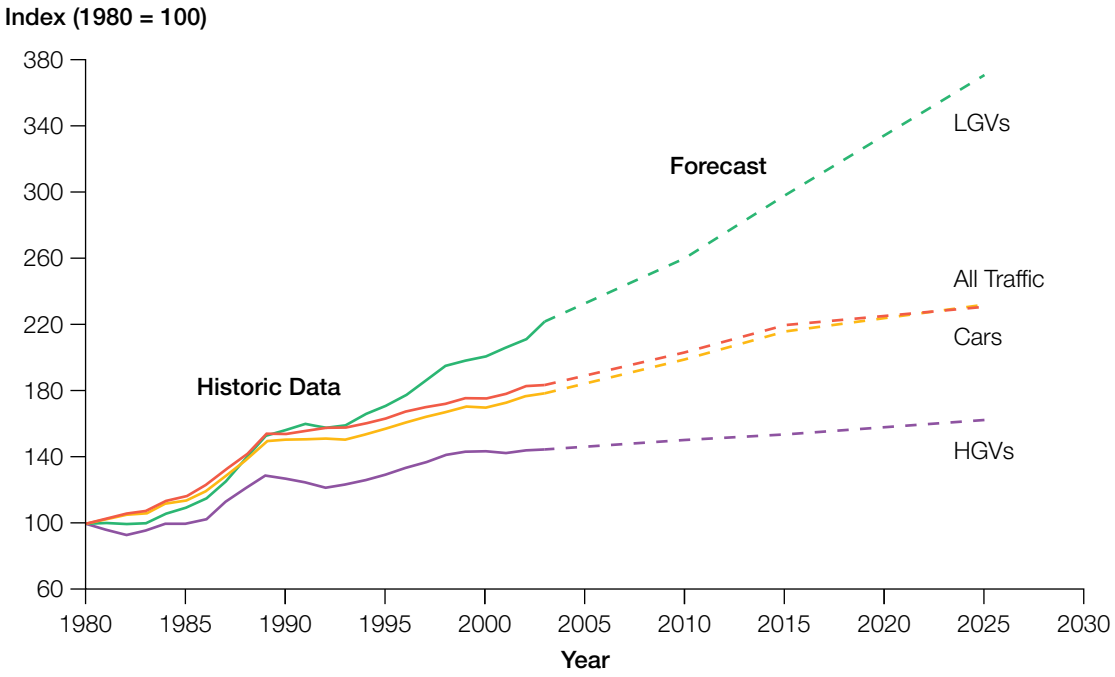
Source: Defra (2008) *Guidelines to Defra's GHG Conversion Factors: Methodology Paper for New Transport Emission Factors*

2.17 The impact of aviation on climate change is not caused solely by CO_2 emissions. Other emissions arising from aircraft that can influence climate change include: water vapour from exhaust engines, nitric oxide and nitrogen dioxide (NO_x), soot, nitrate and sulphate particles, and other compounds, including hydrocarbons. Currently there is no suitable climate metric to express the relationship between these non-CO_2 emissions and their climate change effects, though it is clear they have a total warming effect, over and above that caused by CO_2 emissions. This is an active area of research.

Historic and forecast traffic growth

2.18 Road traffic forecasts for England derived from the Department's National Transport Model (NTM) are reproduced in Figure 2.5. This modelling is based on the projected effects of current policies and does not consider any other assumptions.

Figure 2.5 Traffic growth in England: historic data and forecast



Source: Historic data is from DfT, Transport Statistics Great Britain (2006); forecasts from the DfT, National Transport Model (2006)

Factors influencing CO_2 trends

2.19 Vehicle fuel efficiency has improved since the 1980s, which has limited the increase in CO_2 that would otherwise have resulted from the increase in road freight activity (see Figure 2.5). HGV traffic has grown more slowly than car traffic, and this is forecast to continue through to 2025. On the other hand, van traffic (LGV) has increased particularly quickly in recent years, possibly due to the trend of increasing home deliveries, and is forecast to continue to do so over the long term. Growth in van traffic has historically tended to increase in line with GDP, and this link is forecast to continue. However, the forecasts do not explicitly account for home deliveries or other factors that may drive changes in van traffic. Hence this is an area where more research could improve the Department's understanding. Despite the forecast rise, vans are expected to account for only around 15 per cent of total traffic in 2025 (up from 12 per cent in 2003).

2.20 Fuel efficiency improvements since the 1980s have been driven through continuous customer pressure on manufacturers to deliver vehicles with improved fuel economy. A tension exists, however, between meeting progressively more stringent air quality pollutant emissions standards and fuel economy, and it is likely that meeting future standards will limit – and might even temporarily reverse – the fuel improvement trends that have been obtained in the past.

2.21 Other CO_2 saving initiatives include the use of electric or hybrid vehicles, which are now appearing in forms that have practical applications. The range and payload of electric goods vehicles now available are sufficient to displace some conventional diesel engined vehicles (e.g. for urban deliveries). However, the cost of purchasing or leasing them is significantly higher and in many cases will be regarded as prohibitive. These economic factors will limit the extent to which the potential benefits of shift from fossil fuel in this sector are achievable in practice.

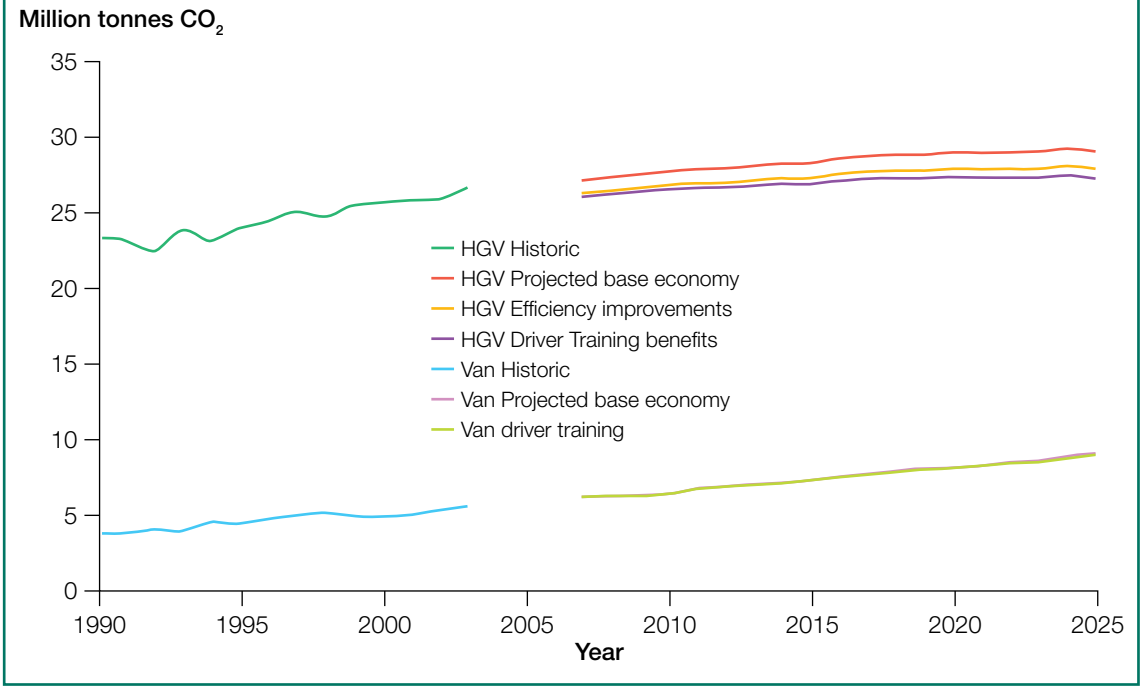
2.22 The Department's current key policies to reduce emissions from the movement of freight include modal shift support (Table 2.3), the Freight Best Practice scheme, and driver training through the Safe and Fuel Efficient Driving programme (SAFED). Further details are provided in Chapter 3.

Table 2.3 Example impacts of mode shift grants, 2007

Felixstowe to Midlands	Southampton to Midlands
134,000 containers moved by rail	78,000 containers moved by rail
3,800 tonnes of CO_2 saved	1,975 tonnes of CO_2 saved
£4.9m paid in grant	£2.1m paid in grant

2.23 The figures above are net, with allowances for road leg delivery from the rail head to final destination. Where rail is used for domestic traffic, there is usually a road leg at both ends of the rail journey.

Figure 2.6 CO_2 emissions from road freight movements with current policies



Source: Department for Transport (2008)

2.24 Figure 2.6 shows the projected CO_2 emissions from road freight to 2025. The 'projected base economy' case for both HGV and van traffic is calculated from the vehicle activity forecast illustrated in Figure 2.5. CO_2 emission will be proportional to vehicle activity if no other effects are taken into account. As it is now clear that tightening air quality standards has slowed the trend for improving fuel economy (paragraph 2.20 above), the trend assumes no major changes in the fleet fuel economy for HGVs over the period, other than the gradual introduction of more economical new vehicles to the fleet from 2015. For LGVs a gradual improvement for the fleet of around 1 per cent per year is assumed to 2010, but no change thereafter.

2.25 Figure 2.6 then shows the cumulative effect of CO_2 savings expected through the adoption of HGV efficiency improvements (including those attributed to the Freight Best Practice scheme) and HGV and van driver training programmes (including the SAFED schemes).

2.26 The introduction of mandatory Driver Certificate of Professional Competence (CPC) training from September 2009[23] will require drivers to undertake five days of training every five years. By 2014, therefore, all drivers of HGVs and Passenger Carrying Vehicles (PCVs) (such as buses) will have received the training. SAFED is not compulsory but is recognised as a Driver CPC training course. It is likely that SAFED or similar type courses will make up a large percentage of the required training, since these offer rapid benefits to the operators (and quick recovery of course costs).

Development of environmental standards and air quality

2.27 Under the Kyoto Protocol, the UK is required to reduce its greenhouse gas emissions by 12.5 per cent over 1990 levels by 2008–12. The UK also has a role in ensuring the EU meets its target of a 20 per cent reduction in greenhouse gas emissions (or 30 per cent if there is international agreement) from 1990 levels by 2020. The Climate Change Act also sets a legally binding target for the UK of an at least 80 per cent reduction in greenhouse gases over 1990 levels by 2050. It also requires the Government to set out five-yearly carbon budgets to ensure progress towards our targets.

2.28 Additional savings of CO_2 from the road freight sector will be partly dependent on significant efficiency changes to reduce road mileage. The Department will need to engage closely with the industry to understand the practicalities of achieving these savings. Issues to be explored will include improving vehicle load factors, better routeing and possibly rethinking of distribution chains and positioning of key regional distribution centres. Optimisation of vehicle types is a key issue that is being considered, so we are commissioning research to investigate the potential effects of a limited increase in length of the trailers for articulated vehicles. The study will consider whether there are clear benefits in changing the permitted length to reduce the number of HGVs on roads, taking into account freight demand, the interaction

23 The Driver CPC is a scheme for drivers of HGVs (over 3.5 tonnes gross vehicle weight) who drive professionally throughout the UK. It is being developed as a requirement of EU Directive 2003/59, which is designed to improve the knowledge and skills of professional drivers of HGVs and PCVs throughout their working life.

between rail, road and water transport, the limitations of infrastructure and consistency with European legislation. More information about this study can be found in Chapter 3, under 'Regulating proportionately'.

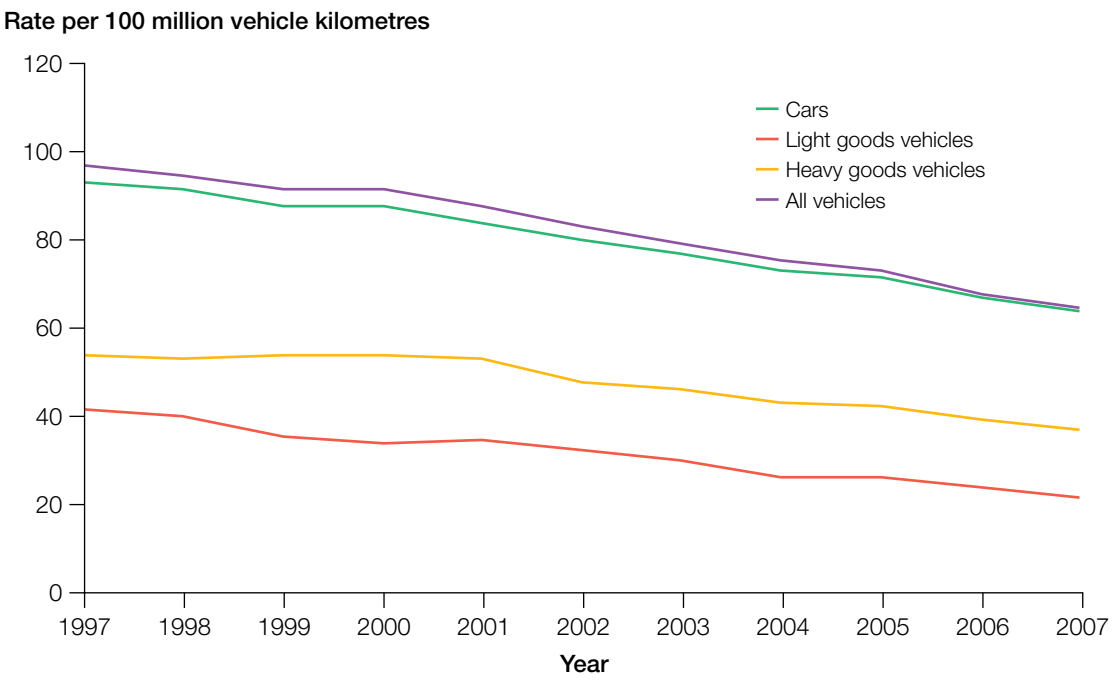
2.29 The potential for mode shift, to both rail and coastal/inland water transport, to reduce CO_2 will need to be further developed. Simply taking vehicles off the road has obvious benefits, but in practice the overall environmental benefit is very dependent on load factors, emission rates/factors from the mode used (which vary considerably in the water sector) and proximity of transfer points on the road network to the final destination. These will need to be studied in depth.

Safety

2.30 In 2007 there were 248 thousand casualties resulting from accidents on British roads (a fall of 24 per cent since 1997), of which 28 thousand involved serious injury (a fall of 35 per cent) and a further 2,946 were fatalities (a fall of 18 per cent). This decline in the number of casualties was despite the traffic on British roads rising by 14 per cent between 1997 and 2007.[24]

2.31 Accidents involving road-based freight vehicles continue to decrease. In 2007, 10,700 HGVs and 14,600 vans were involved in road accidents that resulted in personal injury. This total number has fallen by 27 per cent since 1997 (HGVs down by 26 per cent and vans down by 27 per cent).

Figure 2.7 Vehicle involvement rate in accidents per 100 million vehicle kilometres: Great Britain, 1997–2007



Source: DfT, Goods Vehicle Accidents and Casualties, Road Accident & Road Freight Statistics Factsheet No. 1 (2008)

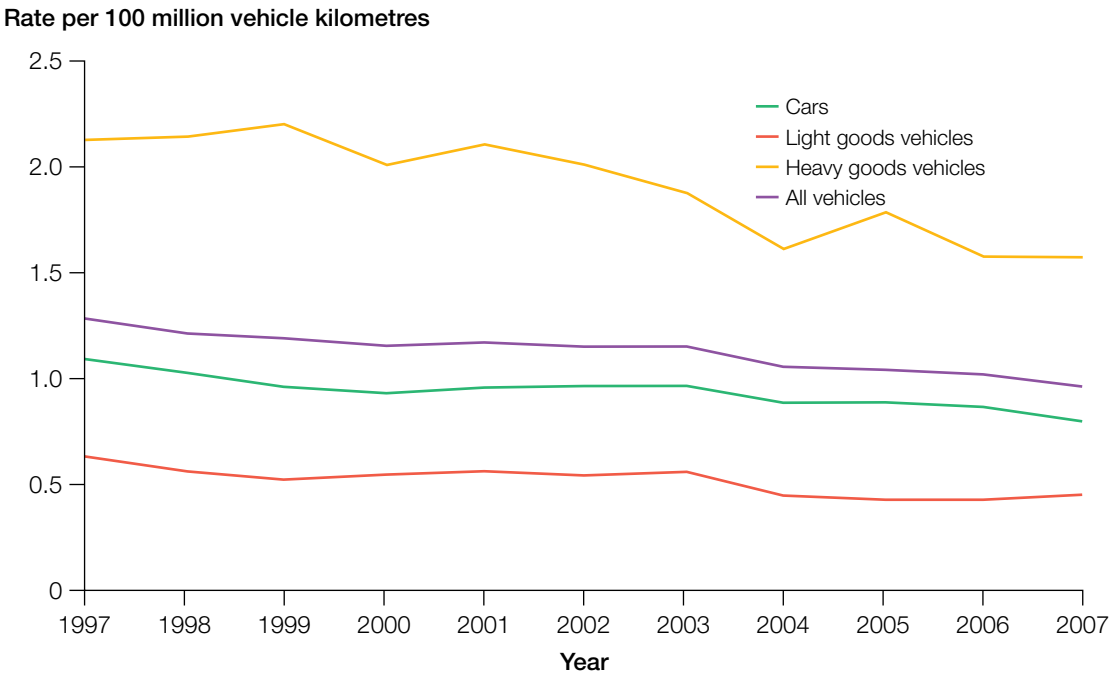
24 Statistics in this section are drawn from DfT, Goods Vehicle Accidents and Casualties, Road Accident & Road Freight Statistics Fact Sheet No. 1 (2008).

2.32 Again, this decline in the number of goods vehicles involved in road accidents is despite goods vehicle traffic increasing by 29 per cent between 1997 and 2007 (HGVs by 10 per cent and vans by 40 per cent).

2.33 The number of goods vehicles involved in accidents per kilometre travelled is considerably lower than the car-and-all-vehicle rate (this includes motorcycles, pedal cycles and buses among others). In 2007, there were 21 accidents involving vans for every 100 million kilometres travelled. The value for HGVs was 36; for cars it was 63 and all vehicles 65 (see Figure 2.7).

2.34 However, due to their size and weight, HGVs tend to be involved in accidents that result in more serious injury (see Figure 2.8). In 2007, the rate of fatal accidents per vehicle kilometre was higher for HGVs (1.6 per 100 million vehicle kilometres) than the all vehicle average (0.9) and also cars (0.8). Yet, even though HGVs are involved in more serious accidents, the number of people killed or seriously injured in accidents involving HGVs has fallen by 42 per cent since 1997. The number of fatalities in accidents involving an HGV has fallen by 19 per cent in the same time period to 435.

Figure 2.8 Vehicle involvement rate in fatal accidents per 100 million vehicle kilometres: Great Britain, 1997–2007



Source: DfT, Goods Vehicle Accidents and Casualties, Road Accident & Road Freight Statistics Factsheet No. 1 (2008)

2.35 Nine per cent of all accidents that involved an HGV involved a non-UK registered HGV. The proportion was slightly lower when looking at fatal accidents (7 per cent). The corresponding values for all vehicles were considerably lower (1 per cent and 2 per cent respectively).

2.36 Nearly half (46 per cent) of all accidents involving a non-UK registered vehicle in 2007 involved a goods vehicle. This rose to 60 per cent for accidents that involved fatalities. Most of the goods vehicles involved were HGVs.

2.37 The Department has compared roadworthiness compliance rates of UK and non-UK registered vehicles on roads in Great Britain from June 2006 to May 2007. Vehicles from over 24 countries were involved. Table 2.4 compares UK vehicles against vehicles from the nine countries with the highest number of roadworthiness checks. The compliance indicators are prohibition rates for drivers' hours, overloading, and vehicle and trailer roadworthiness.

Table 2.4 UK and non-UK registered vehicle prohibition comparison: top 10 countries by encounter, June 2006–May 2007

Country	Roadworthiness encounters	Traffic encounters	Hours prohibition rate (%)	Overloading prohibition rate (%)	Goods vehicles roadworthiness prohibition rates (%)	Trailer roadworthiness prohibition rate (%)
UK	53,056	47,054	10	24	34	41
Eire	5,779	5,910	35	34	35	62
Poland	4,442	3,626	16	23	50	46
Netherlands	3,562	3,821	22	29	31	43
Spain	2,982	2,245	15	40	37	63
France	1,790	1,419	8	31	31	46
Germany	1,755	1,845	30	26	44	28
Italy	1,607	1,218	26	19	43	54
Belgium	1,286	1,070	17	28	42	51
Hungary	898	929	24	17	48	41

Source: DfT (2007)

2.38 The results indicate that non-UK HGVs have a higher than average prohibition rate than UK HGVs across all compliance indicators.

Noise emissions

2.39 Noise can be intrusive at all times of the day. Noise from road vehicles has been regulated since the 1960s. Specific limits for different classes of vehicle have been progressively reduced, so that the maximum permitted noise from modern HGVs is now no more than that permitted for a passenger car in the early 1980s.

2.40 However, noise becomes much more intrusive when it is significantly above background levels. In the case of freight this can happen when operations are being undertaken when the networks are less congested, such as evening or early morning deliveries to retail outlets. Good practice is capable of mitigating disturbances by, for example, preventing vehicles idling excessively, use of 'quiet' vehicles and goods handling equipment, care over the use of horns (including in rail operations), reversing and other alarms and by generally instilling considerate working practices into staff.

3. Working with industry today

Overview

Freight services, and interchanges such as ports, airports and warehouses, are, in the main, provided by the commercial sector, but the planning, funding and provision of the network infrastructure over which they operate is often the responsibility of the Department. Any adverse operational impacts on the environment, safety and congestion are also important issues for government. Industry will ultimately decide the mode of transport and the route, but the Department seeks to achieve behavioural change, including the transfer from road to rail and water, where the benefits are affordable and represent value for money. Government regulation is needed, including to improve and maintain safety standards and the welfare of industry employees, but must be proportionate to avoid undue burden on the freight industry. Enforcement action is targeted so that the burden falls on non-compliant businesses. Local government has an important role in balancing complex and diverse issues at local level. Regional bodies also have a role, and consider freight within their regional strategies. There needs to be close dialogue between central and local government and the private sector owners and providers of key infrastructure. The procedure for consideration of nationally significant transport infrastructure projects is to be streamlined under provisions in the Planning Act.

The role of the Department for Transport

3.1 The Government recognises that the provision of freight services and the management of supply chains in the UK is best provided by the commercial sector. It is primarily for the providers and purchasers of freight services to ensure that they operate effectively and sustainably. The responsibility does not rest solely with freight operators, but exists throughout the supply chain – from the end business customer (and their customers), through any third party logistics company, to the freight provider and the originator of the goods transported.

3.2 That said, efficient and predictable movement of goods is central to the success of the UK economy – as highlighted by the Eddington Transport Study. Areas where freight activity is inappropriately constrained can have significant undesirable consequences for the economy, society and the environment. The Department currently has a key role to play in one of three circumstances. These are where:

- it has responsibilities for the provision or funding of network infrastructure;
- there is a demonstrable need for a long-term, strategic planning framework; or
- the market fails to capture its own externalities – such as adverse impacts on environment, safety and congestion – and action can contribute to the achievement of the Department's strategic objectives.

3.3 These rationales for the Department to play a role in the sector, normally lead to one of five different types of actions. These are activities which involve:

- **providing a long-term planning framework** which recognises the needs and aspirations of both industry and the overall public interest;
- **investing in network infrastructure** required to support effective freight services where it is affordable and the overall project can be delivered in accordance with the Department's value for money policy;
- **regulating proportionately** (both domestically and internationally) to minimise, as far as possible, the administrative and other burdens placed on industry;
- **increasing compliance with a targeted approach** to minimise the burden on those operating within the law; and
- **promoting and incentivising behavioural change** where benefits are affordable and can be delivered in accordance with the Department's value for money policy.

3.4 These activities are undertaken across the whole of the Department's family. Some are the responsibility of the central Department, others the core functions of its Executive Agencies or regulators. This document focuses on the role of the Department for Transport, but other Departments have key roles to play in the sector, especially:

- HM Treasury;
- the Department for Business, Enterprise and Regulatory Reform;
- Communities and Local Government;
- the Department of Energy and Climate Change;
- the Department for Innovation, Universities and Skills; and
- the Department for Environment, Food and Rural Affairs.

Providing a long-term planning framework

3.5 The Department seeks to ensure that there is a clear and long-term framework within which the private sector can provide freight services and facilities. In doing so it recognises that different modes, supply chains and private sector stakeholders have different needs, expectations, structures and planning timescales that have to be taken into account.

3.6 To date, the focus of this framework has been on the provision of infrastructure. The current key strands include:

- the aviation White Paper*;*
- the Interim Ports Policy Review;
- the rail White Paper;
- the Planning Act;
- a report and map highlighting the key inland waterways with freight potential;
- the Programme of Major Roads; and
- the Strategic Rail Freight Interchange Policy.

3.7 The May 2007 White Paper *Planning for a Sustainable Future*[25] builds on these arrangements. It outlined a new regime for considering proposals to build nationally significant infrastructure projects in the fields of energy, water, waste and transport. The Planning Act seeks to implement this change. The objective in doing so is to streamline the procedures for considering such projects, providing greater certainty to their promoters and improving public participation in the process by building public consultation into each of its stages.

3.8 For these nationally significant developments, an independent Infrastructure Planning Commission (IPC) will consider and decide the applications, in line with a statutory timetable. Ministers' role in this regime will be to establish the national interest in the provision of that infrastructure. The key means to do this will be through issuing National Policy Statements (NPSs), which will set out the relevant environmental, economic and social considerations. These NPSs will be subject to public consultation and to Parliamentary scrutiny.

3.9 The Department is undertaking a research project on the provision of lorry parking in England. The project is being undertaken to consolidate existing research, which will lead to the clarification of roles and responsibilities across the public and private sectors. It is anticipated that it will feed into an action plan or strategy on lorry parking for implementation from 2009/10.

25 www.communities.gov.uk/publications/planningandbuilding/planningsustainablefuture

Investing in network infrastructure

3.10 The Department invests in the improvement, maintenance and operation of the national road and rail networks. When undertaking investments in our major transport networks, we value the benefits to freight users as an integrated part of scheme appraisal. It is not usual for the Department to invest in infrastructure that benefits only freight traffic. This is because many areas where investment is required for freight are also places on networks where non-freight traffic from different sources converges.

Active Traffic Management

In October 2007 it was announced that, following a successful trial on the M42, Active Traffic Management techniques will be implemented as part of a £150m scheme on the motorway box around Birmingham. As part of the project, a feasibility study will be undertaken to consider if similar schemes could help to beat congestion on other parts of the motorway network.

The twelve-month M42 trial saw significant benefits for motorists, the environment and the economy. Use of the hard shoulder in peak periods saw average journey times fall by more than a quarter on the northbound carriageway, and drivers' ability to predict their weekday journey times improved by 22 per cent. Alongside this, overall fuel consumption reduced by 4 per cent and vehicle emissions fell by up to 10 per cent.

The Department is now undertaking a major study to examine the costs and technical feasibility of extending signalling and traffic management systems on a wider scale, as well as looking at innovative ideas for future traffic management.

3.11 This principle applies across modes, although the routes through which investment is delivered vary between modes and funding sources. The areas supported by the Department include:

- the Highways Agency's investment of £5.4bn in major schemes since 1997, delivering 405 lane miles across the strategic network, and in 2007–08 completing a major programme to re-engineer 85 key junctions to improve traffic flow;
- the Department's plans to invest up to £6bn over the next six years to 2014 in major improvements to the strategic roads network in a programme that has an important part to play in supporting delivery of our strategic priorities, including supporting freight movement;
- improving local roads infrastructure through our support for Local Authority Major Schemes over £5m, with Department funding for local authorities more than doubling in the past six years;
- the Transport Innovation Fund where the Department is providing part-funding of a number of schemes offering substantial freight and productivity benefits. This is providing over £150m for rail freight projects alone; and

- the Strategic Freight Network (SFN) announced in the rail White Paper in July 2007 that £200 million has been provided for Network Rail investment. A draft list of SFN projects was announced in Network Rail's business plan.

Rail freight investments

The Office of Rail Regulation published on 30 October 2008 its determination of Network Rail's outputs and access charges for 2009–14. This included two key projects benefiting rail freight, funded from the Department's High Level Output Specification for the railway network. These are:

- £230m for the upgrade of the GN/GE Joint Line via Lincoln – which provides an alternative route for freight between Peterborough and Doncaster, ensuring that there is long-term capacity for growth in freight (particularly containers from SE ports) on this key route; and
- £45m for Shaftholme Junction grade separation – a scheme that gives freight trains (especially imported coal from Immingham travelling to power stations in the Aire Valley) a shorter, more direct route and removes them from a short section of the East Coast Main Line, eliminating potential delays for freight and long-distance high-speed passenger services.

3.12 The Department does not usually invest in terminals, warehouses, ports or airports. These facilities are normally provided by the private sector on a commercial basis. There is an exception to this where we provide Freight Facilities Grants. These grants provide matched funding for small-scale infrastructure projects that have the potential to deliver modal shift from road to rail or water. In effect, the scheme is used to buy the removal of lorries from the road system.

The Department provides Freight Facilities Grants (FFGs) for funding towards the cost of infrastructure to facilitate water freight. FFGs helped Prime Molasses build a storage facility to enable them to switch a flow of molasses from road to water, saving more than 1,000 lorry journeys per year. Likewise, FFGs have funded blast furnaces for slag at Teignmouth, cocoa storage facilities at Liverpool, grain storage at Silloth and an aggregate conveyor system at Greenwich.

Regulating proportionately

3.13 Regulation has an important role to play in improving and maintaining safety standards and the welfare of industry employees. However, the Department is also concerned to ensure that the regulatory burdens placed on the freight industry are the minimum considered necessary to achieve its objectives. It therefore:

- reviews regulatory requirements for all freight sectors on a regular basis to ensure that they remain appropriate;

- takes action to reduce burdens where opportunities are identified. For example, through changes to fees to reduce the number of transactions for HGV operators; and
- seeks to ensure that European regulatory proposals deliver significant opportunities for business, address a demonstrable market failure and deliver benefits that clearly outweigh the overall costs.

3.14 Given the international nature of supply chains and in the interests of fair competition, much of the regulation for the sector is agreed at a European or wider international level. The Department therefore seeks to secure appropriate action internationally where there is a clear need for cross-border regulation. Examples of this include:

- securing the inclusion of aviation in the EU emissions trading scheme;
- successfully pressing for action on greenhouse gas emissions from shipping at the International Maritime Organisation;
- securing agreement to the mandatory retrospective fitment of enhanced mirrors to the passenger side of most HGVs registered after 1 January 2000; and
- negotiating requirements for the mandatory fitment of stability control systems to HGVs to help prevent accidents.

Cabotage

At the meeting of the EU Transport Council on 13 June, the UK secured agreement that recognises the UK's concerns, on road safety grounds, at the potential liberalisation of the road haulage market.

The agreement would limit the number of domestic loads a European haulier can carry within the UK (cabotage), without leaving the country, to three in one week, compared to the unlimited number they can currently make during a 30-day period. It also says that cabotage activity cannot be 'continuous or permanent' and includes arrangements to improve the enforcement of road safety rules so that those foreign hauliers who commit serious offences can be banned from undertaking cabotage.

Securing this outcome required effective lobbying by both the Department and UK industry. We are continuing to work together as negotiations are ongoing in the European Parliament.

3.15 Where necessary, we also work to head off – or reduce the impact of – regulatory proposals that may have an adverse impact on the sector and support measures that bring benefits. Examples of this include:

- the withdrawal by the European Commission of proposals for supply chain security and ports regulation following concerns expressed by the UK and other Member States;
- the agreement of proposals to liberalise the European rail freight market, which have delivered significant business opportunities for UK based companies;

- the application of a derogation in the directive on the competency of masters operating vessels commercially on coastal and inland waterways; and
- the implementation of digital tachographs, which are expected to substantially reduce administrative burdens for the HGV and Public Service Vehicle sector.

Consideration of longer trailers

Changes to regulations also have the potential to offer important benefits for industry.

In June research into the scope for longer and/or heavier HGVs in the UK, undertaken for the Department by TRL, was published. This found that the largest so-called 'super-lorries' could lead to an overall increase in CO_2 emissions, create serious implications for the management of the road network and introduce new safety risks. But it also showed that there could be worthwhile benefits from permitting a modest increase in the length of current articulated vehicles.

The Department is therefore undertaking a further market study of the potential benefits and impacts of extending the length of articulated HGVs by up to 2.05m – to inform a decision on whether to increase vehicle trailer dimensions. This will focus on the use that business will make of these vehicles, be undertaken in close dialogue with industry stakeholders and include consideration of the potential impacts on modal shift.

Transforming compliance – a targeted approach

3.16 The way in which the Department seeks to ensure compliance with regulations once they have been made also has the potential to impose burdens on industry. Our aim is to seek to place the weight of that burden on non-compliant businesses rather than those who normally do comply. This is most effectively illustrated in the road haulage and shipping sectors.

3.17 The Vehicle and Operator Services Agency's (VOSA) HGV compliance activities have traditionally focused on the condition of vehicles, on overloading and on drivers' hours infringements. Most of this activity takes place at roadside check sites. Since 2004, VOSA has been developing a more targeted approach to its roadside enforcement activities, increasingly making greater use of intelligence and technology to target the non-compliant. This includes development of a rating system, the Operator Compliance Risk Scoring system (OCRS) for GB operators, based on their overall risk of being non-compliant, and the use of weigh-in-motion sensors (WIM) and automatic number plate recognition equipment (ANPR). The combination of better intelligence and WIMS/ANPR technology has led to better targeting and a significant increase in the number of prohibitions issued with a decrease in the number of checks carried out. VOSA's roadside compliance enforcement activity has been further enhanced following the announcement of a £24 million package, detailed below.

Vehicles on international journeys

We announced on 8 April 2008 that VOSA will be provided with an extra £24m over three years to target unsafe and overloaded HGVs on international journeys. Due for implementation in 2009 the investment will fund:

- 97 additional enforcement staff;
- a move to 24/7 enforcement checking at two sites – on the M6 and in North Wales and the introduction of 24/7 enforcement at other sites over the three-year period;
- two new enforcement sites at key points on the road network; and
- a 50 per cent increase in the number of HGV checks carried out; which is expected to result in a near doubling of prohibitions (where a vehicle or driver is prevented from continuing their journey until the fault has been rectified).

3.18 In recent years the Maritime and Coastguard Agency (MCA) has also been taking an increasingly risk-based approach to the conduct of ship inspections under Port State Control arrangements. Ships calling at UK ports are assessed against a range of criteria, including the record of the ship and its owners, and inspections targeted accordingly. With the introduction of new automated means of tracking ships, such as the Automated Identification System and Long Range Identification and Tracking, it will be possible to identify ships at an earlier stage, improving the ability to target high risk vessels while minimising the regulatory burden placed on high quality ships and ship owners.

Promoting and incentivising behavioural change

3.19 The ultimate decision on which mode of transport, or which route, is used is normally made by industry, who consider such factors as access, cost, demand, safety, reliability and time. However, the Government seeks to promote and fund behavioural change where the benefits are affordable and can be delivered in accordance with the Department's value for money policy.

3.20 In the domestic freight context our main mechanism to secure behavioural change is in the provision of information and the use of financial incentives through the Sustainable Distribution Fund (SDF). The fund consists of two types of programmes:

- **efficiency programmes,** which encourage efficient operating practices in the logistics and haulage industry – particularly Freight Best Practice and Safe And Fuel Efficient Driver (SAFED) training; and
- **mode shift programmes,** which secure the transfer of freight from road to rail or water transport. Current mode shift schemes are:

  (a) Freight Facilities Grant, which provides match funding for capital schemes;

  (b) the Rail Environmental Benefit Procurement Scheme, which provides revenue grants for rail; and

(c) the Waterborne Freight Grant, which provides revenue support for water freight.

3.21 In 2007/08 budgeted expenditure by the Sustainable Distribution Fund was £25.5 million. This was composed of £7 million for capital expenditure and £18.5 million for resource expenditure. The funds used for resource expenditure are allocated across all modes through Sustainable Distribution Fund processes, which recognise those proposals that generate the greatest benefit.

Freight Best Practice

The Department's Freight Best Practice (FBP) scheme seeks to reduce the CO_2 and other impacts of freight through the provision of advice and operational tools for the freight industry to improve its efficiency. Two impact assessments of the programme have shown that it is actively used by 9 per cent of all HGV fleets (up from 5 per cent in 2003), saving around 120,000 tonnes of CO_2 and £40m for industry each year.

On 30 June 2008 we awarded a £4.5m contract to Faber Maunsell to run the programme for up to three years. The new contract includes a requirement to promote modal shift initiatives and develop tools to help the rail and water freight sectors improve their carbon efficiency further.

The programme's geographic coverage was increased to include Scotland on 7 November 2008, when the Scottish Government funded and launched Freight Best Practice in Glasgow.

Benefits of modal shift funding

In 2007 the Department spent just over £17.5m in revenue funding for intermodal and bulk rail freight journeys (including £390,000 from the Aggregate Levy Sustainability Fund for bulk rail movements). This funding directly removed 880,000 lorry journeys from British roads and saved over 120,000 tonnes of CO_2.

In terms of container traffic, the funding supported 133,771 containers moved by rail from the Port of Felixstowe and 78,051 containers moved by rail from the Port of Southampton (around 20 per cent of all containers moved from both ports). Container movements from these two ports to the Midlands saved almost 6,000 tonnes of CO_2 in 2007.

3.22 In addition the Department, through its freight and logistics research programme, invested £2.7m in 2007/08. This work included benchmarking surveys in the food and drink sector, impact assessments, SAFED van demonstration funding, a survey of the Working Time Directive, and further research for online benchmarking. The SAFED scheme has shown to save up to 5 per cent of fuel per driver in HGV operations. Initial assessments from Van Training Days show slightly better improvements, but a full impact assessment of the van scheme has yet to be carried out. The impact

assessment has quantified the CO_2 savings for the 12,000 HGV drivers trained under the Department's funding as 87,000 tonnes of CO_2. The SAFED programme is currently operating for both HGVs in the aggregates industry and for vans under Government funding (Department for Transport and Defra's Aggregates Levy and Sustainability Fund) and on a commercial basis.

Increased funding for sustainable distribution

In October the Government announced a £67 million boost to the Sustainable Distribution Fund. The revenue budget for sustainable freight funding has increased from £20m in 2007/08 to £23.3m this year and to £23.4m in 2009/10 and £24.0m in 2010/11. This funding covers all efficiency and mode shift programmes, including Freight Best Practice.

Future capital funding for freight facilities grant has also been increased from £4m this year to £7m next, £10m in 2010/11, £16m in 2011/12, £20m in 2012/13 and £25m in 2013/14.

3.23 These funding programmes sit alongside other Department for Transport, and wider Government, incentives to encourage the use of rail and water transport. These include:

- the continued low duty on red diesel;
- zero duty on bunker fuels;
- tonnage tax for shipping companies; and
- the exclusion of electric rail freight from the climate change levy.

3.24 The Department has identified existing inland waterways that may realistically be considered for freight transport, either in their current condition or with minor infrastructure improvements. A map can be accessed on the Department's website.[26] Our thinking is that this will allow potential uses of inland waterways to focus more easily on existing possibilities for water freight.

The role of local government

3.25 The handling of complex and diverse freight-related issues at a local level can be critical in obtaining a successful outcome for people and business. Issues can include how kerbside space is allocated between alternative uses, how the application of noise and route restrictions is undertaken, through to planning issues for housing and business. The Department seeks to work with local government on these issues – providing guidance on best practice, including through our Freight Best Practice scheme.

26 Available at: www.dft.gov.uk/pgr/freight/waterfreight.

Night-time deliveries in Wandsworth – benefits for all

The Noise Abatement Society's (NAS) Silent Approach scheme brings a unique collaboration between the local authority, residents (represented by the NAS) and a major supermarket.

The scheme involves noise minimisation improvements to plant, machinery and equipment and supervision of staff making deliveries and unloading. A three-month trial demonstrated that night-time deliveries can be achieved without adversely affecting neighbouring residents, with reduced congestion and pollution, lower noise levels from daytime deliveries and with financial benefits to the company. The trial demonstrated reduced HGV journey times of 60 minutes for a round trip, with a substantial reduction in CO_2 emissions.

3.26 There are many areas where local authorities are demonstrating significant leadership on freight issues. The most well known example is in London, where Transport for London (TfL) has a dedicated Freight Unit that has developed the London Freight Plan, but there is also much work elsewhere, particularly through local authority involvement with industry in Freight Quality Partnerships (FQPs). These partnerships can play a significant role in developing understanding between parties with different apparent self-interests and often lead to outcomes that satisfy the needs of all parties. The best FQPs produce tangible benefits through implementing informed decisions. Through Freight Best Practice, the Department offers advice on the establishment and operation of FQPs and has published case studies of good practice examples. Local authorities should look to set out their plans for addressing freight issues in their Local Transport Plans.

Tyne and Wear Freight Quality Partnership of the year, 2007

The Tyne and Wear FQP was launched in 2005 and is run by the Tyne and Wear Local Transport Plan Team with management support from a consultant. The FQP brings together freight operators, industry representatives, five local authorities, the Highways Agency and local stakeholder groups.

The FQP has delivered a wide range of outcomes including:

- freight maps;
- freight signage improvements; and
- an electronic information point for HGV drivers at local service stops.

The FQP also played a part in formally naming a junction in the area to assist way-finding. Further information is available on the FQP's website at: www.tyneandwearfreight.info.

The role of infrastructure owners

3.27 In setting out the roles of government and industry in the freight and logistics sector, it is important to recognise that much of the infrastructure used in freight and logistics is owned and delivered by private industry. Ports, airports, distribution centres and freight terminals are all significant infrastructure facilities that are owned and operated by industry without (with the exception of the rail network) significant Departmental funding.

3.28 From the ports side in particular there are many recent examples of substantial or proposed investment by industry. These include:

- Milford Haven for liquefied natural gas reception and processing;
- the Port of Dover's master plan, which envisages major development of its Western Docks to help meet growth in ro-ro demand, subject to securing planning permission;
- new facilities at the Port of Immingham and the Port of Tyne to accommodate coal imports; and
- new container developments at Felixstowe South, Bathside Bay (Harwich), London Gateway, Mersey (Seaforth) and Teesport have all been given planning approval. Together, these developments have the potential to accommodate more than a doubling of container traffic.

3.29 In many cases developers have made, or plan to make, substantial investments in road and rail connections to help accommodate planned growth at their infrastructure. The scale of such investments is dependant upon local circumstances and impacts.

Developer contributions

The Department has committed to clarifying arrangements for funding of transport links to major developments. A set of guidelines and principles has been drafted, following wide dialogue with stakeholders, and these were subject to public consultation over the summer. The guidelines cover funding of transport schemes to mitigate impacts (passenger and freight) of major strategic developments. Under current arrangements, promoters of major strategic developments are expected to meet the full cost of any supporting infrastructure to mitigate the impacts of their proposals, even if wider benefits will result. The proposed guidelines introduce the concept of cost share arrangements between the public and private sector, where there is a compelling case to do so and where there are significant national benefits to schemes. Any government contribution to these schemes will be evaluated against other competing schemes and prioritised through the DaSTS funding allocation process. The responses received to the consultation are currently being reviewed by the Department.

3.30 In addition to these responsibilities for investment decisions – which the Department seeks to influence through the planning frameworks discussed earlier in this chapter – infrastructure owners also have a key role to play in the day-to-day management of their assets. The Department's work on six freight end-to-end journey case studies, published in July, highlights the potential impacts of delays at these key locations to the effectiveness of businesses. It is also clear that the way in which operations of this nature are managed has the potential to change their environmental and other impacts.

4. Meeting future challenges

Overview

The freight and logistics sector has a key role to play in respect of the Department's five policy goals: climate change; competitiveness and productivity; equality of opportunity; safety, security and health; and quality of life. To that end the Department has been working closely with industry over recent months to identify the major issues (or 'themes') for the sector. These views have been considered alongside those of other stakeholders – since freight does not exist in isolation from other users of the transport networks – and contributed to the proposed challenges for transport as a whole contained in the consultation document accompanying DaSTS. The process has shown a strong commitment from those in the supply chain to reducing transport emissions. On competitiveness, congestion has been highlighted as a key issue, since journey time reliability is seen as more important than total journey time. To inform future transport investment decisions the Department has recently started work to assess future freight demand on key corridors. The major theme of our discussions with stakeholders on the equality of opportunity goal was the need to ensure a clear understanding of the skills and numbers needed to support a competitive and effective logistics industry. It is broadly accepted that safety and security considerations will require ongoing effort in the future. On the quality of life goal, there is recognition of the need for compromise between actions to tackle the impacts of freight activities, such as noise and pollution, and supply of the goods we all need.

The challenges ahead

4.1 It is clear from the Department's current understanding of the logistics sector and from the feedback we have received from stakeholders on the key issues for the sector in the future (summarised at Annex A) that the roles of all of the key players will need to develop further over the next few years. The scale of the issues to which the sector will need to respond – from import demand growth to tackling climate change – are such that closer and more effective working between the Department and industry will be required.

4.2 The freight and logistics sector has a key role to play in each of these areas and over recent months we have engaged with industry to understand the key issues for the sector relevant to each of these goals. This engagement process has included:

- an industry-wide stakeholder event in February 2008, which captured a range of views on freight's role in relation to the five Departmental goals;
- bilateral meetings with operators, infrastructure owners and freight users to build on our knowledge of the sector;
- the development and publication of five end-to-end journey case studies for freight (available on the Department's website); and
- the establishment of a Logistics Sounding Board of practitioners chosen to reflect the broad interests of both industry and modes. The Board's role is to provide broad-based, industry-led advice on the development of the Department's approach to logistics, and to ensure that appropriate social, environmental and commercial issues have been considered.

Listening to Industry

The Department hosted a Listening to Industry event in February 2008, where we invited a wide group of stakeholders to consider freight's contribution to the five Departmental policy goals in light of their own experiences and perspective. The group was invited to respond with what they felt were the factors most impacting upon them.

Over 60 stakeholders attended the day, including representatives from trade associations, freight customers, service providers, infrastructure operators, ports and others. The event was opened by the then Secretary of State for Transport, Ruth Kelly, and closed by the logistics Minister, Jim Fitzpatrick.

The participants welcomed the opportunity to be heard by Government in an unfiltered and open environment and to work in small groups to identify and prioritise the challenges that are of greatest concern for industry. The output from the event helped the Department to form the 16 'themes' that are being fed back into the wider work being undertaken by the Department. These themes and an outline of the stakeholder perspective are provided in Annex A.

4.3 Freight does not exist in isolation from other uses of our networks. The issues raised by freight and logistics businesses and customers have been used, alongside the views expressed by other stakeholders, to identify the key future 'challenges' for transport. The challenges sit beneath each of the five goals and serve two purposes:

- they set out in more detail to our stakeholders, particularly those involved in transport or land use planning, where we shall be looking for progress under each goal; and

- they provide a checklist against which emerging options for Departmental investment and other priorities will be tested to enable us to identify the best packages of interventions.

4.4 Some of the longer-term freight issues identified through our engagement with stakeholders will be best addressed through the decision making process (set out in the consultation document accompanying DaSTS) to determine the Department's investment and other priorities beyond 2014. Following Sir Rod Eddington's analysis, the Department intends that this will look at options across three types of network – city and regional, national and international – as the basis for option generation. In practice, individual journeys (particularly for freight) typically use more than one of these networks. From the user's perspective, the distinction may therefore seem somewhat artificial. Nevertheless, from a delivery perspective it is important to be clear who will actually lead the process of option generation in each case, and to define where responsibilities start and end. We are working on the basis that the Government will take the lead in commissioning on national policy measures, such as regulation, which cut across network boundaries, as well as on option generation for national and international networks, but it will be for regions and local authorities to do so for city and regional networks.

4.5 Other issues that we have identified with stakeholders will require action in the shorter term. The following paragraphs set out some initial views, building on the information from stakeholders, about the potential scale and nature of action in relation to freight that could be necessary in relation to each policy goal. As well as the Department, responsibility for action will rest with many players including the logistics industry and their customers, infrastructure providers, local authorities, regulatory bodies and government. We will expect all to play their part (for example, in adopting industry best practices).

The climate change policy goal

4.6 It is likely that substantial savings in greenhouse gas emissions will need to be made across a wide range of transport activities in the period to 2050. There are three main ways in which reductions of CO_2 in the supply chain can be delivered:

- reducing the need to transport goods;
- moving more goods by the modes with the lowest carbon dioxide emissions per tonne/km; and
- reducing emissions per tonne/km without changing the mode of transport.[27]

27 This could be achieved in many different ways: from reducing empty running to improving driving behaviour, or vehicle aerodynamics. But there is an irreducible underlying CO_2 output per litre of fuel consumed and the potential for savings from this source may reduce considerably over a 40–50 year period unless significant technological advances are made.

4.7 To date, the Department's activity – and arguably that of industry – has been dominated by the last two of these areas. For example, the Sustainable Distribution Fund supports both modal shift from road to rail and water and efficiency programmes to promote more sustainable freight within modes. When the scope for these different categories of action was discussed by the Logistics Sounding Board, none of the practitioners present mentioned the first of the above options as either part of their current plans or as a key action to consider for the future.

For the future, we will need to think together much more about where goods are transported from and to. Our view is that this is an area where industry is best placed to take the lead, but in which Government may have a high level role to play – for example through the use of National Policy Statements. We will be discussing this balance further with industry over coming months.

4.8 Through our engagement process, the Department has heard a strong commitment from practitioners in the logistics sector (particularly customers) to play their part in achieving this goal. We have also been told that there are some practical barriers to doing so, including an absence of strong CO_2-based incentives and a lack of clarity about who in the supply chain is responsible for delivering savings. Is it the freight shipper (who arguably has fewest levers available to them), the freight forwarder, the business owning the goods transported (which generally has the widest range of interventions within its control), the end customer or a combination of these?

4.9 Clearly, regulation and price signals also have a part to play in influencing behaviour. For example, international action on shipping practices have a consequent impact on cost and pricing in the sector that will, in turn, influence behaviour. This is, however, not an area where the Department can act alone.

We will aim to work with industry bodies and others in Government to ensure that there is clarity about responsibility for, and incentives to encourage, CO_2 reductions in the freight sector.

4.10 In 2008, the Government published revised guidance on how to value greenhouse gas emissions in appraisals. The guidance adopted the concept of the Shadow Price of Carbon (SPC). In 2008, this was estimated at £26 per tonne of CO_2.[28] DECC is reviewing this guidance to consider whether to accept a 'marginal abatement cost' based approach instead. Under this approach, the SPC would represent the price necessary to include or induce sufficient investment to reach a given greenhouse gas target. We expect the results of this review shortly.

28 Further information is available at: http://www.defra.gov.uk/environment/climatechange/research/carboncost/index.htm.

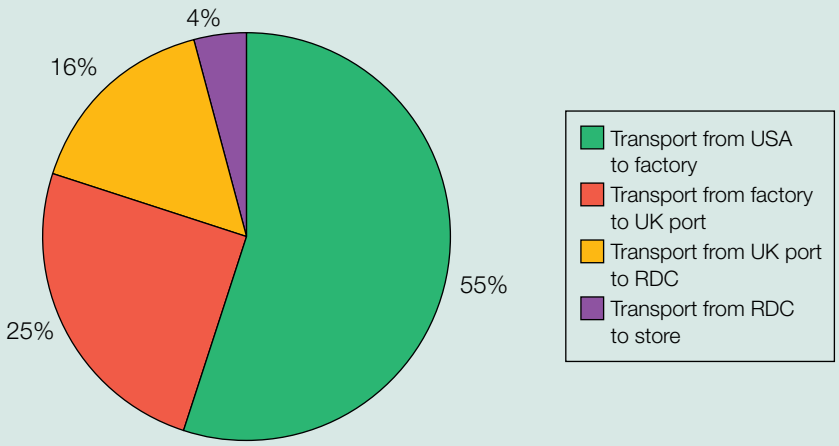
4.11 The Department uses the existing guidance to value transport greenhouse gas emissions. Our appraisal guidance will be updated to reflect the results of the DECC's review of the SPC. Alongside this we are revisiting (as part of a review of Sensitive Lorry Mile valuations) the values attributed to carbon savings in modal shift grant funding; at present the value of the reduction in CO_2 emissions is 5 per cent of the net benefits of removing a lorry from the road network.[29]

Case Study 1: Life cycle assessment in the supply chain – the CO_2 impact of the production and distribution of a pair of jeans

A study by the University of Westminster and INRETS in 2004 analysed the supply chain of a pair of jeans to the UK. Data were collected and analysed to calculate the total transport activity in the supply chain, the energy consumed and CO_2 emitted in the production and distribution of the jeans. The supply chain involved the sourcing of cotton in the USA, spinning in Turkey, manufacture in Morocco and distribution to the UK and through the UK supply chain.

Over 70 per cent of CO_2 emissions from the production and distribution of the jeans were attributed to product manufacture: while the freight transport activities accounted for only 4–5 per cent of the total energy used.

The following graph shows the breakdown of that 4–5 per cent of energy consumed. The entire energy consumption attributed freight to transportation within the UK is 20–25 per cent of the transport CO_2, broadly equivalent to 1 per cent of the total energy used in the production of the jeans.



Source: Browne M, Allen J, Rizet C (2006) Assessing transport energy consumption in two product supply chains *International Journal of Logistics: Research and Applications*, vol 9, no 3

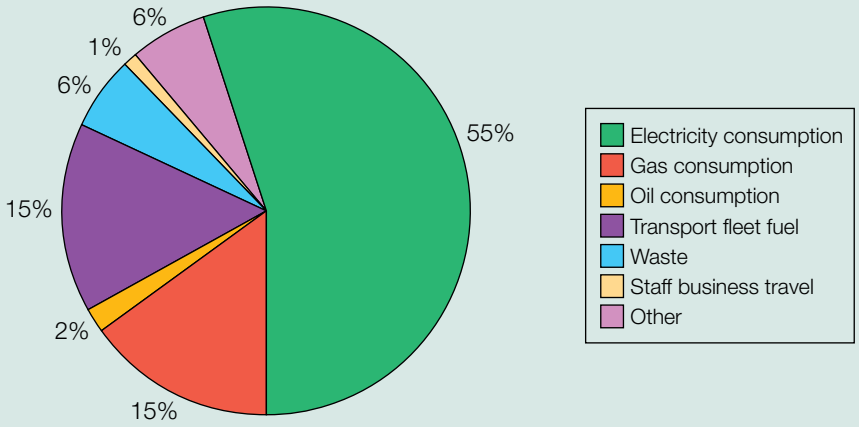
The study also showed that approximately 50 per cent more energy was used transporting the jeans from the shop to the consumer's home (assumed to be a seven mile round trip by car) than in transporting them from the UK port to the retail outlet.

29 The Sensitive Lorry Mile values are dominated by improvements in journey reliability for other road users.

4.12 It is also important in considering potential actions in this area that we ensure that we do not create perverse incentives for industry to reduce CO_2 emissions in the UK, whilst increasing them in the supply chain as a whole. We also recognise that the nature of different businesses and supply chains means that the scale for CO_2 savings from transport can vary considerably between companies and sectors.

Case Study 2: Major UK companies' carbon footprints

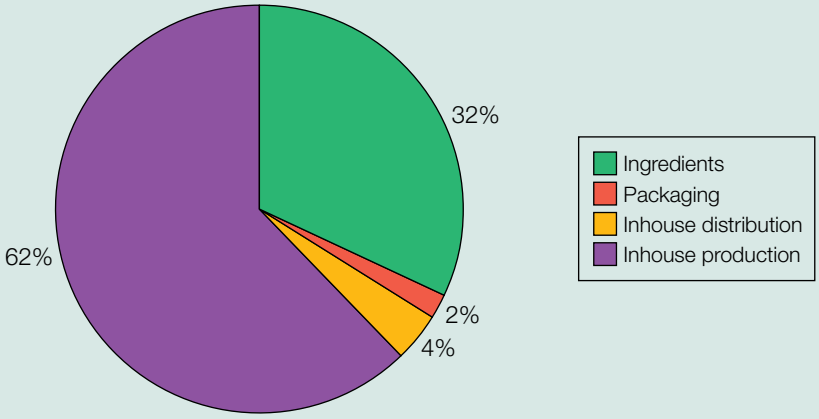
The carbon footprint is a measure of the exclusive total amount of CO_2 emissions that is directly and indirectly caused by an activity or is accumulated over the life stages of a product (Wiedmann and Minx, 2007). A British high street department store has measured the carbon footprint of its business and attributed CO_2 emissions to electricity, gas and oil consumption, waste and transport fleet fuel. The findings show that 15 per cent of the company's carbon footprint was attributed to the company's fleet and distribution of its products, while the majority of its carbon footprint (55 per cent) was attributed to electricity consumption:



Source: Green Logistics

Case Study 2: Major UK companies' carbon footprints *continued*

Likewise, a British confectionery manufacturer has also measured its carbon footprint, but by business activity rather than consumption levels. They found that 4 per cent of the company's carbon footprint was attributed to in-house distribution, while the majority of its carbon footprint (62 per cent) was attributed to in-house production:



Source: Green Logistics

The two results illustrate the variable impact that transport has on a company's carbon footprint, and the amount of carbon emissions attributed to transport will depend on the company's business model and practices.

We can measure carbon according to country, sector, supply chain, company, process, activity, product or a combination of these, and the two examples illustrate the extent to which carbon footprints can be measured following different methods and categorisations.

The competitiveness and productivity policy goal

4.13 A significant proportion of the Department's activity is focussed on achievement of the competitiveness and productivity goal. The benefits to freight users are factored into investment decisions across the Department alongside those of other beneficiaries (such as passengers and individual transport users). Freight, therefore, needs to continue to be fully integrated into the wider work of the Department rather than develop on a 'stand alone' basis.

4.14 As highlighted earlier, the investment relating to the East Coast joint line project – funding for which has been provided in the Office of Rail Regulations' final determination of Network Rail's outputs – is based on the forecasted benefits that will accrue for *both* passenger and freight users. The same is true for road investments, where the Department factors in the benefits that accrue in the economic performance of all people and businesses that benefit from an investment.

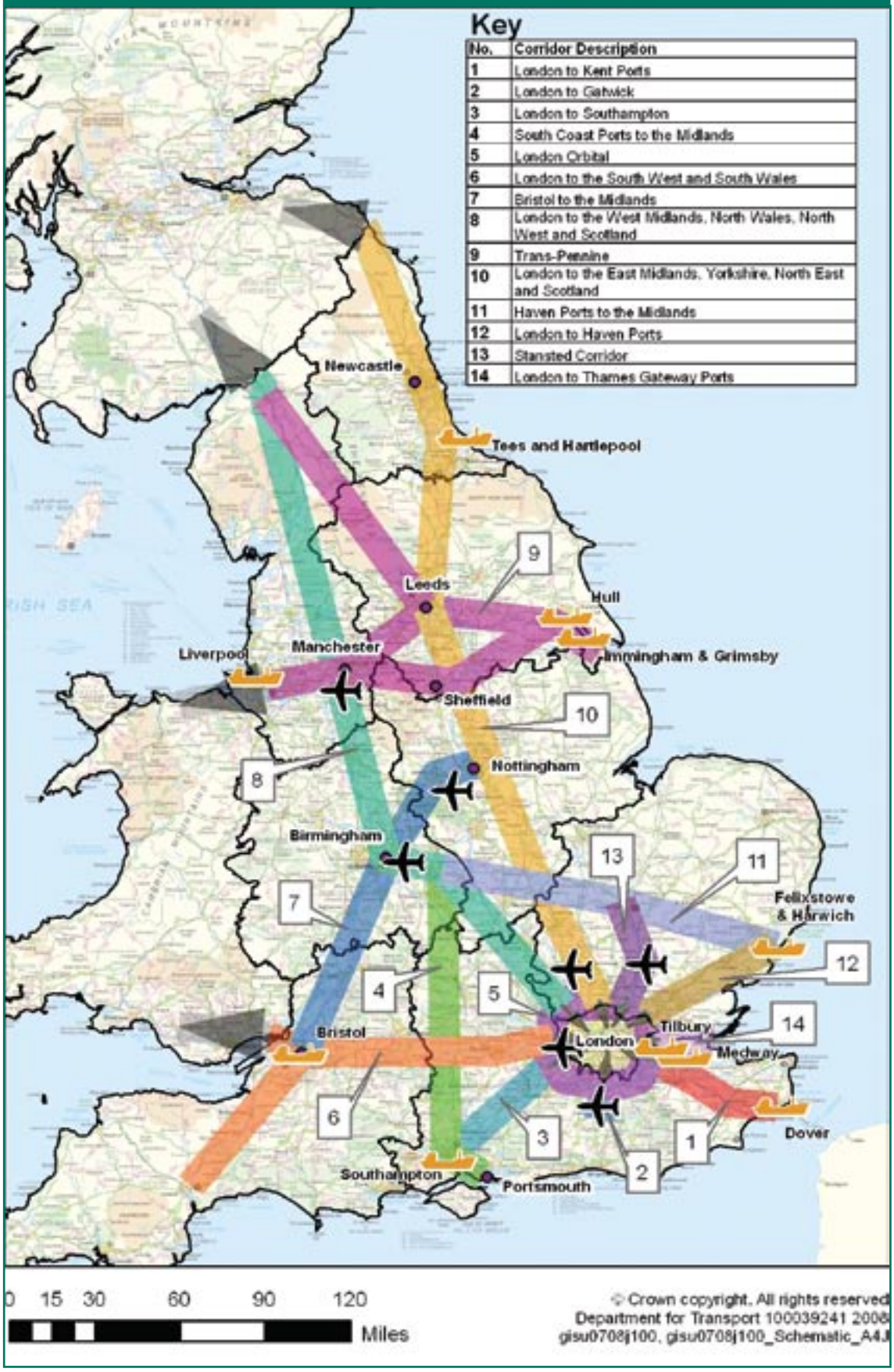
East Coast Rail Capacity Scheme: Peterborough – Doncaster (Joint Line) Upgrade

The Joint Line scheme provides significant capacity and performance benefits for both container freight from London and Felixstowe ports and passenger services on the East Coast corridor. It does this by segregating these traffic flows on a key, congested section of the East Coast Main Line. It meets a White Paper commitment to meet the reasonable requirements of freight growth alongside the new Inter-City East Coast service level (with additional services between London and York/Lincoln) whilst protecting performance levels. It also increases network resilience by providing a diversionary capability for engineering access in the event of service disruption.

4.15 Our stakeholders have consistently highlighted that congestion on our networks and at some major interchanges (such as ports and airports) can lead to unpredictability of journey times and that this is often an issue of greater importance than absolute journey times. While there are exceptions to this rule, the indications from stakeholders are that the focus for industry will often be on reliability, not total journey-time. This is supported by our work on end-to-end journeys.

4.16 Chapter 3 sets out the Department's approach to investing in networks. The next significant decisions will be those taken for 2014 and beyond. As set out at paragraph 4.4, above, the Department is proposing that central Government will lead only on identifying investment and other priorities for national and international networks. DaSTS explained that we intend that this work will focus on 14 route corridors that link key centres of population to each other and to the busiest international gateways that have the highest volume of goods and people movement. Figure 4.1 shows the 14 strategic national corridors included in this definition. These corridors, collectively, are regarded as critical to the functioning of our transport infrastructure system as a whole, and therefore the economic success of the nation. They include all of the key routes for freight identified in Chapter 1. The intention is that the outputs of these processes will lead to the production of the next formal rail High Level Output Specification due in 2012, covering the years 2014–19. For roads, we expect that this will also result in an output-based specification, and individual projects that will feed into a National Policy Statement.

Figure 4.1 Strategic National Corridors



Source: DfT (2008)

4.17 A crucial part of any planning process is the need for careful prioritisation of transport interventions. We envisage that the first stage of the work will look at hotspots on the networks (across all five goals) and the potential for action to address this. Following this analysis the focus will be on meeting the challenges on those corridors where incremental measures may not be sufficient. For international networks, the intention is to carry out a series of gateway and freight centric studies to generate policy options. This will build on end-to-end journey studies for international container and ro-ro freight transport, which the Department is undertaking. These enable us to better understand the pinch points for passenger and goods movements in and out of the UK.

4.18 DaSTS indicates that the needs of freight will be prominent throughout the Department's work on option generation. To ensure that this is achieved, we have recently started work to consider, across modes, the nature of current freight demand on the key transport corridors. Some initial outputs to this work were included in the London–Manchester case study contained at Annex 1 to DaSTS – 'The London–Manchester corridor'. A further, more detailed, case study of the national network corridor between Rugby and Manchester, which illustrates the approach that we are adopting, is included at Annex B to this document. Understanding more about the nature of freight movements (including the key commodities, length of journey and modal choices) in this way will allow us to plan more effectively and make more targeted interventions to address the challenges and achieve our goals. This work will feed into the generation of options for both national and international networks. We plan to discuss this approach – and gain an initial industry perspective on the key hotspots on our national networks – at a Listening to Industry event in early 2009.

4.19 We have also sought over the past few months to develop an indicator of journey reliability specifically for freight journeys – in order to provide measures to monitor progress and to understand whether the data the Department holds on journey reliability for all vehicles are representative of the experience of freight businesses. However, attempts to gather data on a pilot basis have, so far, been limited because of the unavailability of data or the unwillingness of businesses to fit the necessary GPS technology to vehicles. We would welcome offers of further assistance with this work and/or views on whether this proposal is worth pursuing further.

The needs and impacts of freight and logistics will be prominent in decisions on priorities for our national and international networks beyond 2014.

We are also working to ensure that there is an appropriate climate for private sector investment in logistics facilities – including through the provisions in the Planning Act and our consultation on developer contributions.

We will continue to consider whether an effective reliability indicator for freight services on national networks can be developed.

4.20 In Chapter 3 we set out the provisions in the Planning Act to improve certainty for developers and referred to work in hand to clarify arrangements for funding of transport links to major developments.

4.21 Not all of the issues raised in relation to competitiveness and productivity can be addressed by investment or are the direct responsibility of the Department. Our end-to-end journey case studies and KPI benchmarking scheme showed that collection and delivery problems can cause longer average delays than congestion on the road network (e.g. 51 per cent of delays to drink deliveries were caused by waiting for loading or unloading, with only 13 per cent due to congestion). There were also views expressed about the impacts of management systems at ports and other hub locations.

We look to infrastructure owners to monitor and work to improve journey experiences for customers at key gateways and distribution centres. We will consider with industry if there is anything the Department can do – for example through the Freight Best Practice scheme – to facilitate this.

The equality of opportunity policy goal

4.22 Looking forward, we know the industry is, and will remain, a significant sector for employment in its own right. To contribute to our goal of 'promoting greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society', we will need freight and logistics businesses to harness the skills and attributes of current and potential employees.

4.23 Delivering this involves a wide range of players including – within Government – the Departments for Innovation Universities and Skills and Business Enterprise and Regulatory Reform; and Skills for Logistics – who have lead responsibility across sectors for many of these issues. Skills for Logistics is the Sector Skills Council that works to raise awareness of skills issues within the logistics sector and to offer support and practical advice on all aspects of improving skills and training. This includes raising the standards of logistics training and improving the industry's image to attract an increased and diversified workforce. The Chartered Institute for Logistics and Transport also has an important role in the sector, providing

members (both individuals and organisations) with training, qualifications and resources.

4.24 Traditionally the Department has not played a significant role in the skills agenda for the logistics sector. But, over the past few years, we have engaged more effectively with the industry, particularly through the Driving Standards Agency's implementation of the Driver Certificate of Professional Competence (CPC). Driver CPC, which from next autumn requires all relevant drivers to undertake the equivalent of a day's training a year, will play an important role in developing skills in the sector and raising the standards of both new and experienced drivers. We expect that this will, amongst other things, contribute to a reduction in HGV-related CO_2, accidents and associated congestion.

The Department intends to play a greater leadership role on skills issues, supporting Skills for Logistics and industry in developing a clearer career path for, and greater skills within, the sector.

The safety, security and health policy goal

4.25 The safety of workers and others who come into contact with freight activities will remain a key consideration for industry and government. Security issues, both for the supply chain itself and for those who interact with it, remain a permanent consideration for all modes. It is broadly accepted by stakeholders and government alike that these issues will require ongoing effort in the future.

4.26 In Annex A, our stakeholders identified two core themes related to this goal. They are:

- the impact of freight services on the health of logistics employees and others should be maintained or improved in relative terms; and
- there needs to be wide and genuine consultation on introduction of new health and safety measures that are comparable to, or at least do not introduce competitive disadvantage when compared with, best practice and standards abroad.

4.27 We have seen a long-term improvement in the safety performance of freight and logistics activities, especially in regards to safety at work for employees. We believe this improvement will continue, led by industry, but with the support of safety bodies such as the Health and Safety Executive, VOSA, MCA and the Rail Safety and Standards Board.

4.28 Given this situation, we do not see a significant need to change our broad approach and effective working relationship with industry on safety and security issues. Regulations regarding security will, of course, need to balance the need to minimise administrative burdens of people and business, while ensuring that an appropriate level of security is maintained.

The quality of life policy goal

4.29 Freight and logistics activities can impact on people in many ways: noise, pollution and the severance of communities can all be caused by moving freight. There is, however, a trade-off between providing the goods we all need and promoting our quality of life. Balancing these issues is a key task for both policy makers and industry.

4.30 At a high level, the outcome of our dialogue with industry was a recognition of the need to seek interventions to address the impacts of freight and logistics operations on society which look at the full benefits and issues involved – from both the industry's and the public's perspective. This cuts across a wide range of interventions, including planning decisions – which are addressed in the Planning Act. Lead responsibility for addressing this issue rests with infrastructure owners and industry who often have the information needed to present a full and balanced case.

Issues with impacts across goals

4.31 In our dialogue with stakeholders it became clear that there were four key areas that had impacts across several of the Department's goals. These related to:

- the impacts of an expected increase in non-UK HGVs on the goals for safety, competitiveness and productivity, and greenhouse gas emissions;
- the impacts of a forecast growth in van traffic;
- a view that modal shift was not always a real option for businesses – particularly for small-medium enterprises – because of practical barriers; and
- a perceived need to ensure that options for and potential costs, benefits and mitigations of, changing working practices (such as night time deliveries) are understood and are considered alongside other (e.g. local) concerns.

4.32 None of these areas is new to the Department; work is in hand on them all. For example:

- because of the higher statistical risk posed by non-UK HGVs and their drivers, we have been working for some time to increase enforcement resources, undertake more targeted compliance, and ensure that UK and European legislation provides an appropriate context for our action;
- we are investing £1.2m over three years in SAFED for the van sector plus £0.85m from the Aggregate Levy Sustainability Fund for SAFED in the Aggregates HGV sector;
- last September we announced an increase of £67m for modal shift funding and the inclusion of modal shift promotion as a key part of the new Freight Best Practice contract; and
- in 2006 we published guidance on relaxing night time delivery curfews and have sponsored two urban freight summits to bring industry and local authority practitioners together.

4.33 However, these cross cutting themes are also all areas where we need to work in close partnership with industry:

- to secure an appropriate agreement on future access to the domestic road haulage market we need the support of UK trade associations to lobby their opposite numbers in other Member States and present their case direct to MEPs and others. The purchasers of freight services also ultimately have a choice about the compliance and safety records of the operators and vehicles (regardless of nationality) that they use to undertake their work;
- research on the van sector can only be delivered if companies are prepared to work with us to study the detail of their activity and impacts;
- the key role in making rail freight more accessible to customers rests with the rail freight companies, freight forwarders and freight providers; and
- the majority of the trade-offs between industry benefits and community concerns are made at local level and are not issues which the Department can determine directly. Such decisions must be influenced by local circumstances and will require significant commitments from business to ensure that the quality of life of local residents is maintained.

4.34 Government action on these issues alone will not deliver the outcomes required. That is why the stakeholder engagement process and the renewed relationships with business and other organisations we have established over the past year are so important.

We will seek to work in partnership with industry, local government, infrastructure providers, the academic community and others to:

- secure the best possible European agreement on cabotage;
- undertake a preliminarily van survey to improve our knowledge of which vehicle types are being used for which uses, vehicle kilometres and fuel type and consumption;
- develop an end-to-end journey case study following a van making business-to-consumer deliveries;
- improve further our understanding of the van sector;
- develop a Van Best Practice programme, to complement our existing work on Freight Best Practice;
- identify the most appropriate companies or organisations to provide more effective interfaces between potential customers and rail and water freight operators so that opportunities for modal shift are fully explored; and
- promote further the opportunities for best practice in balancing the needs of freight and communities both in specific areas and through the use of Freight Quality Partnerships. In doing this we will seek views on the role of Government and the priority areas for consideration as part of Freight Best Practice and other programmes.

Next steps

4.35 Looking forward, the justifications for the Department's leadership role in the sector, and the broad types of activity in which central Government engages, are likely to remain the same. But the scale of the issues we face (particularly in relation to climate change) mean that the threshold for action and the precise nature of activity undertaken by the Department is likely to evolve.

4.36 Government actions with the greatest potential to influence achievement of the Department's policy goals will have a much wider scope than the logistics sector alone. For example, incentives and disincentives may need to be in place across the supply chain in order to influence emissions behaviour. Pricing and regulation are tools for making the cost of greenhouse gas emissions reflected in our transport choices, and we are committed to using these tools effectively. But this is not an approach that is specific to logistics, nor is it a simple process in which the Department acts alone: carbon pricing is a complex matter that requires a co-ordinated, cross-Government approach.

4.37 Similarly, investment in infrastructure needs to take full account of the benefits to all users (reflecting realistic views of future demand once other policy impacts have been taken into account) including freight.

4.38 To ensure that we remain on the right track, we will continue to work closely with industry and other key players (including elsewhere in central and local government) so that we continue to understand and reflect the key issues for and impacts of, the sector.

Annex A
Freight policy themes – the stakeholder perspective

Introduction

A1.1 In October 2007, *Towards a Sustainable Transport System* set out the Government's approach to strategic transport planning for 2014 and beyond. It set out an approach for implementing the recommendations of the Eddington study and reflected the findings of the Stern review of the economics of climate change. Last month, we published *Delivering a Sustainable Transport System (DaSTS),* which sets out how we are putting this approach into practice and was accompanied by a more detailed consultation document on our approach to decisions for 2014 and beyond.

A1.2 Building on Sir Rod Eddington's recommendations, *Towards a Sustainable Transport System* proposed a four-step process:

- clarifying the goals of transport policy;
- specifying the challenges to be addressed on each of the three types of network (city and regional, national and international) and on a cross-network basis;
- generating a range of options on a cross-modal basis to address the challenges, looking at the role of regulation and price as well as infrastructure; and
- appraising the options on the basis of their delivery against the transport goals and their value for money.

A1.3 This approach will help avoid what Eddington described as 'solutions in search of problems'.

Table A1.1 The challenges

	Tackle climate change	Support economic growth	Promote equality of opportunity	Contribute to better safety, security and health	Improve quality of life
Cross-network (national policy)	1 Deliver quantified net reductions in greenhouse gas emissions consistent with the Climate Change Bill and EU targets.	2 Ensure a competitive transport industry by simplifying and improving regulation to benefit transport users and providers and maximising the value for money from transport spending.	3 Enhance social inclusion by enabling disadvantaged people to connect with employment opportunities, key services, social networks and goods through improving accessibility, availability, affordability and acceptability.	4 Reduce the risk of death, security or injury due to transport accidents. 5 Reduce social and economic costs of transport to public health, including air quality impacts. 6 Improve the health of individuals by encouraging and enabling more physically active travel. 7 Reduce vulnerability of transport networks to terrorist attack.	8 Manage transport-related noise in a way that is consistent with the emerging national noise strategy and other wider Government goals. 9 Minimise the impacts of transport on the natural environment, heritage and landscape and seek solutions that deliver long-term environmental benefits. 10 Improve the experience of end-to-end journeys for transport users.
Cities and regional networks	1 Deliver quantified reductions in greenhouse gas emissions within cities and regional networks, taking account of crossnetwork policy measures.	2 Reduce lost productive time including by maintaining or improving the reliability and predictability of journey times on key local routes for business, commuting and freight. 3 Improve the connectivity and access to labour markets of key business centres. 4 Support the delivery of housing, and in particular the PSA target of increasing supply to 240,000 net additional dwellings per annum by 2016 by facilitating the conditions for the housing to be delivered, while limiting increased congestion. 5 Ensure local transport networks are resistant and adaptable to shocks and impacts such as adverse weather, accidents, terrorist attacks and impacts of climate change.	6 Enhance social inclusion and the regeneration of deprived or remote areas by enabling disadvantaged people to connect with employment opportunities, key local services, social networks and goods through improving accessibility, availability, affordability and acceptability. 7 Contribute to the reduction in the gap between economic growth rates for different regions.	8 Reduce the risk of death or injury due to transport accidents. 9 Improve the health of individuals by encouraging and enabling more physically active travel. 10 Reduce the social and economic costs of transport to public health, including air quality impacts. 11 Reduce vulnerability of city and regional transport networks to terrorist attack. 12 Reduce crime, fear of crime and anti-social behaviour on city and regional transport networks.	13 Reduce the number of people and dwellings exposed to high levels of noise from road and rail networks consistent with implementation of Action Plans prepared under the Environmental Noise Directive. 14 Minimise the impacts of transport on the natural environment, heritage and landscape and seek solutions that deliver long-term environmental benefits. 15 Improve the quality of transport integration into streetscapes and the urban environment. 16 Improve the journey experience of transport users of urban, regional and local networks, including at the interfaces with national networks and international networks. 17 Enhance well-being and sense of community by creating more opportunities for social contact and better access to leisure activities and the natural environment.

Table A1.1 The challenges

	Tackle climate change	Support economic growth	Promote equality of opportunity	Contribute to better safety, security and health	Improve quality of life
National networks	1 Deliver quantified reductions in greenhouse gas emissions on national networks taking account of cross-network policy measures.	2 Reduce lost productive time on national transport networks, including by maintaining or improving the reliability and predictability of journey times for business and freight. 3 Ensure national transport networks are resistant and adaptable to shocks and impacts such as adverse weather, accidents, terrorist attacks and impacts of climate change.	4 Enhance social inclusion by ensuring national transport networks are accessible and acceptable for disadvantaged people. 5 Contribute to the reduction in the gap between economic growth rates for different regions.	6 Reduce the risk of death or injury due to transport accidents. 7 Reduce the social and economic costs of transport to public health, including air quality impacts. 8 Reduce vulnerability of transport networks to terrorist attack.	9 Reduce the number of people and dwellings exposed to high levels of noise from road and rail networks consistent with implementation of Action Plans prepared under the Environmental Noise Directive. 10 Minimise the impacts of transport on the natural environment, heritage and landscape and seek solutions which deliver long-term environmental benefits. 11 Improve the journey experience of transport users of national networks including at the interfaces with local networks and international networks. 12 Enhance wellbeing and sense of community by creating more opportunities for social contact and better access to leisure activities and the natural environment.
International networks	1 Ensure forecast growth in international aviation emissions is matched by equivalent transport reductions or offset by reductions in other sectors. 2 Increase the carbon efficiency of international shipping. Forecast growth to be offset by reductions in other sectors.	3 Reduce lost productive time on international networks by maintaining or improving efficiency, predictability and reliability of international end-to-end journeys. 4 Ensure passengers and freight have access to globally competitive levels of international connectivity. 5 Ensure international networks are resistant and adaptable to shocks and impacts such as adverse weather, accidents, terrorist attacks and impacts of climate change.	6 Improve accessibility for persons of reduced mobility on international networks. 7 Contribute to the reduction in the gap between economic growth rates for different regions.	8 Reduce the risk of death or injury due to transport accidents. 9 Reduce the social and economic costs of transport to public health, including air quality impacts. 10 Work internationally and nationally to reduce vulnerability of international networks to terrorist attack.	11 Limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise. 12 Minimise the impacts of transport on the natural environment, heritage and landscape and seek solutions which deliver long-term environmental benefits. 13 Improve the experience of end-to-end journeys for international transport users.

A1.4 Our five goals were confirmed in DaSTS and the accompanying consultation document, which also included our proposed challenges. These challenges have been developed in discussion with a wider range of stakeholders. In the logistics sector we have gathered views through a wide range of mechanisms, including:

- a major 'listening to industry' workshop for the logistics sector in February 2008;
- detailed one-to-one meetings with freight companies, freight users and representative groups;
- the establishment of a Logistics Sounding Board – a sample of industry representatives who will meet up to 4 times per year with the Director General for Safety, Service Delivery and Logistics and other senior officials;
- site visits and exchange of data and evidence; and
- ongoing work on understanding end-to-end freight journeys.

A1.5 This Annex summarises the main issues identified through this engagement and explains how they relate to the Department's proposed challenges – which are reproduced in Table A1.1.

A1.6 We have grouped the feedback we received from logistics sector stakeholders into a series of themes. Most themes are broadly related to one of the five *TaSTS* policy goals. However, we have identified some themes cut across more than one of the *TaSTS* policy goals.

A1.7 We welcome your views on the issues and themes identified in this Annex, including their relevance, completeness and relative priority.

Climate change

A1.8 Engagement with logistics stakeholders to date on climate change has focused on what they feel are the barriers to effective delivery against the goal of reducing climate change effects from freight activity.

> Theme 1: Incentivisation to achieve climate change, summarised as:
>
> **'Appropriate incentives (and/or disincentives) and market mechanisms need to be in place to influence the behaviour of companies and their customers to achieve desired climate change outcomes.'**

A1.9 Logistics stakeholders have expressed a number of concerns regarding the mechanisms available to influence behaviour to deliver climate change outcomes from the sector. Amongst the detailed issues and challenges they reported were:

- significant business risks associated in making some of the fundamental switches in supply chain configuration or business practices that could be required to achieved significant CO_2 reductions;
- major business risks from being an 'early adopter' of better CO_2 practices in an industry sector that competes intensely on price and quality of service;
- a significant gap between the additional costs of lower-carbon transport solutions (including modal shift and other investments) and the current cost of carbon to their businesses (even where the business itself had CO_2 reduction targets it wished to meet);
- a need (closely related to intensity of competition in the sector) for the customer (both the purchaser of freight transport and the ultimate purchaser of end products) to be incentivised to seek lower carbon transport solutions. The freight and service industries ultimately exist to serve their customers and, unless the customers' purchasing decisions are influenced (including financially) by the level of carbon used, then the scale of change freight and service providers can deliver will be constrained;
- an absence of market mechanisms to bring different businesses together to collaborate to deliver lower-carbon solutions. Many users expressed a willingness to consider rail rather than road but were concerned at the lack of consolidation opportunities (so that there was enough viable traffic to make rail a realistic alternative to road) other than at ports. There was also discussion of potential for collective purchasing of technology so that a reduced unit costs could be achieved; and
- a sense that carbon-beneficial action (such as modal shift) would benefit from being 'mainstreamed' into business practice, especially at board level, perhaps through greater use of price signals or the taxation system.

Theme 2: Technology to achieve climate change, summarised as:

'Appropriate technological options to contribute to CO_2 reduction should be available at an appropriate cost and with a clear business case for adoption, to companies and organisations.'

A1.10 Stakeholders felt strongly that technology would be part of the interventions package needed to address the threat of climate change and that there were currently significant cost, reliability and credibility barriers to its adoption. For example, small road haulage companies have told us that they receive regular mailshots marketing devices that purport to save fuel and thus CO_2, but have no way of knowing which work and which don't. This is not an issue for the larger fleets, who are able to undertake their own tests and research, but appears to be a market failure for smaller operators.

Theme 3: Measurement issues and consistency summarised as:

'There needs to be clear, consistent and accepted methods for calculating, and accountability for delivering, carbon reductions.'

A1.11 There was a strong consensus view at the Listening to Industry stakeholder event that there was no widely agreed or accepted method for determining the current carbon footprint of logistics activities (in their widest sense, including warehousing, use of vans etc). Many businesses said that they used a partial methodology and were unclear on the Government's preferred approach and how to reconcile their 'real data' with necessarily generic assumptions used for more formal carbon reporting. For example, a generic value for modal shift from road to rail does not reflect the real benefit for some products, underplaying the contribution made in some freight sectors and overplaying in others.

A1.12 There was also a strong view that much better evidence and research on the impact of potential emissions-reducing interventions was needed. Boards wanted to know what they will get for the investments they may make.

A1.13 Many stakeholders said that there was no real sense of accountability for emissions reduction, and different views were expressed as to where accountability for delivery should lie. Some stakeholders felt that it should rest with those in the supply chain closest to the end consumer (or even the consumer themselves), as the key to freight behaviour was ultimately the customers' demands.

A1.14 There was also a view that the Government could work with industry to ensure greater clarity about emissions reduction in the logistics industry as a whole (rather than for freight transport alone).

Each of these three themes on climate change contributed to cross-network challenge 1: 'Deliver quantified reductions in greenhouse gas emissions consistent with the Climate Change Act and EU targets.'

Competitiveness and productivity

A1.15 Effective freight services are vital to the UK economy.[30] The key drivers are ready access to markets and the reliability of journey times for commercial traffic across all modes. From our engagement with stakeholders, and analysis of the available evidence, we see four main themes have developed under the general headings;

- provision and use of capacity,
- network and gateway resilience,
- competitive and efficient industry; and
- international connectivity

30 The Government recognised the importance of enhancing the all-round capability of UK logistics operators to support overall UK business competitiveness in the joint BERR/DIUS Report *Supporting Innovation in Services* (2008).

Theme 4: Provision and use of capacity, summarised as:

'Networks and gateways need to provide appropriate capacity for the efficient operation of freight services, and freight operators and their customers need to make the most effective use of the available capacity in order to maximise journey reliability.'

A1.16 The most obvious examples of the importance of journey reliability are just-in-time deliveries – where an unexpected delay can have wide-ranging implications, from empty supermarket shelves or downtime on a building site to lost orders. But the importance of journey reliability also extends more widely across the freight industry. Planning schedules for all freight businesses already include significant time lost within baseline journey time assumptions. Any increase in these base journey times assumptions decreases vehicle and driver utilisation and imposes a direct cost on business and, ultimately, consumers. It is also likely to have knock-on impacts on other goals, such as climate change. Our analysis of end-to-end journeys suggests that not all delays are on the national networks where the Department has the most direct influence.

A1.17 The scale of the challenge for journey reliability is predicted to increase with forecast growth on our national networks, in urban areas and at key gateways

A1.18 Much of the feedback from stakeholders was modally specific. In the ports sector, stakeholders recognised that around 90 per cent of the UK's container traffic is carried in deep-sea vessels through deepwater ports. In their view, productivity gains alone will not be enough to increase the UK's deepwater capacity sufficiently to handle the projected increases in container traffic to 2030 and the creation of further infrastructure will be necessary to achieve this.

A1.19 Similarly, it was felt that ro-ro port capacity (particularly through Dover) could be full by 2018. Some stakeholders also expressed a view that port capacity needed to be matched by the capacity of associated infrastructure, including the key corridors to and from ports and secure waiting and lorry parking facilities close to ports. Some of the key infrastructure issues linked to ports highlighted by stakeholders were:

- future capacity on the East Coast Main Line, particularly for rail container traffic, especially between Peterborough and Doncaster, and for coal traffic from the Humber ports to the Aire Valley power stations;
- the potential for the A2/M2 to alleviate demand on the M20/A20 and the regular build up of HGV traffic on the A20; and
- the impacts of ports such as Bristol, Liverpool, Teesport and Tyne with ambitious growth plans becoming increasingly important in the face of capacity constraints elsewhere.

A1.20 Comments were also made about the use made by industry of port capacity and associated infrastructure. Many ports experience significant peaks and troughs – with most hauliers wanting their boxes picked up from the port from around 8am (this peak being driven by the requests of the hauliers' customer). A more effective spread of demand would impact on the capacity of the surrounding infrastructure, easing congestion and increasing end-to-end journey reliability.

A1.21 This was not just a ports issue; freight transporters saw this having a wider impact, particularly on the road network. Customer delivery time expectations (both directly by internal customer requirement and as a result of planning and other constraints) creates narrow peak of demand, with many customers demanding deliveries at similar times.

A1.22 These issues were not limited to national networks and larger international gateways. The management of urban road capacity appears to be becoming an increasing issue for industry, especially as the trend towards short/home deliveries (hub to consumer) increases. It was felt that there were fewer 'tried and tested' tools available for local network managers to use compared to managers of national networks and international gateways.

This theme contributed to:

- **national networks challenge 2:** 'Reduce lost productive time on national transport networks, including by maintaining or improving the reliability and predictability of journey times for business and freight';
- **international networks challenge 2:** 'Reduce lost productive time on international networks by maintaining or improving efficiency, predictability and reliability of international end-to-end journeys'; and
- **cities and regional networks challenge 2:** 'Reduce lost productive time including by maintaining or improving the reliability and predictability of journey times on key local routes for business, commuting and freight'.

Theme 5: Network and gateway resilience, summarised as:

'Networks and gateways used for the movement of goods and services will need to have sufficient contingency built in to adapt to climate change factors and should have appropriate resilience for effective handling of incidents and delays.'

A1.23 The above theme is primarily concerned with delivering baseline journey time predictability. Effective overall journey reliability also involves the resilience of networks and international gateways. There are three strands to resilience:

- minimising the risk of an adverse event occurring;
- reducing the risk of major disruption to the system if an adverse event does occur; and
- ensuring an adequate backup or alternative if one part of the system has to deal with an event.

A1.24 A significant issue raised under the first of these areas was having to respond to increasingly varied climate change factors, both in terms of providing for contingencies in existing networks and designing the factors in to new projects. However, stakeholders have to date primarily focussed on the second and third areas.

A1.25 They suggested that the level of response to major incidents/works on the national networks appeared to vary between modes. There were concerns at the impact and delays (unplanned costs) caused by incidents on the road network. However, there was general agreement that the situation was more effective than for rail. This is in part due to the widespread availability of alternative routes in many circumstances. In this respect, the rail network was seen as more inflexible than roads, with lack of appropriate diversionary routes (particularly those 'gauge cleared' for 9'6" containers) and the perception by some that freight is a marginal user of the network.

A1.26 They also saw a need for appropriate capacity at international gateways to handle short term disruptions to facilities.

This theme contributed to:

- **international networks challenge 5:** 'Ensure international networks are resistant and adaptable to shocks and impacts such as adverse weather, accidents, terrorist attacks and impacts of climate change';
- **cities and regions challenge 5:** 'Ensure local transport networks are resistant and adaptable to shocks and impacts such as adverse weather, accidents, terrorist attacks and impacts of climate change'; and
- **national networks challenge 3:** 'Ensure national transport networks are resistant and adaptable to shocks and impacts such as adverse weather, accidents, terrorist attacks and impacts of climate change'.

Theme 6: Optimisation and efficiency of operations and investment, summarised as:

'The investment (private and public) needed to support strategic development of freight infrastructure.'

A1.27 Optimisation, particularly in terms of costs, is a key commercial concern to all operators and freight users. This optimisation contributes to GDP through overall cost savings for business and consumers. The issues in this area reflect both immediate and longer term issues. There was detailed discussion of a perceived need for greater priority of transport and freight requirements in planning decisions, both regional and local. Concern has also been raised by a number of stakeholders about inconsistency of treatment in planning terms. This had the following main elements:

- at the local level, giving appropriate weight to freight and operational factors alongside local environmental and community issues, and with a view to the wider impacts of decisions. Particular issues here included the impacts on industry and communities of night time delivery curfews

and any relaxation of them. The attitude of a local authority to delivery curfews or lorry parking provision can have impacts on the ability of an entire supply chain to deliver at the most effective and efficient time; and

- at regional and national level to consider broader impact of planning policy on development and the consideration of delivery and transport. This would include the issue that many strategic freight investment opportunities or facilities are lost because of higher land values for alternative uses, e.g. housing. Examples of this include the recent closure of lorry parks to allow the land to be reused as brownfield sites for housing purposes. Stakeholders see the Government's role here as addressing market failures and avoiding the creation of new ones.

A1.28 Following on from this is the consideration of wider incentives to attract investment in the freight market. There are a number of views that the current investment climate would benefit from greater certainty and clarity from government (at all levels). Stakeholders also expressed concerns that planning timescales, especially for larger projects, remain protracted. It is perceived that the process for infrastructure change is not always able to keep pace with the faster changes in the supply chain. More effective and co-ordinated planning is seen as being required to ensure the capability to handle goods is optimised.

This theme is reflected in cross-network challenge 2: 'Ensure a competitive transport industry by simplifying and improving regulation to benefit transport users and providers and maximising the value for money from transport spending.'

Theme 7: International connectivity, summarised as:

'Freight users need to have access to globally competitive levels of international connectivity.'

A1.29 Freight stakeholders recognised the importance of international connectivity to the continued successes of their businesses – almost regardless of sector. This related to opportunities for the import and export of retail goods, skilled staff and key parts, as well as manufactured products.

This theme was similar to comments from other business users of transport networks and is reflected in international networks challenge 4: 'Ensure passengers and freight have access to globally competitive levels of international connectivity.'

Equality of opportunity

A1.30 Freight and logistics activities are particularly diverse. The industries within the sector provide opportunities for people with a wide range of skill sets. The sector employs both the unskilled and highly skilled in many roles. It also employs people nationwide in a wide range of locations that are relevant to the freight activity being undertaken. As a major employment sector, we can expect the industry to make a substantive contribution to the broadening of opportunities throughout the nation.

> Theme 8: Skills availability, summarised as:
>
> **'There needs to be a clear understanding of the skills and numbers needed to support a competitive and effective industry, both now and for the future.'**

A1.31 For the industry stakeholders that have been consulted, dealing with skills availability and the training of both current and potential staff is perceived as a significant issue. They see considerable scope for the logistics sector, as an employer, to play a part in contributing to the Department's goal, but they also indicated that the support they can provide is being impacted by a number of differing factors.

A1.32 There are concerns for a consistent comparison of standards and regulations internationally to ensure a level playing field for both UK operators abroad and international operators in the UK.

A1.33 In line with many other sectors, freight and logistics are experiencing changing workforce needs to meet changing demands and expectations – this includes increasing part time, temporary and shift working as well as a lack of technical skill in middle management roles.

A1.34 The use of agency staff to meet fluctuating demand leads to a need for consistent application of standards for agency staff and, again, consistent application of regulations, including for drivers who work internationally outside of their home country on a temporary basis.

> Theme 9: Positive image of the Industry, summarised as:
>
> **'Need to promote a positive image of the industry to the public in an effort to broaden the appeal of the sector to a wider, more diverse range of potential recruits.'**

A1.35 For industry, image is both a present and future concern when considering recruitment and skills. In many sectors current workforces are male-dominated, and in some areas average ages are also high. We have come across a range of opinion as to whether labour availability itself is a current issue or not. However, there has been a consistent message that the sector is less effective than others in attracting higher calibre recruits.

A1.36 Industry also believes that the social and economic contribution made by freight and logistics activity is not fully appreciated by society, and that the impact of this poor image results in lost opportunities for the industry. They believe this image problem also has an impact on the consideration of planning and operational issues.

A1.37 There is a challenge to ensure the continued availability of training and education schemes, both private and public, that will deliver the right numbers and levels of skills needed, which bear comparison with international standards and meet the needs of people and industry. This training needs to cover a wide range of capabilities including operational, support and management roles.

Both of the themes under this goal can contribute to cross-network challenge 3: 'Enhance social inclusion by enabling disadvantaged people to connect with employment opportunities, key services, social networks and goods through improving accessibility, availability, affordability and acceptability'. **However, the Department intends to take these issues forward to a shorter timescale than the process for identifying priorities beyond 2014.**

Quality of life

A1.38 Quality life is about how people feel about transport, and it therefore presents both risks stemming from the negative impacts on our well being as well as opportunities to enhance our lives. This includes issues such as:

- how transport can enhance people's lives;
- how transport impacts on people's lives; and
- people's experience of using transport networks (whether as travellers or employees).

Theme 10: Impact of freight on quality of life, summarised as:

'An appropriate and fair treatment of the impacts of freight and logistics operations on society, having regard to both the economic and environmental factors and with proper appreciation of both the benefits and issues.'

A1.39 In respect of the industry stakeholders, there is a broadly held opinion, particularly amongst employees in the sector, that society does not value what they do not see, and does not like what it does see in relation to freight. They believe that freight matters only become an issue when things are going wrong. Some stakeholders said that this made them feel that their role and contribution to society was not as highly valued as it could or should be.

A1.40 Two specific areas that came through in discussions with stakeholders (that are not dealt with elsewhere in this document) related to access and noise issues. Access, specifically in relation to the competition for parking space in urban areas, was raised by industry as a key concern.

A1.41 In discussions, the Department identified an emerging consensus amongst both industry stakeholders and informed commentators that there is potential, in some areas, for 'win–win' solutions. The Noise Abatement Society, for instance, is promoting the wider benefits of increased 'low noise' deliveries at night in recognition of the wider noise reduction this offers to the population as a whole through the take up of quieter deliveries.

A1.42 Another example raised was the potential to give greater priority to freight needs in planning decisions. For example, if consideration was given – for larger developments – to the impacts of delivery needs, and these needs were designed into the environment (for instance by designing in delivery bays) then freight impacts could be considerably reduced.

A1.43 There are also internal trade offs between objectives. Local restrictions on freight have a wider operational impact on supply chains. These can lead to fragmentation of operations – increasing freight miles travelled, noise, driver frustration and pollution. Similarly, clustering of freight businesses can lead to increased local resistance, contrary to the economic benefits and overall reduction in freight impacts that it would be likely to generate.

A1.44 A further factor is the fact that society's expectations in dealing with one issue can lead to more freight moving at peak times – increasing congestion and cost – and heightening society's negative perception of freight activities.

A1.45 Achieving a satisfactory outcome will involve communications and effective and responsible actions by industry, with appropriate support from local and central government.

This theme particularly contributes to cross-network challenges 8 and 9:

- **'**Manage transport related noise in a way that is consistent with the emerging national noise strategy and other wider Government goals'; and
- 'Minimise the impacts of transport on the natural environment, heritage and landscape and seek solutions which deliver long-term environmental benefits.'

Safety, security and health

A1.46 Transport is an important factor in public health and safety. Access to transport and travel behaviour can be positively health promoting – through enabling access to employment, education and services, and by offering opportunities for exercise and recreation. However, delivery of transport services and travel behaviour can also be health damaging, not just directly through accidents, but by generating pollution, noise, stress and community severance.

> Theme 11: Safeguarding employees' health, summarised as:
>
> **'The impact of freight services on the health of logistics employees and others are maintained or improved in relative terms.'**

A1.47 Freight has a key role to play in many of these areas. Whilst no multi-modal safety figures for freight transport are available, the risks of a freight vehicle being involved in an accident are comparatively low. In 2007, there were 435 fatalities arising from accidents that involved a HGV and 1,574 people seriously injured casualties. However, it is not known how many accidents that resulted in death or serious injury HGVs or the drivers of HGVs caused. This compares against an overall killed or seriously injured (KSI) figure for Great Britain in 2007 of 30,720. Therefore, approximately 7 per cent of all KSI casualties occur in accidents involving HGVs.

A1.48 This also covers the wider impacts of the sector on the health of its employees and others, for example through noise or local air pollution. HGV operators are required by law to have an operating centre, and these are often in local neighbourhoods. Traffic Commissioners can and do set environmental conditions (for example, to limit the hours of operation or number of vehicles that can be kept at a particular operating centre) to minimise the negative impact of operating centres on the local community.

A1.49 As part of the Department's informal consultation with stakeholders, there has been a strong view that we need to continue to seek to improve road safety, noise and local air pollution emissions from freight. HGVs in particular will need to play their part in this. This theme reflects these views.

It contributes to cross-network challenges 4 and 5:

- 'Reduce the risk of death or injury due to transport accidents'; and
- 'Reduce social and economic costs of transport to public health, including air quality impacts.'

Theme 12: Appropriate regulation, summarised as:

'There is wide and genuine consultation on introduction of new health and safety measures and that they are comparable with, or at least do not introduce competitive disadvantage when compared to, best practice and standards abroad.'

A1.50 Feedback from stakeholders in the logistics sector showed broad based support for an appropriate level of health and safety rules covering freight and logistics operations across all modes. They indicated that health and safety approaches are supported if they are seen to be outcome driven, and not simply for the sake of compliance. Caution was expressed at the potential for excessive regulation – which can lead to a 'risk averse' attitude and one that disproportionately increases operating costs. Such cost pressures are certainly one of the main impacts on priorities in the operating environment, although businesses indicated that their first priority was to operate a safe and compliant service. Stakeholders were keen to see the UK adopt an approach similar to other countries in Europe – especially where operators from those countries had the potential to undertake work within the UK.

A1.51 A further issue raised by stakeholders is that HGV drivers driving in increased levels of congestion are perceived to be exposed to higher risks of accidents and are likely to need additional training, potentially including the development of new skills.

This is reflected in cross-network challenge 2: 'Ensure a competitive transport industry by simplifying and improving regulation to benefit transport users and providers and maximising the value for money from transport spending.'

Cross-cutting themes

A1.52 A number of themes raised cut across the different goals. Because of this, they do not link directly to a small number of the Department's challenges in the same way as previous themes. Tackling these themes will, though clearly contribute to the achievement of the Department's goals and, where relevant, measures related to them will be considered as part of the process of identifying the Department's priorities beyond 2014.

Theme 13: Attractiveness of modal shift – summarised as:

'There is a perceived need for opportunities for modal shift that are both competitive and available for those wishing to pursue them.'

A1.53 In discussion with stakeholders in the logistics sector, there existed a widespread interest in wanting to consider the benefits of modal shift, especially by predominantly road based operators wanting to diversify on to rail networks. The issue of mode shift from road to water freight has also been raised.

A1.54 Mode shift has the potential to deliver improved outcomes for road journey reliability (and so competitiveness and productivity), climate change, and safety, security and health goals. However, stakeholders report a number of barriers to taking this further, including:

- lack of commercial incentives, at a time when road transport is still seen as having a price and flexibility advantage over rail freight;
- lack of intermodal connectivity to major centres, restricting the opportunities to consider modal shift on a broad scale;
- compatibility/consistency of international standards is a particular issue for companies importing and exporting. The costs/technology involved add a high degree of both complexity and cost; and
- understanding how to make a rail or water service work, who to approach and what Government support is available.

Theme 14: Flexible working, summarised as:

'There is a need to ensure that the options for and potential costs, benefits and mitigations of, changing working practices (such as night time deliveries) are understood and are considered alongside other (e.g. local) concerns.'

A1.55 A number of companies also expressed concerns that they are being restricted in the scale of their operations, particularly 24/7 working where needed. It is felt that there is a clear trade-off between efficiency, wider benefits (for safety, journey reliability and so carbon reduction) and the local impact on society which was not always fully covered at present.

A1.56 Some industry participants were clear that, where 24/7 working creates added costs, these can be assumed to be borne by the transport operation and can include increased staff costs involved in mitigation.

A1.57 There is a perceived conflict between delivery curfews and restrictions and the provision of sufficient opportunity for industry to invest in equipment and practice that could make night time deliveries more acceptable.

Theme 15: Impact of non-UK vehicles, summarised as:

'To ensure that the expected increase in non-UK HGVs does not have a negative impact on the achievement of DfT goals – particularly for safety, productivity and competitiveness and carbon reduction.'

A1.58 Concern has been expressed that there is not a level playing field in terms of vehicle and traffic regulations compliance between UK and non-UK registered operators working in the UK. For example, the drivers of non-GB HGVs are up to three times more likely to be committing drivers' hours offences than drivers of GB HGVs. This has potential implications for road safety.

A1.59 The number of non-UK HGVs is growing, and there is evidence from enforcement checks that they have a poor compliance record compared to UK vehicles. This has impacts on road safety, security, productivity and competitiveness, carbon and quality of life. With the lifting of cabotage restrictions – from May 2009 – for the 2004 accession states, and increasing imports, the trend in numbers of non-UK vehicles may to continue to rise, but macro-economic factors may also have an impact.

> Theme 16: The influence of the van sector, summarised as:
>
> **'To ensure that there is a much greater understanding of the role of vans in achievement (or otherwise) of Departmental goals and that this is factored into decisions on option selection.'**

A1.60 There is a comparative lack of understanding – in both industry and government – about trends in the van sector and their potential impact on the achievement of our goals. Stakeholders indicated that trends in internet shopping and home delivery may be contributing to this.

A1.61 The point has also been raised the van sector is more than just the simple freight and logistics activities: it includes all forms of commercial servicing of people and businesses. The stakeholders also commented that it is an artificial distinction in the urban environment to consider a plumber's van (delivering a plumber and the plumber's tools) to be significantly different from a supermarket van making a home delivery.

Your views

Whilst the themes in this annex have been developed in discussion with freight and logistics stakeholders, we would welcome your views on them. In particular please let us know:

1. Are there any themes in this annex that you disagree with? If so, which ones and why?
2. Are there other themes relevant to any or all of the goals that you think the Department should have included? If so, what are they and why?
3. Which of the themes identified under each goal would be your top priority and why?

Please send comments to:

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Annex B
Initial study of freight movements on the Rugby, Birmingham and Manchester transport corridor

Introduction

B1.1 To help us improve our level of understanding of freight corridors and the future challenges to be addressed, we have carried out a study of freight movements on the corridor running between Rugby, Birmingham and Manchester. The study brings together data from Network Rail, Highways Agency and the central Department for Transport, as well as from modelled analysis where necessary – all data presented in this report are from the sources listed and processed using GBFM version 5 under contract.

B1.2 The corridor studied forms part of the London to West Midlands, North Wales, North West and Scotland Strategic National Corridor, as set out in our proposals for the Department's strategic planning process in *Delivering a Sustainable Transport System* (DaSTS).

B1.3 This is our initial investigation into freight corridor analysis and as such it is very much work in progress. In particular, we recognise that much of the analysis remains more modally based than we would wish. We would welcome your comments on our findings. We also intend to validate the results of our study with industry representatives at a Listening to Industry event in the New Year.

The Rugby, Birmingham and Manchester freight corridor

B1.4 We chose to study the Rugby, Birmingham and Manchester corridor, as it is a key artery for freight, serving a high proportion of our national distribution centres, several major urban areas and a number of key manufacturing hubs. As a result, it carries some of the highest number of freight movements on our road and rail networks. The corridor has good freight transport links in the form of the M6 and West Coast Main Line (WCML) railway. Figure B1.1 shows the London to West Midlands, North Wales, North West and Scotland Strategic National Corridor, focusing on the Rugby, Birmingham and Manchester section.

Figure B1.1 London to West Midlands, North Wales, North West and Scotland Strategic National Corridor, focused on the Rugby, Birmingham and Manchester section

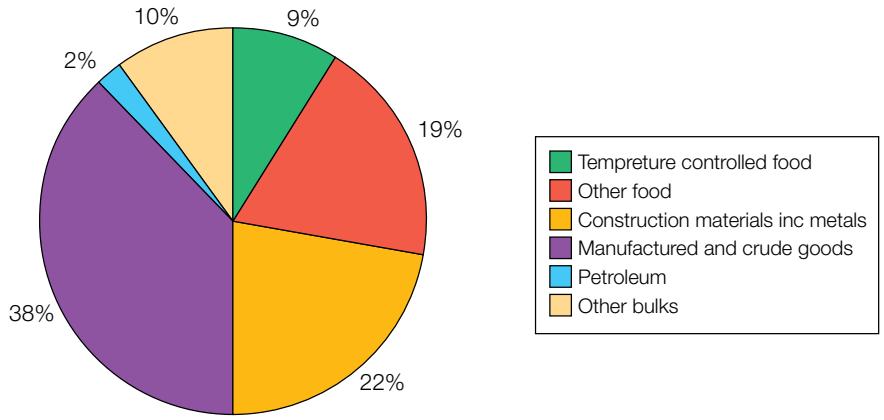
Sources of freight demand

B1.5 The available transport links and types of local industry influence the nature and mode of freight flows along the corridor. Since the 1960s, the British economy has gradually changed from one largely based around heavy industries to one dominated by the service sectors. This has affected the UK's transport requirements, driving:

- a gradual decline in heavy bulk and semi-bulk material movements;
- a steady growth in demand for finished consumer goods. Compared with bulk commodities, movements of these goods are generally in smaller but more frequent consignments; and
- an increase in imported consumer goods. This increase has generally been at the expense of domestically produced goods, although in some cases imports now ensure year-round supplies of seasonal goods such as fresh produce. Imports of maritime containers often move by rail, particularly on longer journeys, although road transport dominates short and medium distance flows as well as imports from mainland Europe. In addition, a further impact of this trend has been a growing demand for warehousing at strategic locations along the transport network, as previously domestically produced goods were stored at factory warehouses prior to delivery.

B1.6 Retail forms a significant part of the economy around the corridor studied. Birmingham, Manchester, Liverpool and other major conurbations are located along the corridor, and are major destinations for finished consumer goods (Figure B1.2). The West Midlands is also a key consumer and producer of metals. Significant bulk liquid production facilities are located in the North West, and to a lesser extent the Midlands. Over the past decade, the construction sector has been particularly active in these regions.

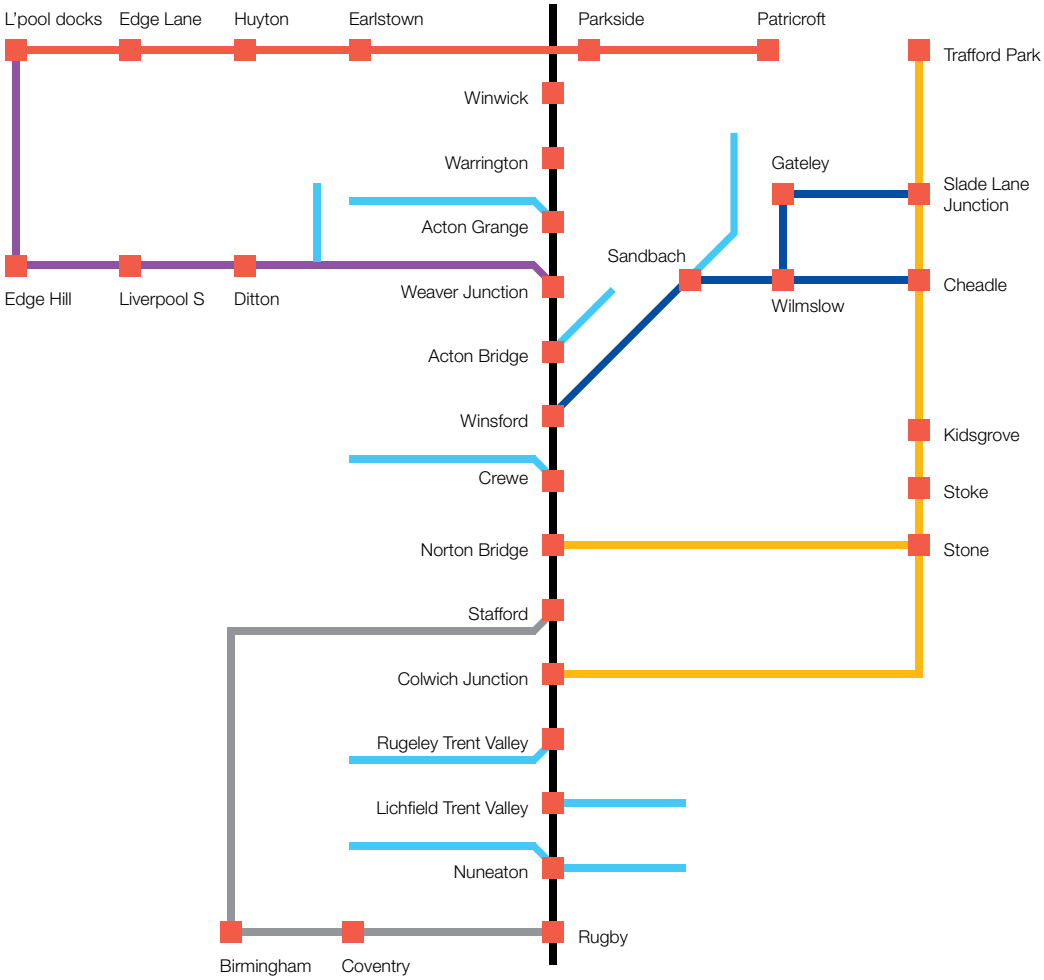
Figure B1.2 HGV movements along the M6 by cargo type, 2007



B1.7 A significant proportion of imported container traffic is distributed to regional and national distribution centres located in the East Midlands, termed the 'Golden Triangle' because of its good connections to the road network, including the M1 and the M6. Around three-quarters of the country's population can be served by road in a one-day return trip from locations within the Golden Triangle.

B1.8 Our freight study focused on the WCML between Rugby and Winwick Junction near Warrington via the Trent Valley, Stafford and Crewe. The study also encompassed other lines that link the WCML to places such as Liverpool and Manchester. Figure B1.3 illustrates the Trent Valley portion of the WCML and key interconnecting lines running between Rugby and Winnick.

Figure B1.3 Trent Valley portion of the WCML and key rail connections



B1.9 Our analysis of the road corridor focused on the M6 between its M1/A14 junction near Rugby and junction 21a near Warrington, as detailed in Figure B1.4.

Figure B1.4 M6 junction links

		Northbound			
Liverpool	M62	J21a		M62	Manchester
Warrington	A57	J21		A57	Warrington
	A50	J20		A50	
Chester	M56	J20a		M56	Chester
Knutsford	A556	J19		A556	Knutsford
	A54	J18		A54	
Sandbach & Crewe	A534	J17		A534	Sandbach & Crewe
	A500	J16		A500	
Stoke	A500 & A519	J15		A500 & A519	Stoke
Stafford	A513 & A34	J14		A513 & A34	Stafford
Stafford	A449	J13		A449	Stafford
	A5	J12		A5	
	A460 & A462	J11		A460 & A462	
Telford	M54	J10a		M54	Telford
Wolverhapton	A454	J10		A454	Walsall
	A461	J9		A461	
	M5	J8		M5	
	A34	J7		A34	
Birmingham	A38(M)	J6		A38(M)	Erdington
	A452	J5		A452	
Solihull	M42	J4a		M42	Solihull
	A446 & M42	J4		A446 & M42	
	M6 Toll	J3a		M6 Toll	
	A444	J3		A444	
Coventry	M69, A4600 & A46	J2		M69, A4600 & A46	Coventry
	A426	J1		A426	
	M1/A14	M6/M1		M1/A14	
			Southbound		

B1.10 This work looks at 2007 freight movements that are modelled where necessary. The results are provisional at this stage, and we are publishing them so that they can be refined and developed further through feedback from freight users of the corridor.

Rail links

B1.11 The WCML is the primary rail route for containerised movement of freight from the ports of Felixstowe and Southampton into the Midlands and North West England, which account for 60 per cent of the container freight coming into the UK. Pending completion of the Transport Innovation Fund rail sponsored gauge clearance programme, it is the only route with access to the Golden Triangle of warehouse distribution centres in the Midlands that is currently fully gauge cleared for carriage of 'high cube' maritime containers on standard rail wagons.

B1.12 All freight trains share the WCML with large numbers of their passenger counterparts. During 2007, EWS, Freightliner and DRS carried various types of freight along the WCML, including vehicles, coal, ballast, china clay and containers.

B1.13 The average number of container and other general freight trains that travel along the WCML each working day (Monday to Friday, excluding bank holidays) is shown in Figure B1.5. Figure B1.3 maps out the WCML and key interconnecting lines. The black lines in Figure B1.5 show rail junctions; the red arrows highlight the fact that counts shown are for two-way traffic.

B1.14 On average, 63 freight trains run along each section of track each working day. Figure B1.5 shows that the section of track between Stafford and Norton Bridge, close to where a number of different junctions link rail lines together, carried 86 freight trains on average each working day during 2007 – the highest of any portion of the WCML studied. Of these 86 trains, 54 were container services. If these 54 trains were carrying an average load of 27 containers, they would be responsible for transporting 1,458 containers, all of which would be road hauled if the rail option was not available; the remaining 32 trains carried bulk, semi bulk and other cargos.

B1.15 The section of track between Nuneaton and Lichfield Trent Valley stations, as well as one between Weaver Junction and Acton Grange stations, carried fewest freight trains a day at 51. As 60 freight movements are recorded between Rugby and Nuneaton stations, we can deduce that 9 trains daily continue their journey off the WCML at Nuneaton.

B1.16 Container train movements are substantially higher south of Crewe station. Crewe is a major junction and marshalling point for freight on the WCML, and around 23 container trains head towards Sandbach and onwards towards Manchester. Trains for Liverpool diverge at Weaver Junction north of Crewe, with other services continuing towards Winnick for Scotland. Other, smaller, flows of around three daily trains head towards these northerly locations from junctions on the WCML near Colwich and Norton Bridge stations.

Figure B1.5 Daily freight trains on the West Coast Main Line, 2007

	Link		Mean Daily Trains (2-way flows) Container Trains	Other Trains	Total
WCML	Warrington-Winwck Jct		21	39	60
	Weaver Jct-Acton Gr		21	30	51
	Acton Br-Weaver Jct		38	37	75
	Crewe-Winsford		38	32	70
	Norton Br-Crewe		53	31	84
	Stafford-Norton Br		54	32	86
	Colwich-Stafford		40	12	52
	Rugeley-Colwich		42	14	55
	Lichfield TV-Rugeley		42	13	55
	Nuneaton-Lichfield TV		41	9	51
	Rugby-Nuneaton		47	13	60
WCML Liverpool Branch	Liverpool S-Edge Hill		2	6	7
	Weaver-Ditton		17	7	24
Chat Moss – Liverpool	Edge Ln-Spellow Tun		2	16	17
	Earlstown-Huyton		0	11	12
Chat Moss – Man	Parkside-Patricroft		1	8	8
Crewe – Stockport	Gatley-Slade Ln Jct		12	1	13
	Sandbach-Wilmslow		23	4	27
	Crewe-Sandbach		23	5	28
North Staffs Line	Slade Ln Jct-Trafford Pk		26	3	29
	Cheadle-Slade Ln Jct		13	2	14
	Kidsgrove-Cheadle		3	1	4
	Stoke-Kidsgrove		3	3	7
	Stone-Stoke		3	3	6
	Colwich-Stone		2	1	3
	Norton Br-Stone		1	1	3

B1.17 In March 2007, Network Rail published its freight Route Utilisation Strategy, which detailed its plans to upgrade the rail freight network to 2015. It recommends a number of improvements that will affect the WCML, including:

- W10 gauge clearance (allows carriage of 9ft 6in high cube boxes on conventional wagons) between Peterborough and Nuneaton and some initial additional capacity from Felixstowe to Nuneaton, allowing five additional paths from Felixstowe to be routed cross-country away from the southern section of the WCML;
- W10 gauge clearance between Southampton and Nuneaton.

B1.18 In addition, the route along the Trent Valley (between Tamworth and Armitage Junction near Rugeley) has already been four-tracked as part of the WCML Route Modernisation project.

Road links

B1.19 Junctions that showed the greatest number of HGV movements were concentrated in the northern section of the M6 (Figure B1.6). J21–21a carried around 26,500 HGVs daily. However, the busiest section of the M6 in terms of freight was just outside Manchester between J20-21, which carried 27,000 HGVs.

Figure B1.6 The M6, J20–J21a

Figure B1.7 Daily M6 HGV movements by junction, 2007

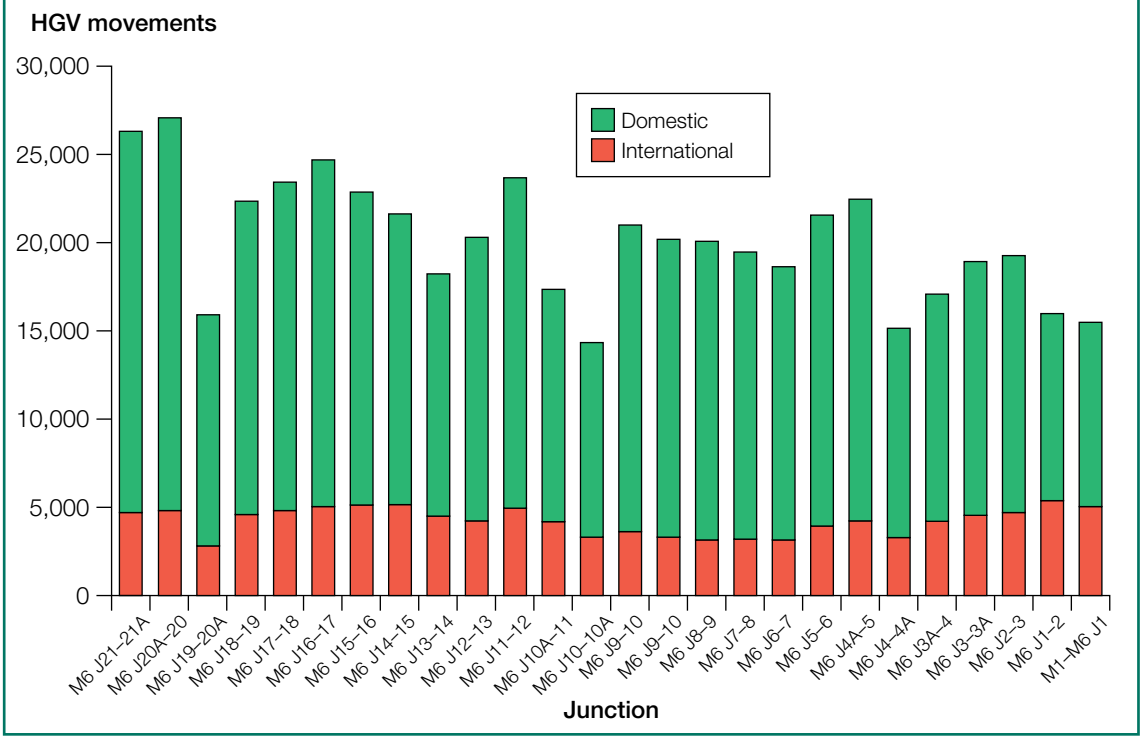


Figure B1.8 The M6, J1–J3

B1.20 Around 80 per cent of all HGV movements on the M6 originated domestically, with the remaining traffic made up of load-on-load off (container), roll on roll off, bulk and other traffic on international journeys. Figure B1.7 shows the total number of HGV movements between junctions on the M6 and splits them between domestic and international journeys.

B1.21 There is a significant amount of international ro-ro traffic on the M6, accounting for between 1,500 and 4,500 HGV movements per link each day. These figures reflect flows of freight from mainland Europe into the many regional distribution centres located in the West Midlands and North West.

B1.22 J1–J2 of the M6 (Figure B1.8) carried nearly 5,500 international HGV movements each day, around one-third of the 16,000 HGV movements on that section daily. This was the highest number in terms of actual international movements, and as a percentage of HGV movements, on any section of the M6.

B1.23 Figures B1.9–B1.11 show the relative volume of HGVs compared to other traffic along this stretch of the M6.

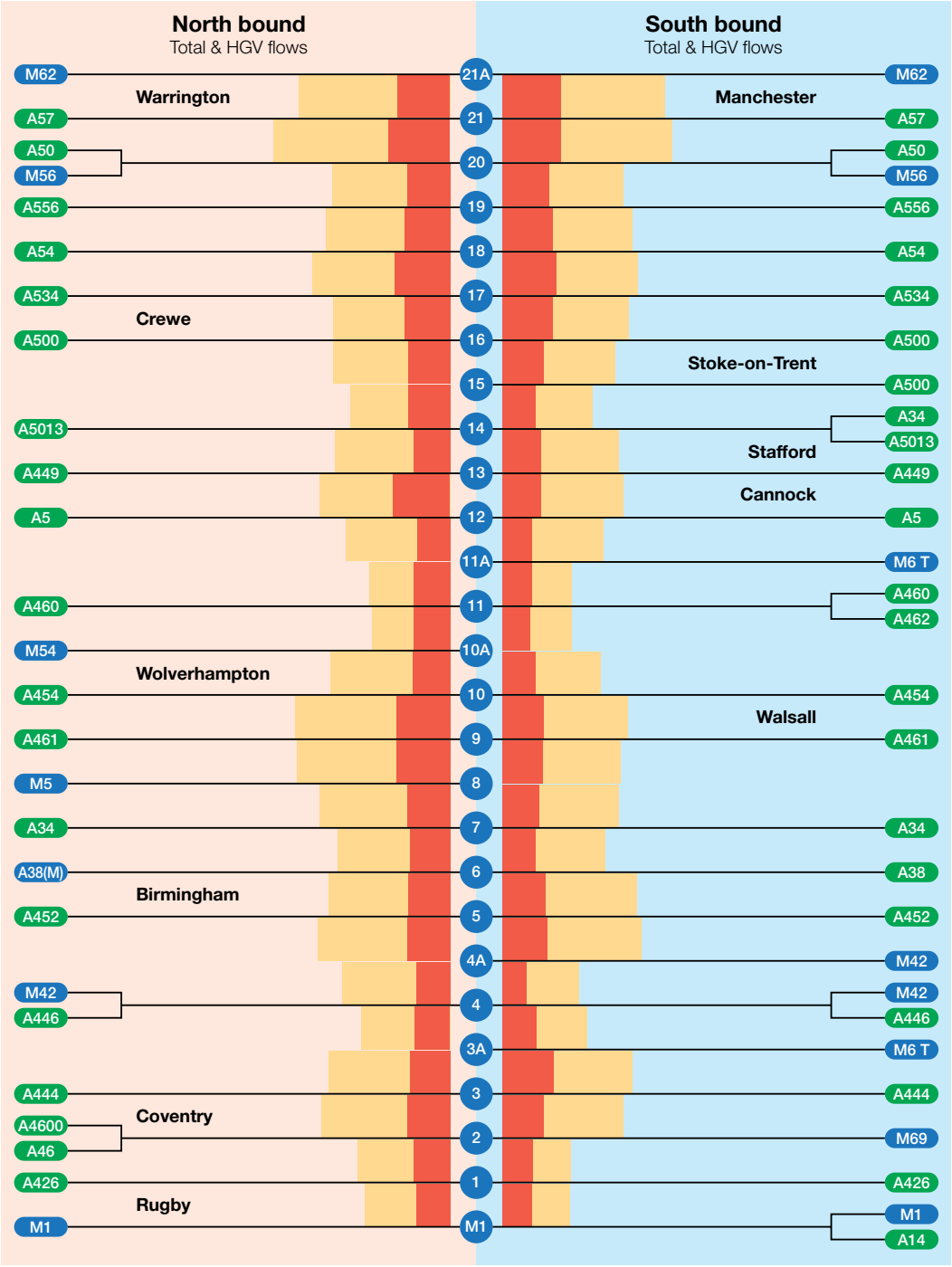
B1.24 HGV volumes are shown in red and other traffic in yellow. They clearly illustrate a low level of overall HGV traffic. However, because of their comparative size as well as speed and acceleration, their presence contributes more significantly to congestion than other road users do. When comparing traffic volumes, it is standard modelling practice to assume that, on average, an articulated goods vehicle is equivalent to 2.9 cars and a rigid goods vehicle is equivalent to 1.9 cars. Local conditions such as lane width, gradient and junction density can lead to variations in these factors which have not been considered in this analysis.

B1.25 Figure B1.9 shows the morning peak traffic flows, while Figure B1.11 shows the evening peak travel time. Comparing the two shows that total traffic is similar at both peaks. However, HGV volumes are consistently heavier in the morning peak.

B1.26 Figures B1.9–B1.11 also enable us to compare the volume of HGVs travelling on each consecutive link. There are some areas showing a significant change in the volume of HGVs from one link to the next, which will require further analysis to understand how HGVs use these parts of the network and why. It is particularly interesting to see that some links behave differently at different times of day.

B1.27 Such observations about HGV density on corridors may provide valuable information for decisions on where an intervention may benefit the freight industry to best effect.

Figure B1.9 Average morning peak (7am–10am) flows in 2007 M6 Corridor



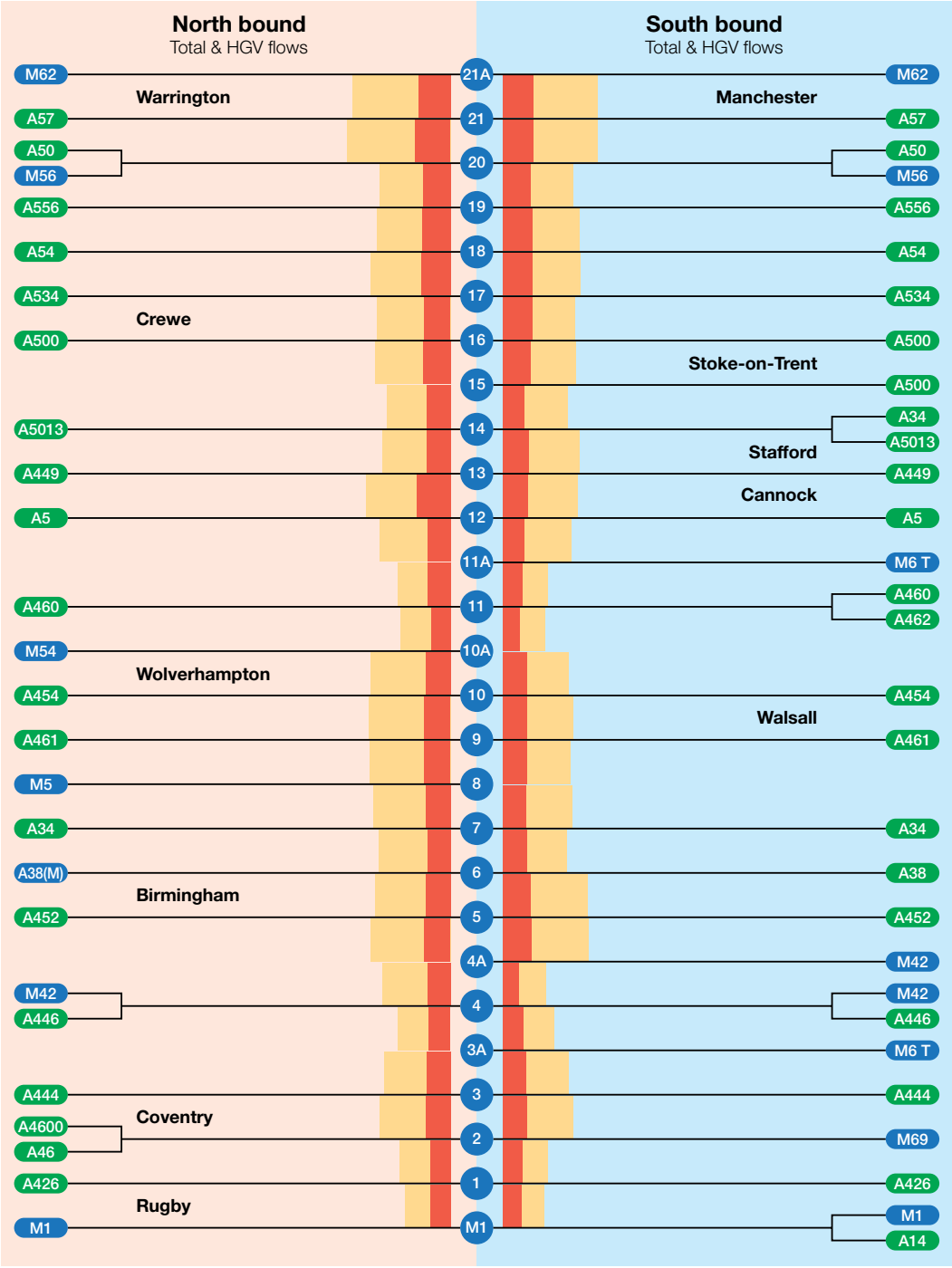
Data sources
Total flows: DfT and HATRIS traffic counts from the National Transport Model
HGV flows: DfT classified traffic counts

All figures in passenger car units, pcu

HGV flow All traffic

Notes:
[1] The link between junctions 20A and 20 has been removed due to its short length and uncertain data.
[2] Link 5-6 shows derived flow data based on total flow in both directions and upstream and downstream traffic.
[3] Road exits are represented geographically and not per north/south-bound carriageways.

Figure B1.10 Average all day flows in 2007 M6 Corridor



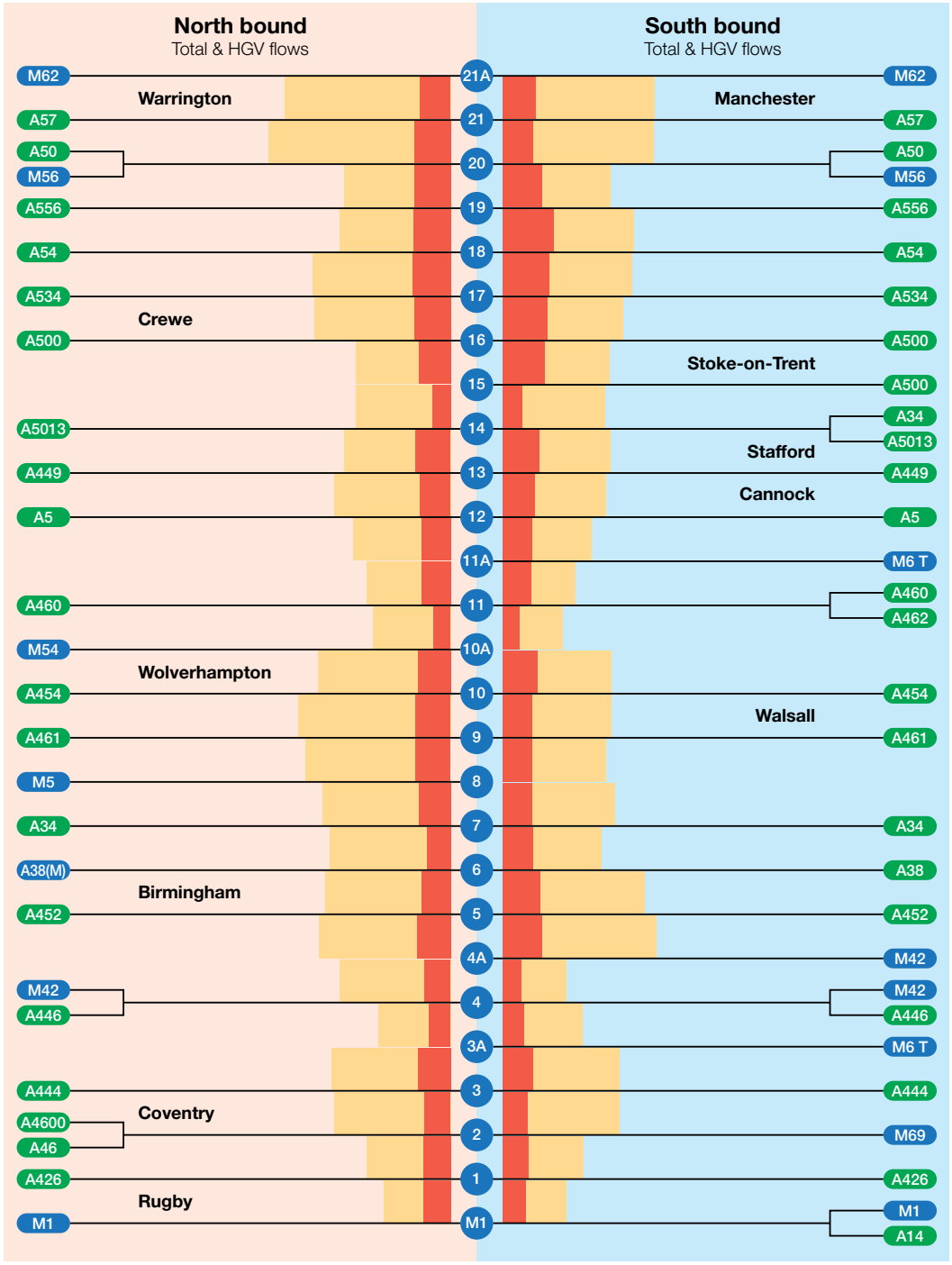
Data sources
Total flows: DfT and HATRIS traffic counts from the National Transport Model
HGV flows: DfT classified traffic counts

All figures in passenger car units, pcu

HGV flow All traffic

Notes:
[1] The link between junctions 20A and 20 has been removed due to its short length and uncertain data.
[2] Link 5-6 shows derived flow data based on total flow in both directions and upstream and downstream traffic.
[3] Road exits are represented geographically and not per north/south-bound carriageways.

Figure B1.11 Average evening peak (4pm–7pm) flows in 2007 M6 Corridor



Data sources
Total flows: DfT and HATRIS traffic counts from the National Transport Model
HGV flows: DfT classified traffic counts

All figures in passenger car units, pcu

HGV flow All traffic

Notes:
[1] The link between junctions 20A and 20 has been removed due to its short length and uncertain data.
[2] Link 5-6 shows derived flow data based on total flow in both directions and upstream and downstream traffic.
[3] Road exits are represented geographically and not per north/south-bound carriageways.

B1.28 Figure B1.12 shows that many HGV journeys appear relatively short in nature, with 14 per cent of all journeys under 50 km; a further 13 per cent are less than 100 km. Around 50 per cent of all HGV journeys are under 200 km.

Figure B1.12 HGV journeys by length of haul with M6 link

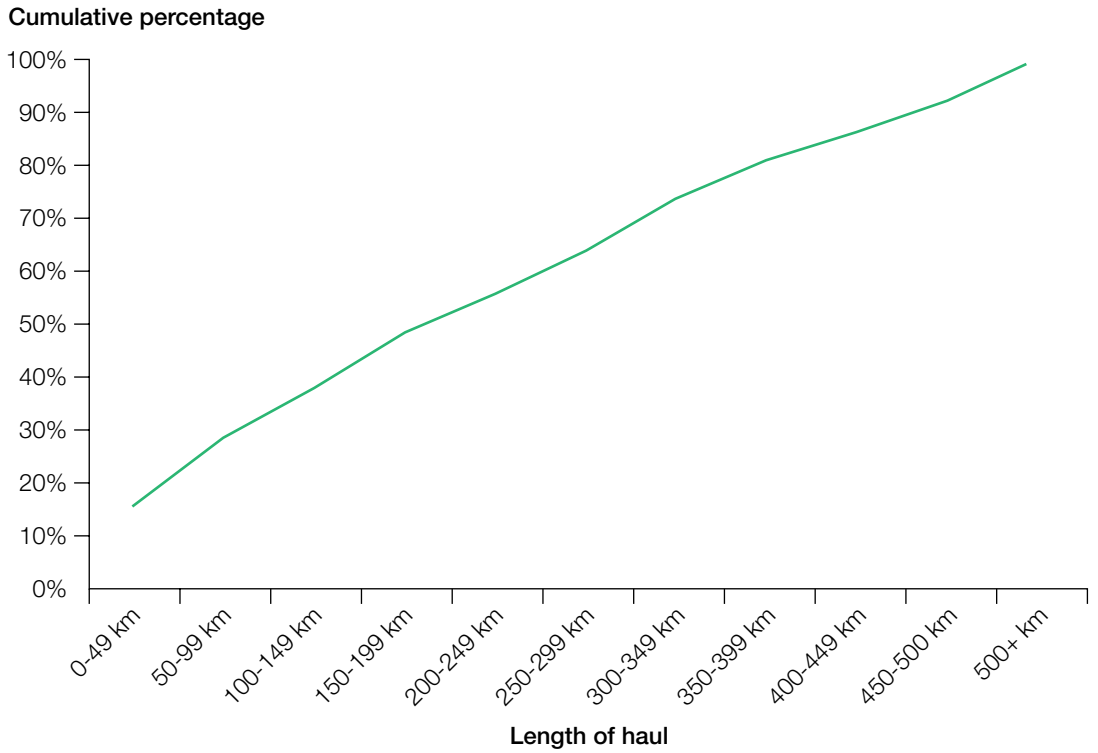
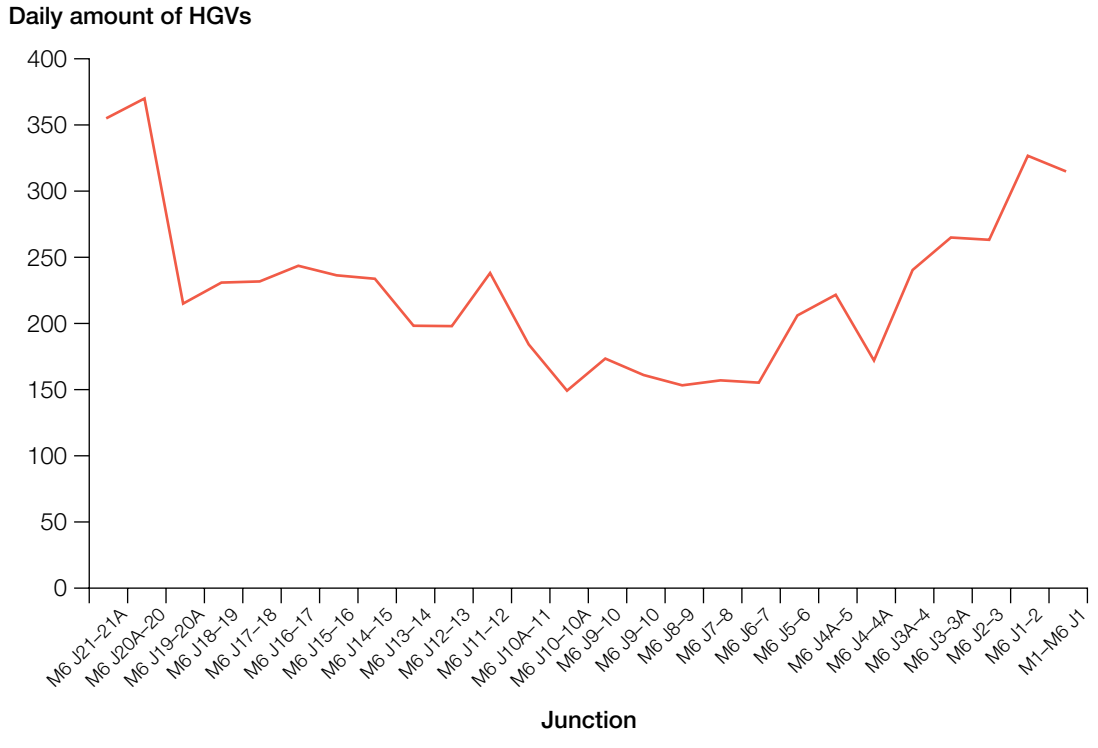


Figure B1.13 Daily M6 international container movements by junction, 2007

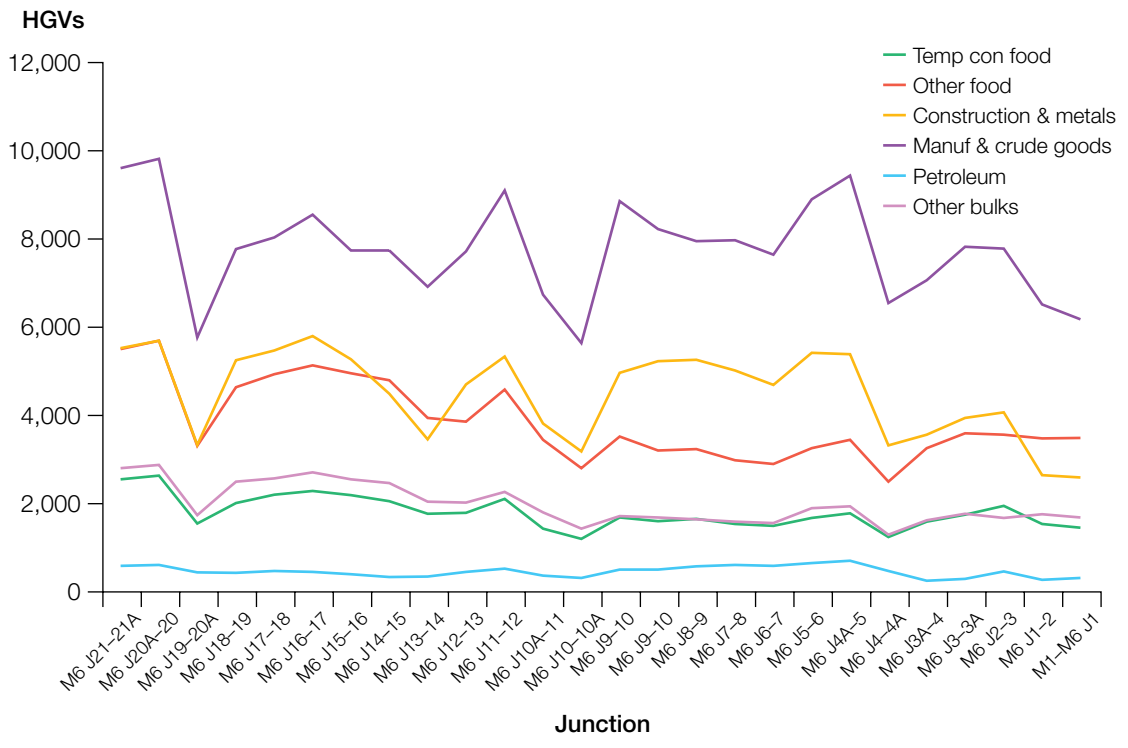


B1.29 Figure B1.13 shows the average number of international containers transported per M6 junction per day in 2007. International container movements of over 300 per day represented the highest percentage of traffic (at 2 per cent of HGV movements) between J1 and J2, closest to major distribution centres around the M1 and A15 as well as South East ports, whilst the greatest number of containers was recorded between J20 and J21 near Manchester, just under 400 each day. This probably reflects the close proximity of the Port of Liverpool and the relatively short distance collection and delivery of containers from multi-modal interchanges in the Warrington, Liverpool and Manchester areas.

B1.30 Overall, the modelled analysis suggests that the number of international containers that flow along the M6 is relatively low, accounting for around 1 per cent of all HGV movements. We believe this is because the majority of maritime container imports are destined for large national distribution centres, which are mainly located along the M1/A14 and not the M6. Consequently, many international container movements have no contact with the M6. Moreover, rail freight has a significant market share of flows to/from the North West of England/Scotland and South East ports (see Figure B1.15).

B1.31 Modelled estimates of the cargos carried by HGVs using the M6 indicate that manufactured and crude goods (either manufactured and ready to sell or items for assembly in to finished goods) were responsible for 38 per cent of HGV movements. Figure B1.14 shows the numbers of daily HGV movements by junction by commodity type in 2007.

Fig B1.14 M6 daily movements by commodity type and junction, 2007



B1.32 The heaviest concentrations of movements of manufactured and crude goods on the section of the M6 we studied were recorded around the major conurbations of Manchester, Warrington and Liverpool, between J20 and 21, as well as J21 and 21a, and Birmingham and Solihull between J4a and J5. Most other cargoes followed similar peak flow patterns at junctions servicing entry points to major conurbations.

B1.33 Similarly, petroleum-related HGV movements peaked between J4a and J5, where they accounted for around 700 HGV movements. Conversely, J3a–J4 carried close to 200 HGV petroleum vehicles each day.

B1.34 Other cargoes followed similar peak flow patterns at junctions servicing entry points to major conurbations.

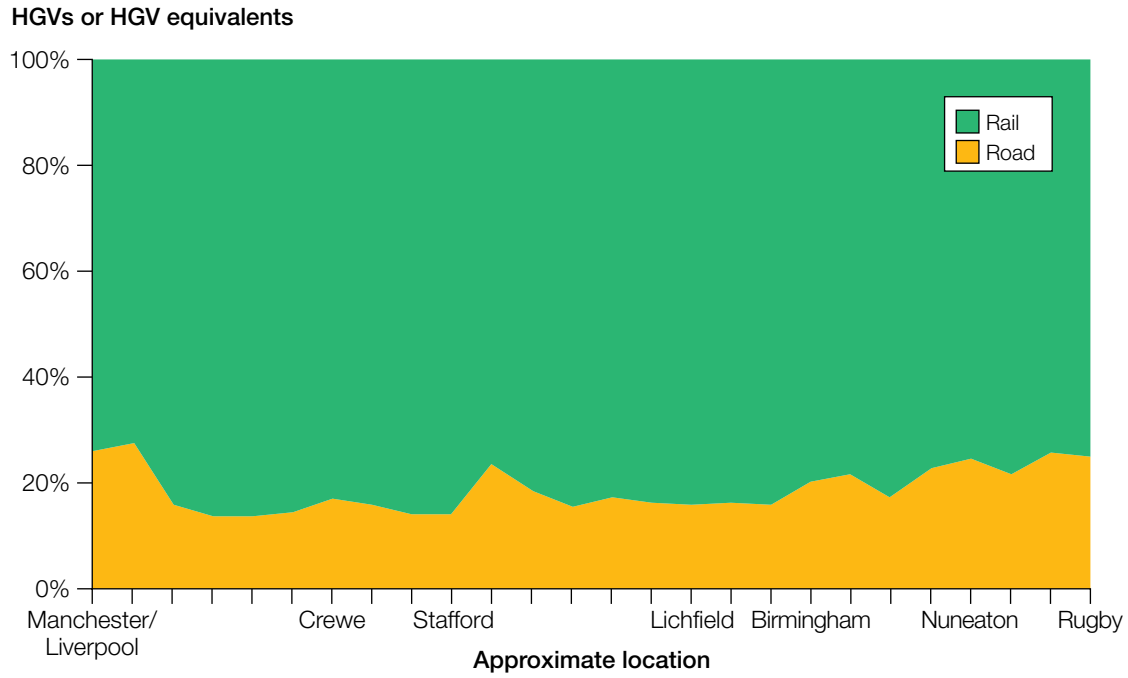
Observations and next steps

B1.35 We plan to use this study to identify the level of detailed knowledge on freight movements by corridor that we need, and to inform future data collection and evidence plans.

B1.36 At this stage, while we are validating the detailed information presented in this annex, we are not seeking to draw definitive conclusions from this study but will discuss the findings with industry to ensure that the key issues for the logistics sector are taken into account in work to consider future options for this and other corridors.

B1.37 By way of example, one area in which conclusions could potentially be drawn is the comparative scope for modal shift and other behavioural change interventions for particular commodities or types of freight transport on a given corridor. The study suggests, for instance, that around three-quarters of long distance container movements on the corridor are transported by rail (Figure B1.15). In a decision-making context, these data would need to be considered alongside similar flows on other corridors, given the complexity of routeing decisions and the potential for alternate routes. However, the package of actions considered on this corridor is likely to be different from that which would be developed if there was greater potential for modal shift of existing traffic from road to rail in this market.

Figure B1.15 Estimate of modal split of container movements on the corridor



B1.38 We also believe from this work that comparatively short road freight trips on the corridor (under 100 km) make up over a quarter of HGV journeys on the M6. Depending on the commodities being transported, influencing the time of day that these journeys are made (for example through greater use of out-of-hours deliveries) could make a worthwhile contribution to achieving the Department's goals – both for businesses in the logistics sector (and their customers) and transport users more widely.

B1.39 We would welcome your views on the material presented in this annex. Please contact us at: Freight@dft.gsi.gov.uk. We would also be interested in hearing from operators who may have data they would be prepared to share, voluntarily, with the Department to help us build up a fuller understanding of freight movements on this and other corridors.

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