



SCOTTISH EXECUTIVE

Scottish Executive

EXAMINING SUSTAINABLE WAYS TO IMPROVE THE EFFICIENCY OF THE ROAD FREIGHT TRANSPORT SECTOR

FINAL REPORT

MARCH 2005



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0. EXECUTIVE SUMMARY

0.1 Introduction

The overarching aim of this research project was to ***“investigate ways that could be developed to improve and maintain the efficiency of the road transport sector in Scotland in a sustainable manner”***.

The initial work was based around an information gathering exercise, which included setting a baseline of the current situation in Scotland, a review of current legislation, and an extensive review of best practice, both domestic and international. This allowed a wide range of potential options to be developed and taken forward to the industry via a series of consultation exercises – a key aim of the Scottish Executive and the project team has been the involvement of the freight industry throughout the project. In an iterative manner these outline options were reduced and refined during the consultation period, and in the final stages of the study were developed in more detail, including recommendations on how they could be taken forward in Scotland. The recommendations emphasise that the measures should not be considered in isolation, but as part of a wider coordinated package, and this is illustrated in an example scenario.

Each of these stages are described in more detail below.

0.2 Methodology

Prior to stakeholder consultation exercises, the first stage involved three elements – an analysis of the Scottish road network with a focus on road freight patterns, a review of UK and international best practice in technological, operational and policy developments in the road freight sector, and a review of relevant legislation, notably the Road Transport Directive and the implications this has for the road freight sector. Based on the output of these three elements an extensive range of potential options was produced for presentation at the subsequent stakeholder consultation phase.

0.2.1 ANALYSIS OF THE NETWORK

In order that an accurate picture of the road network in Scotland could be determined a detailed analysis of the Scottish Trunk road network was undertaken. This analysis considered aspects such as overall traffic volumes since 1993, the proportion of traffic as freight, and the key freight hubs and corridors. Freight movement in the peak and off-peak time periods was examined with a view to exploring the effect that congestion has on freight and the extent to which freight traffic contributes to the overall level of congestion. The cost of interurban congestion to the freight industry was also considered.

0.2.2 LITERATURE AND BEST PRACTICE REVIEW

The aim of this stage of the study was to gain an appreciation of best practice, not only in the UK but internationally, of measures introduced to the road freight transport sector with the aim of reducing road congestion and improving environmental performance.

The review considered a range of criteria for each, including objectives, problems and issues addressed, cost, impacts and any further follow up measures.

Measures were allocated into the following categories:

- Infrastructural and Operational Measures;
- Policy and Institutional Measures;
- Potential for Intelligent Transport Systems;
- Increased Intermodality;
- Freight Quality Partnerships; and
- Other Measures

0.2.3 ROAD TRANSPORT DIRECTIVE AND IMPLICATIONS

The third element of the initial stage was a review of the Road Transport Directive, including the current status of the legislation in the UK and an assessment of the implications its implementation may have on the Scottish road freight industry.

0.2.4 STAKEHOLDER CONSULTATION

The purpose of the industry consultation phase was to gauge the opinions of and gain feedback from the road freight transport sector regarding issues faced by the industry and potential solutions to improve the efficiency of freight in Scotland. A series of consultation exercises were held, which allowed an iterative approach to be taken in moving from the initial package of potential options to those which would be developed in more detail and leading to the study recommendations.

The consultation exercise included the following stages:

- Phase 1 – mailed questionnaire;

- Phase 2 – workshop; and
- Phase 3 – wider online e-questionnaire and survey.

The Phase 2 workshop provided invaluable input from industry stakeholders, reiterating the industry views regarding efficiency of the sector, potential measures which could be progressed, and overall views on policy issues. This assisted in the formulation of the Phase 3 e-questionnaire, in which more focussed feedback on the options was sought. Despite wide distribution on more than one occasion by both the RHA and FTA, response to this questionnaire was disappointing. Notwithstanding, the responses received were of high quality and provided valuable ideas and opinions of logistics planners and freight managers representing some of the larger Scottish freight organisations.

0.2.5 RECOMMENDED MEASURES

On completion of the consultation phase, a range of potential solutions and approaches were developed in detail, which together as a package aim to sustainably improve the efficiency of the freight sector in Scotland.

The table overleaf provides an overview of these measures, highlighting the relative advantages and disadvantages of adopting that measure.

Element		Pro	Con	Applicability	Recommended Action	Responsibility
Perception of Freight	Developing a positive image of Freight in the public and LA perception. Promoting careers in freight.	Improves public relations, reduces outside pressure on freight sector.	Long-term planning required with time intensive investments.	Applicable Scotland wide.	Range of approaches to be taken forward, including supporting research, promoting freight, and creating positive public image of sector.	All stakeholders.
Freight Quality Partnerships	Utilise the expertise of public and private sectors to encourage and improve the sustainable operation of freight.	An excellent platform for discussion and a vehicle for promoting and operating other freight solutions. Requirement to deliver though.	Long term planning required. Promotion of objectives and advantages required to get all parties to sign up. Few examples.	Applicable to all regions in Scotland from Urban to rural.	Promotion of FQPs to encourage best practice, appointment of national/regional FQP coordinators.	Local authorities and industry, facilitated by SE.
Freight Information Service	Development of a real time and historical freight information service disseminated using current technologies.	Customised Freight Information based on data currently collated as part of projects such as NADICS. Improves real time logistic decisions.	Generally disseminated via mobile and internet technology - requires existing widespread usage.	Applicable to Scottish, UK and European travel and may be increasingly facilitated through interoperable incident data.	Development of a FRIS, building on existing NADICS services.	All stakeholders, but principally SE/RHA/FTA.
Recommended Truck Routes/ Agreed Route Networks	Advisory Road Freight Routes - based on road and vehicle type. Aims to improve driver knowledge and reduce unnecessary driving/ fuel consumption.	Method of disseminating critical. Can include travel and traffic information. Reduction in Vehicle kms and emissions.	Extensive Consultation in agreeing scope of network. Work required to keep map up-to-date.	Very, especially with a hierarchical approach to road types. The network must be developed with the Freight industry.	Agreed and advisory routes for road freight should be developed..	Local authorities and freight industry organisations.
Loading and Unloading Zones	Dedicated Loading and Unloading Lanes, better management of kerbside access, lorry access to urban pedestrian areas.	Promotes cleaner use of vehicles and reduces congestion and Tonnage kms.	Requires cross-industry participation, regulation and policing. Parking is limited to specific road space.	Applicable to some larger cities in Scotland. Extensive preliminary worked will be required to identify the appropriate and workable locations.	Trial scheme should be progressed.	SE in partnership with FQP/local authority and freight industry organisations.

Element		Pro	Con	Applicability	Recommended Action	Responsibility
Environmental/Green Urban Deliveries	Within "Environmental Zones" special regulations are implemented for environmentally friendly heavy goods vehicles. The zones are areas within built-up areas, which are especially susceptible to disturbances from traffic and where traffic regulations are implemented. Vehicles which do not have an environmental classification (noise and emissions) are not allowed to enter the Environmental Zones.	Promotes cleaner use of vehicles and reduces congestion. An excellent option to reduce pollution levels.	Requires cross freight participation, regulation and policing. Emissions from freight and goods vehicles represent a small proportion of pollution.	Applicable to some larger cities in Scotland where high pollution levels have been identified.	Greater priority should initially be given to providing dedicated loading and unloading zones, with a view to migration to include environmental aspects. Development of other aspects, such as ITS architecture for freight and LRUC technology, would assist future implementation of this measure.	All stakeholders.
Driver Training	Training of freight drivers to efficiently use vehicles, in safety awareness and vehicle maintenance.	A driver-training scheme can bring about a more efficient use of vehicles and safety benefits and can help to reduce energy consumption through improved fuel efficiency, cut vehicle emissions and reduce accident rates. It can also help to reduce maintenance costs.	Very few, if any, disadvantages. Generally requires government initiatives – cost	Already a proven option in Scotland.	Continue to support driver training schemes implemented as part of SRHMF, and also SAFED programme. Continue to support other initiatives to encourage young people to join industry, such as Young LGC driver scheme and pre-Modern Apprenticeship programmes.	SE support initially with full transition to freight industry in the medium term.

Element		Pro	Con	Applicability	Recommended Action	Responsibility
24 hour operation/delivery	Shift of daytime delivery to night time, relaxation of rules.	Reduced impact of congestion on Freight Operators. Reduction in emissions and vehicle hours and an increase in average speed.	Noise, Social and Community concerns. Potentially requires a change in supplier and business working hours.	Very applicable to congested urban areas, there is evidence that night deliveries are already occurring (inter-urban).	Consider trial "out of hours" freight delivery scheme in a Scottish city.	All stakeholders but principally local authorities and the freight industry.
Harmonising and Relaxing Restrictions	To standardise vehicle restriction regimes in urban environments.	Improve Urban logistics, freight efficiency and potentially open up pedestrian areas to freight. Greater awareness of the importance of freight.	Limits larger vehicles from city centres and some roads.	Applicable to major Urban environments especially Edinburgh and Glasgow.	Development of a vehicle matrix with objective of relaxing and harmonizing restrictions for parking and loading in urban areas.	SE in consultation with local authorities.
ITS, On Board Logistics	The use of ITS, real time traffic information, decision support systems and vehicle management.	Can improve efficiencies, local and national freight distribution.	Cost of infrastructure - although mostly available on Scottish Trunk Road network.	Applicable across Scotland	ITS Architecture/Blueprint for should be produced, providing framework for introduction of freight ITS by industry.	SE to produce Architecture/Blueprint. Industry responsible for implementing technology (LRUC may provide catalyst.)
Real Time Stock Information/ Back loading Database	Real time stock information feed from a centralised database to remote clients to promote back loading and improved efficiencies.	Promotes back loading, reduces empty running and improves economic efficiency.	Could be difficult to implement across disparate freight sectors. Agreements regarding data sharing may be hard to negotiate.	Applicable to Freight on a sector by sector basis. E.g. construction material or timber.	Potential for using real time stock information should be considered, building on previous UK and European trials..	Freight industry with support from SE and local authorities.
Lorry Road User Charging	Charge for lorries using road network with associated tax cuts. Varying by distance, road, time of day.	Charge associated on a fairer as used basis.	Cost of regulation.	Applicable across Scotland	No specific actions recommended, although SE should retain close watch on programme to identify opportunities to improve efficiency of Scottish road freight sector through available information/data.	HM Customs & Excise

Element		Pro	Con	Applicability	Recommended Action	Responsibility
Access Control, Area Licensing, Congestion Charging	Controlled urban areas with access limited by means of policy or charges - specific improvements are relevant to the freight industry if implemented for all private vehicles.	Higher efficiency due to shorter lead times/reduction of waiting times, Higher reliability due to less congestion, Better predictability due to less congestion	All improvements come at a cost at point of delivery.	Potential for access control/area licensing. However, in light of Edinburgh referendum, congestion charging unlikely to be implemented in foreseeable future in Scotland.	No actions recommended at this time, although should traffic conditions in urban areas or strategic sections deteriorate the application of access control or area licensing schemes should be considered.	-
Intermodality/ Consolidation	Increasing Intermodality through urban logistic centres and initiatives such as the Freight Facility Grant scheme.	Reduction in congestion and Environmental benefits.	Costly initiatives to implement and justify economically.	There are a few successes in Scotland but larger economies of scale must prevail so only in areas of intensive freight movements are the projects justified.	Pilot or trial scheme, similar to but building on the 2004 Bristol project, should be progressed.	Local authority with support from FTA, RHA, SE and RTPs.
Freight Use of Priority Vehicle Lanes	Use of priority vehicle lanes by goods vehicles, limited to certain times of the day	Better use of available road space during non-peak bus flows. Improve freight efficiency and average urban journey times	Safety Issues for cyclists and other motorists. Width of priority vehicle lanes may be a problem.	Priority vehicle lanes in most major cities although potential safety issues with regards width of lanes. Some trials completed in Aberdeen.	Trial project for freight vehicles to use priority vehicle lane should be progressed. Evaluation of project with view to providing appropriate national guidance to local authorities on this issue.	Local authority with support from SE and freight industry.
Freight Priority Through Minor Engineering/ Physical Works	Minor projects (lane configuration, signal phasings) on urban road networks.	Low cost. Better use of available road space, particularly in relation to freight vehicles, with improved efficiency and urban journey times	Cost of implementation..	Potential to be widely applied throughout urban areas in Scotland.	SE should consider, via appropriate guidance, recommending that local authorities undertake a review of their road network to identify where such measures would be appropriate.	Local authority with support from SE and input from freight industry.

0.3 Next Steps

Clearly there are a number of measures which can be progressed immediately, such as the initial promotion of FQP's, introduction of a freight information service, developing recommended and advisory truck routes, trial use of priority vehicle lanes, and implementing minor measures to provide greater priority to freight vehicles on urban road networks. Together, these would provide a series of 'quick wins' in improving the efficiency of the Scottish road freight transport sector. Other short to medium term measures should also be progressed, potentially within a wider framework of pilot and trial projects. The upcoming changes in the structure of transport administration in Scottish central and local government presents an ideal opportunity to ensure the importance of road freight is integral to these new agencies' plans and programmes.

Finally, it must be emphasised that in order for the measures to succeed, cooperation and support of all stakeholders, including the Scottish Executive, local government, and the industry, is vital, and the measures recognise that each all have a key part to play in ensuring improved efficiency and continued future growth of the industry in Scotland.

1. INTRODUCTION

1.1 Background

The project Examining Sustainable Ways to Improve the Efficiency of the Road Freight Transport Sector aims to ***“investigate ways that could be developed to improve and maintain the efficiency of the road transport sector in Scotland in a sustainable manner”***.

In completing the project a series of documents have been produced, including reports on:

- Analysis of the Network;
- Review of Road Transport Directive and Other Legislation;
- Literature & Best Practice Review; and
- Industry Consultation & Initial Option Development.

This final report details a series of measures which could be implemented in Scotland. These measures have been collated based on the review of national & international best practice, consideration of the current situation in Scotland, and from the results of the industry consultation exercise. It is recommended that these measures should not be considered in isolation, but as part of a wider coordinated package. The document concludes with an example which illustrates this approach.

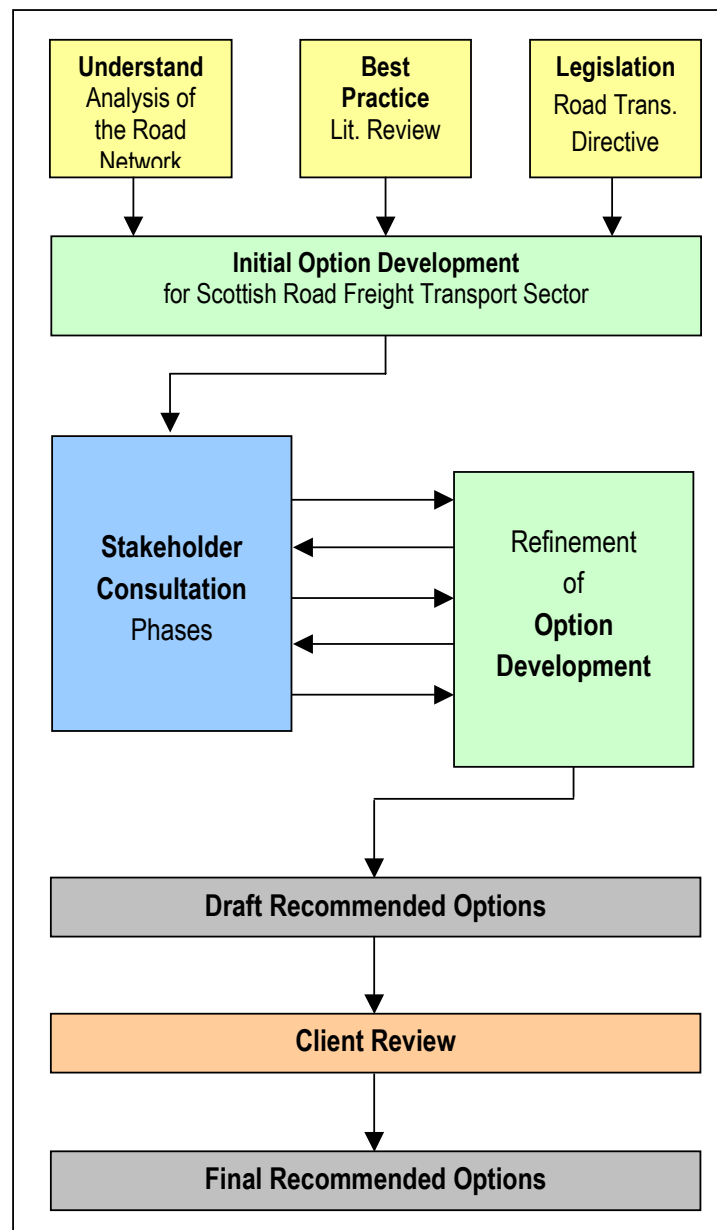
Lastly, it must be emphasised that in order for the measures to succeed, cooperation and support of all stakeholders, including the Scottish Executive, local government, and the industry, is vital, and the measures recognise that all have a key part to play in ensuring improved efficiency and continued future growth of the industry in Scotland.

2. PROJECT OVERVIEW

The great majority of freight moved in Scotland is transported by road, and it is acknowledged and accepted that this situation is highly unlikely to change in the foreseeable future. However, the entire road freight transport sector in Scotland faces an increasing number of challenges that need to be addressed to ensure that it can continue to be a cost-effective means of transport. This section briefly details the methodology used to investigate ways that could be developed to improve and maintain the efficiency of the road transport sector in Scotland.

In doing so, the approach taken has been multi-staged, as summarised in the figure below:

Figure 1 – Research Study Approach



These sections are briefly outlined below and expanded upon in the following chapters.

2.1 Analysis of the Network

In order that an accurate picture of the road network in Scotland could be determined a detailed analysis of the Scottish Trunk road network was undertaken. This work considered overall traffic volumes and the proportion of which is freight traffic, examining both the peak and off-peak periods, as well as congestion patterns. From this it was possible to determine the extent to which freight traffic contributes to the overall level of congestion and the effect of congestion on freight thereby supporting subsequent stages of the study in developing solutions. A key part of the output was the production of GIS mapping of the key freight corridors, highlighting major traffic generators and flows.

The Network Analysis phase of the project has been divided up into five key stages:

- Procurement of Data;
- Contextualisation;
- Mapping of Key Hubs;
- Freight Products and Associated Journeys; and,
- The Cost of Congestion.

2.2 Literature Review

A review of recent research, studies and specific examples of best practice was conducted. This included the existing MDS-Transmodal study "*Opportunities for Developing Sustainable Freight Facilities in Scotland*", relevant research and case studies – notably the Department for Transport's research (including the *Sustainable distribution: A Strategy* document), industry organisation research including work completed by the RHA and FTA, and European Commission's BESTUFS, THEMIS, COST and Marco Polo programmes, which seek to implement best practice, reduce road congestion and improve the environmental performance of the freight sector and international agency research from the continent and North America. Policy documents at national and European level will also be reviewed.

Best Practice review – the literature review was supported by a brief review of best practice. Examination of the current and projected technological, operational and policy developments in the road freight sector, not only in Scotland but throughout Europe and North America – which provided a review of the issues and solutions which could be applied to the road freight transport sector in Scotland.

2.3 Road Transport Directive and Implications

A comprehensive review of the Road Transport Directive, highlighting the key aspects that relate to mobile workers and the road freight transport sector, was undertaken. This was the basis for determining the likely implications of the RTD on the industry, which considered aspects such as rural traffic and operations based in and to/from the outlying rural areas

of the country, inter-urban and urban operations, overnight operations and deliveries, and also the effect on long-distance traffic to the rest of the UK and mainland Europe.

Research focused on the document titled "*Directive on the Organisation of the Working Time of Persons Whose Occupation is the Performance of Mobile Road Transport Activities 2002/15/EC*" but also examined the Centre for Economic Research and Road Haulage Association (RHA) Report on this document which included findings such as the requirement for 60,000 additional drivers, increases in operational costs and increases in the number of vehicles.

2.4 Stakeholder Consultation

Stakeholder consultation was undertaken at various stages of the study process. The first consultation, completed at an early stage of the project, followed the completion of the network analysis, the literature and best practice review, and assessment of the Working Time Directive. This phase consisted of a paper based questionnaire survey targeted at the key sub-sectors of the road haulage industry. Hauliers were selected from each sub-sector in order to provide a representative response from the industry. The questionnaire focussed on issues concerning the efficiency of the road freight sector.

Phase 2 was a consultation workshop which involved those hauliers who had responded to the Phase 1 consultation. The workshop concentrated on the discussion of issues and solutions to improving the efficiency of the road freight sector. Discussions were guided by and built upon the results from the Phase 1 questionnaire.

Phase 3 was an online E-Questionnaire targeted at members of Road Haulage Association (RHA) and Freight Transport Association (FTA). The E-Questionnaire built on outcomes from the Phase 2 consultation workshop, focussing in detail on factors and measures which had been refined during Phase 1 and Phase 2.

2.5 Recommended Measures

The Recommended Measures section is divided into two areas. Firstly a number of potential solutions are outlined, and based on a preliminary analysis and the outcome of discussions with stakeholders during the consultation phase a number of these are explored further, together with their inter-relationship with other measures. This latter point is important as rolling out "packages" of measures, rather than viewing them as single, discrete solutions, will ensure buy-in by the industry and will help to improve the chances of the success in all cases.

The further exploration defines the measure in more detail, considers the objectives and aims the following section focusing on a definition of the option, the objectives and aims of that measure, where and how it can be implemented, and some examples of where it has been successfully introduced. It also suggests next steps for government and industry to take in implementing the measure.

3. ANALYSIS OF THE NETWORK

In order that an accurate picture of the road network in Scotland can be determined a detailed analysis of the Scottish Trunk road network has been undertaken. This analysis has considered aspects such as overall traffic volumes since 1993, the proportion of this traffic which is freight, and the key freight hubs and corridors. Freight movement in the peak and off-peak time periods has been examined with a view to exploring the effect that congestion has on freight and the extent to which freight traffic contributes to the overall level of congestion. The cost of interurban congestion to the freight industry is also considered.

3.1 Scottish Road Network: Contextualisation

3.1.1 KEY ROAD STATISTICS

The general trend in road traffic over the past 10 years has been one of steady growth with an increasing number of vehicles and journeys and increasing congestion. Since the 1950's the number of passenger kilometres on the UK road network has risen steadily from a little over 180 billion to well over 690 billion by 2002, a rise of over 380%. Of this rise the majority is attributable to cars, vans and taxis. For instance, even as late as 1960 only 57% of journeys were made by cars, vans and taxis but fuelled by the commuter culture and greater private car ownership by 2002 the figure reached 91%.

In comparison over the same period freight transport has increased from 32 billion tonne kms to 157 billion tonne kms, a rise of over 490%. Growth in road freight in the UK peaked in 1998 at 160 billion tonne kms and has remained around the 157-158 billion tonne kms mark since. However goods lifted and moved by road since 1953 has only risen by 192% indicating that freight journey distances and/or tonnages per vehicle have been increasing.

As of late 2002 there are currently 30.55 million vehicles registered in the UK, 425,000 of which are registered as goods vehicles (vehicles over 3.5 tonnes). In general the average journey distance by public transport has decreased from the early 1990's whilst private car journeys and freight journeys are increasing (Regional Transport Statistics Department for Transport 2002).

Across the UK 19% of all road journeys were made on motorways and 36% on trunk roads. Roughly 50% of all traffic occurs in urban areas and 50% in rural areas, with 36% of all traffic on minor routes (urban and rural). Motorways across the UK average flows of 71,500 vehicles per day, interestingly this falls to less than 40,000 for motorways averaged across Scotland. The total flows for both major and minor routes in urban and rural areas are in general much lower in Scotland than across the UK as a whole (Transport Statistics for Great Britain 2003).

3.1.2 KEY FREIGHT STATISTICS

Across Europe there has generally been rapid and continuous growth of road freight transport and stagnation of the other modes over the past 10 years. Indeed, road freight has almost trebled since 1970 in Western Europe. The rate of growth of freight has followed closely that of the economy, though road freight has grown faster, for instance between 1990 and

1995 in Western European Countries road freight has grown 24% while economic growth was only 4% (Short 1999). The underlying reasons for the growth in road freight includes the growth in trade, the creation of the single European market and shifts in societal and industrial structures and habits. The dominance of road transport is explained by some of these general factors but also by its flexibility and continued customer-oriented qualities.

Trends in road freight internationally and on the European continent, whilst specific to the geography, economic and political and historical development of each country, are quite similar to those in the UK and Scotland. Whilst a number of countries such as Japan and Greece have freight as one third of their total vehicle kms, the British experience is very similar to France, Sweden, France and Austria in terms of percentage of freight.

In the UK road traffic's overall share of freight (measured by tonne kms) grew from 55% to 65% (compared to rail, pipeline and sea) between 1985 and 1999. The growth in road freight is predominantly a result of a growth in those types of traffic where road has a long established dominant share and a greater than average increase in the length of haul by road. Whilst there are examples of modal switch from rail to road, these are very small in comparison with the change in balance of types of products being transported.

The table below identifies changes in traffic by detailed commodity breakdown (road freight during this period increased from 103 to 157 billion tonne kms). The types of freight traffic that contributed most to the growth were food, drink and tobacco and miscellaneous transactions, together contributing a total of 60% of the growth. Most of the growth was from increased haul lengths - although the volume of goods lifted increased by 15% the average haul length grew from 72kms to 95kms.

Table 1 – Changes in Road Freight by Commodity 1985 - 1999

Commodity	1985	1999	Change (Tonne km)	% Change
Food, drink and tobacco	25.4	41.5	16.1	63
Misc. transactions	12.3	27.9	13.6	27
Misc. manufactures	8.8	15.7	6.9	78
Crude minerals	10.3	12.7	2.4	23
Building materials	8.4	10.6	2.2	26
Machines and transport	5	8.7	3.7	74
Chemicals	6.2	7.4	1.2	19
Iron and steel products	6.1	6.8	0.7	11
Petroleum products	4.3	5	0.7	16
Wood, timber and cork	2.2	3.8	1.6	73
Crude materials	1.4	2.6	1.2	86
Coal and coke	4.2	2.2	-2	-48
Other metal products	1.3	1.7	0.4	31
Fertiliser	1.7	1.4	-0.3	-18
Ores	1.4	1.3	-0.1	-7
All commodities	99.1	149.2	50.1	51

(Multi-modal studies: soft factors likely to affect travel demands. DFT. 2002)

An estimated 138.6 million tonnes of goods were lifted within Scotland by UK HGVs and transported to destinations within Scotland in 2002. About 15.2 million tonnes of goods from Scotland were delivered to destinations elsewhere in the UK, and around 18.3 million tonnes were brought into Scotland from elsewhere in the UK. However, the volume of international traffic is relatively small, less than 1 million tonnes in 2002. The estimated total amount of goods lifted in Scotland by UK freight in 2002 was 3.6 million tonnes more than that lifted in 2001, but interestingly 2.7 million tonnes less than the estimated amount lifted 10 years earlier even though tonne kms have generally been increasing over the period. The total tonnes lifted in Scotland has typically been close to the average of 157 million tonnes per year.

Table 2 – Goods lifted by UK Freight in Scotland with destinations in the UK by length of haul, 2002.

	<25 kms	>25 - 50	>50 - 100	>100 - 150	>150 - 200	>200 - 300	>300 - 400	>400 - 500	>500	All
Million tonnes	56.8	35.1	26.5	10.3	5.8	8.2	5.3	2.4	3.3	153.7
%	37	23	17	7	4	5	3	2	2	100
Million tonne kms	752	1,273	1,871	1,268	1,010	2,041	1,808	1,057	2,197	13,277
%	6	10	14	10	8	15	14	8	17	100

(Data Source: Scottish Transport Statistics 2003)

Most road freight journeys in Scotland are under 50 kms in length as detailed in table 2: 37% of goods lifted by road in Scotland in 2002 were carried a distance of no more than 25 kms, and 23% traveled over 25 km but no more than 50 km. The average journey distance (calculated by dividing the total tonne-kms by the total tonnes lifted) was 86 km.

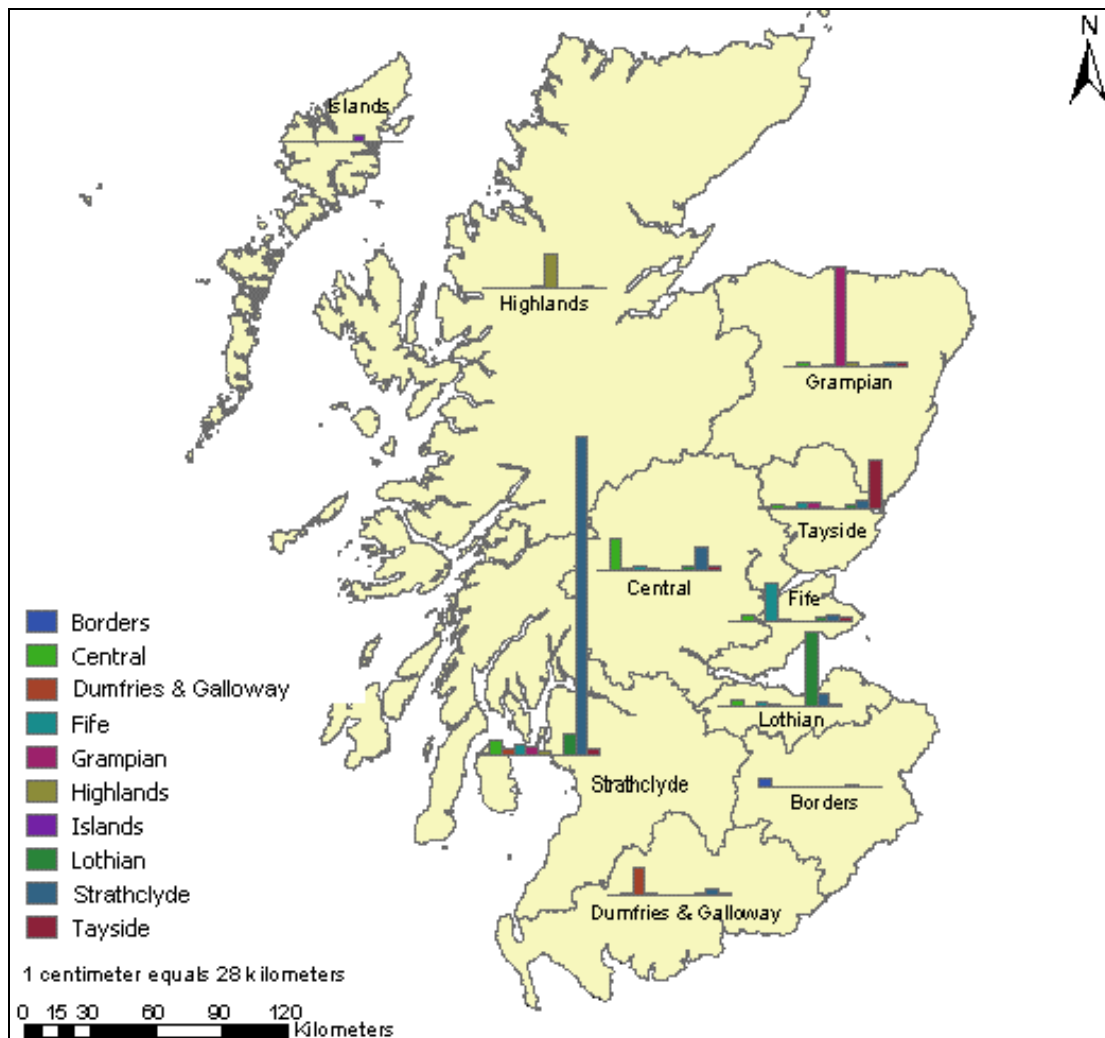
Goods moved on journeys originating in Scotland with a destination in Scotland amounted to an estimated 7,873 million tonne-kms in 2002, slightly less than in 2001 but 17% more than in 1992. The main increases occurred between 1993 and 1995, and between 1997 and 1998. The average journey distance for freight remaining in Scotland rose from 47 km in 1992 to 57 km in 2002. For all freight originating in Scotland, including goods going outwith the UK, the average journey distance increased from 77 km in 1992 to 92 km in 2002.

Of the 15.2 million tonnes of goods lifted by road leaving Scotland for the rest of UK, in 2002, over 70% were destined for the three northernmost regions of England – North East, Yorkshire and the Humber, and North West. In 2002, of the 18.3 million tonnes of goods brought by road from the rest of the UK into Scotland, 70% of goods came from these regions. In 2002, “Minerals and building materials” was the largest single category of goods lifted in Scotland, which remained in Scotland, accounting for over 43 million tonnes out of the total of 138.6 million tonnes. In 2002, around 10% of the total amount of goods leaving the UK lifted by UK HGVs originated in Scotland. However, Scotland provided 47% of petroleum products leaving the UK and 26% of foodstuffs and animal fodder.

Figure 2 below illustrates the point very clearly that the majority of the freight lifted in a region was delivered to a destination within that region (1998 –2002) emphasising the point highlighted in table 2 that the majority of freight moved in Scotland is over a short distance. During this period, around 42% of the annual average amount of freight lifted in Scotland by UK Freight originated in the Strathclyde region, and 12% originated in Grampian and in Lothian. Similarly around 42% of the

annual average freight delivered in Scotland was destined for Strathclyde, 12% each for Grampian and Lothian and 8% from the Central and Tayside regions. In general the amount of freight lifted in each region equates to the amount freight bound for that region.

Figure 2 - Average Freight lifted (thousand tonnes) by UK Freight per year (1998-2002): Journeys with U.K. origins and destinations that either started or ended in Scotland.



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Freight moved by own account operators has remained fairly constant at around 36 billion tonne kilometres between 1980 and 2002 whilst freight moved by public hauliers has more than doubled from 55 billion tonne kilometres to 111 billion tonne kilometres. Since 1992, freight moved by public hauliers has increased by 28 per cent and freight moved by own account operators has increased by 12 per cent, with public haulage accounting for roughly three quarters of freight moved over these years.

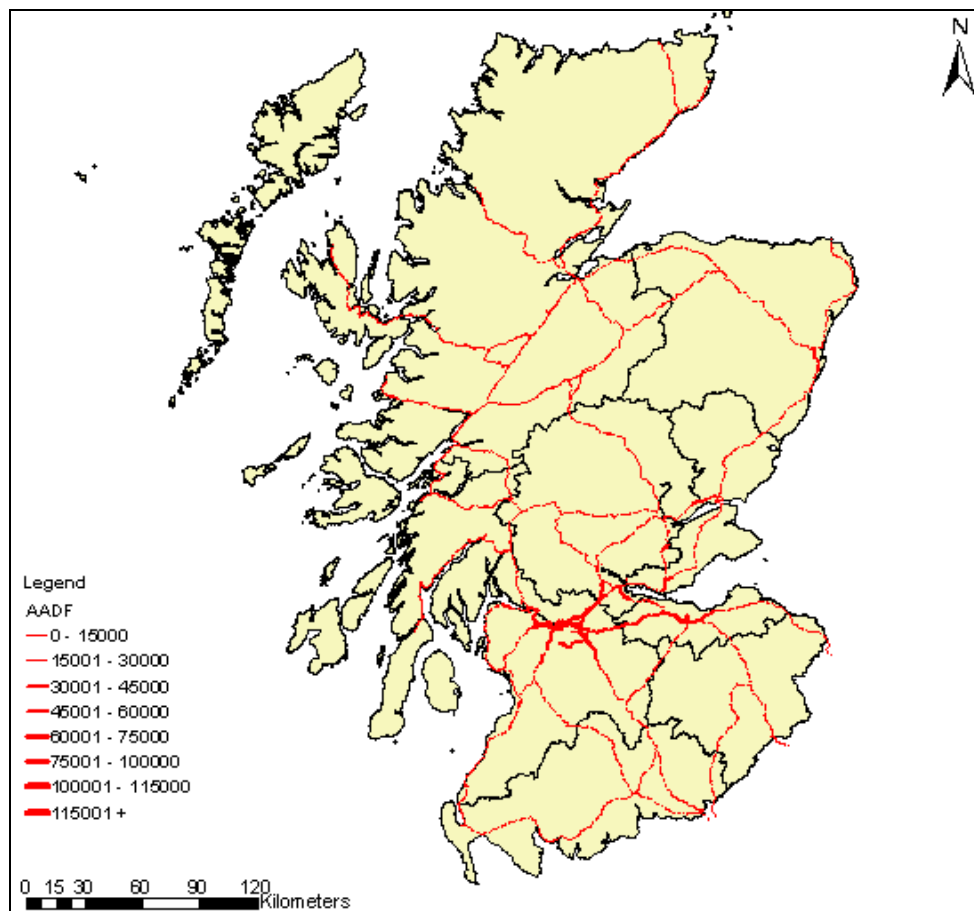
The general trend in the UK since 1992 has been toward an increasing share of freight moved and lifted by public hauliers to over two thirds of total freight although this was redressed slightly in 2001 when the percentage of freight moved and lifted by own account hauliers increased at the expense of public hauliers. This would tend to indicate a movement toward larger freight organisations although the smaller companies are still much greater in number.

A number of factors may have contributed to the rise in the activity of own account operators between 2001 and 2002 including the increase in the population of over 25 tonne rigid vehicles (from 42,837 to 48,104), which are predominantly own account operators, the increase in construction output (by 7 per cent), and the decrease of longer haul activity in 2001 due to the foot and mouth outbreak (to England and Europe that is predominantly the domain of public hauliers).

3.1.3 SPATIAL AND TEMPORAL TRENDS SCOTLAND: A GEOGRAPHICAL PERSPECTIVE

Annual Average Daily Flows (AADF) for all traffic is highest in the central belt between Glasgow and Edinburgh, as illustrated by figure 3, along the M80 to Stirling from Glasgow and Edinburgh, A90 north of the Forth and along the M74 and M73. There are some local peaks west of Aberdeen and near Perth and Dundee.

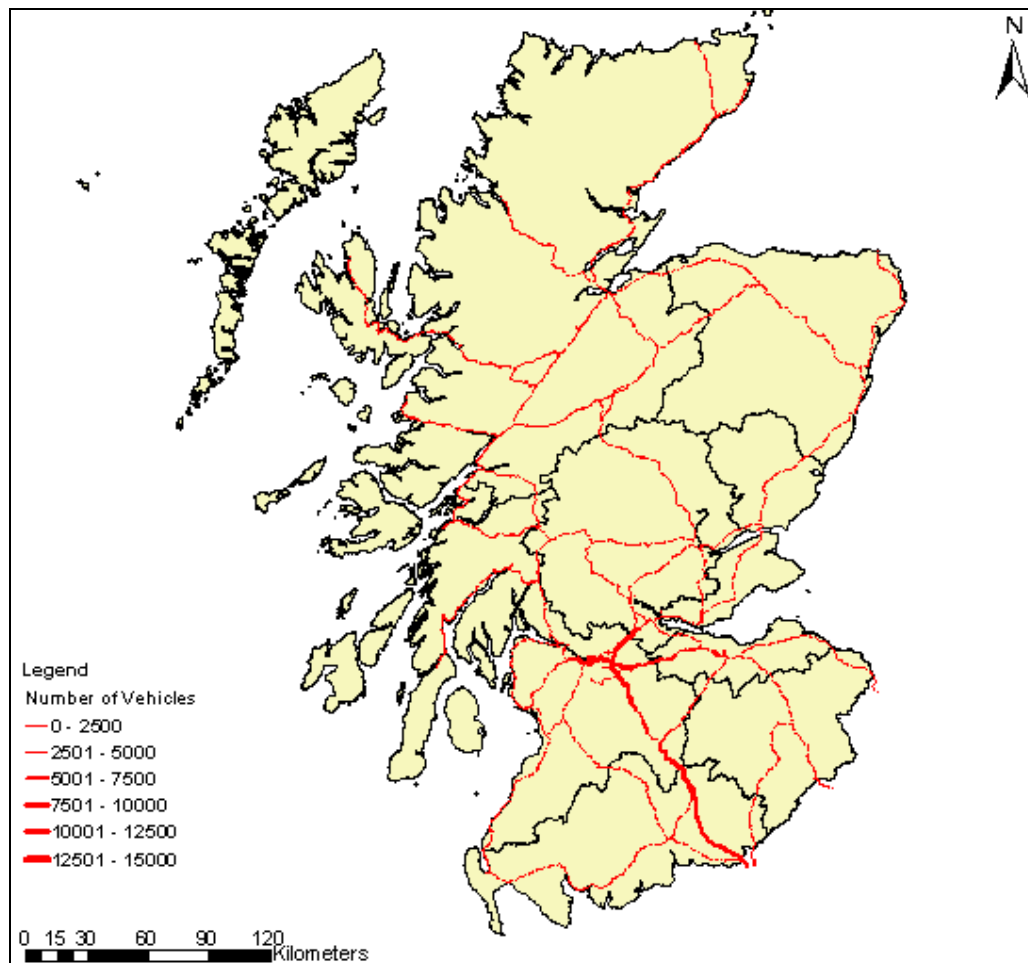
Figure 3 Total Average Annual Daily Flows – All Vehicles 2001



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Figure 4 illustrates the AADF of HGV (freight) vehicles on the trunk road network. Whilst the concentrations of total AADF are relatively clear cut and concentrated the picture for HGV AADF is not. There are some concentrations of HGV in the central regions between Edinburgh and Glasgow but the volumes are not as high around Edinburgh as Glasgow. Sections of the M73 and M74 have particularly high values of HGV AADF, whilst there is a fairly continuous band of high HGV AADF along the A80.

Figure 4 Total Average Annual Daily Flows – HGV 2001

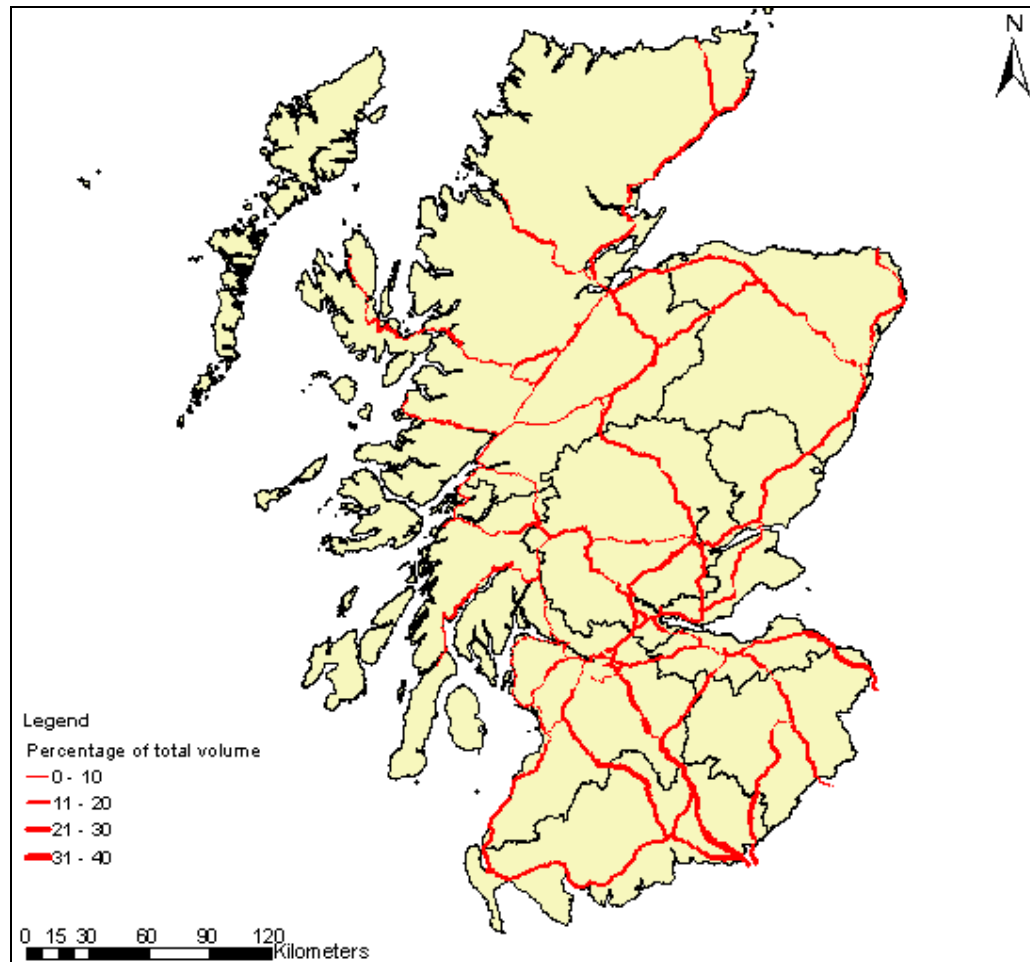


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Figure 5 maps the percentage of HGVs as a proportion of the total AADF on a link-by-link basis producing some interesting results. The map essentially illustrates the concentration of freight as a proportion of total traffic and a number of the relationships demonstrated above between major roads, such as the M8 and M74, and high levels of AADF are turned on their heads. For instance, the M8 has a lower proportion of HGV vehicles than a number of roads in northern Scotland including sections of the A9 and A90. The A1 east of Edinburgh has a particularly high proportion of HGV vehicles, along with the M74.

In general figure 5 illustrates the key regional freight routes within Scotland and also again highlights a number of key routes into England. The sections of the network where HGV flows are more pronounced in terms of total traffic are much clearer and explained by local phenomenon such as major ports, distribution centres and importantly the location of freight and road haulage companies. The location of haulage company in its self represents not only a freight hub of differing sizes but also a intrinsic testimony to market forces as a haulage company will ostensibly locate near to its supply or demand and the company clusters provides the researcher with evidence of local concentration of freight.

Figure 5 Total Average Annual Daily Flow – HGV % of total traffic volumes 2001



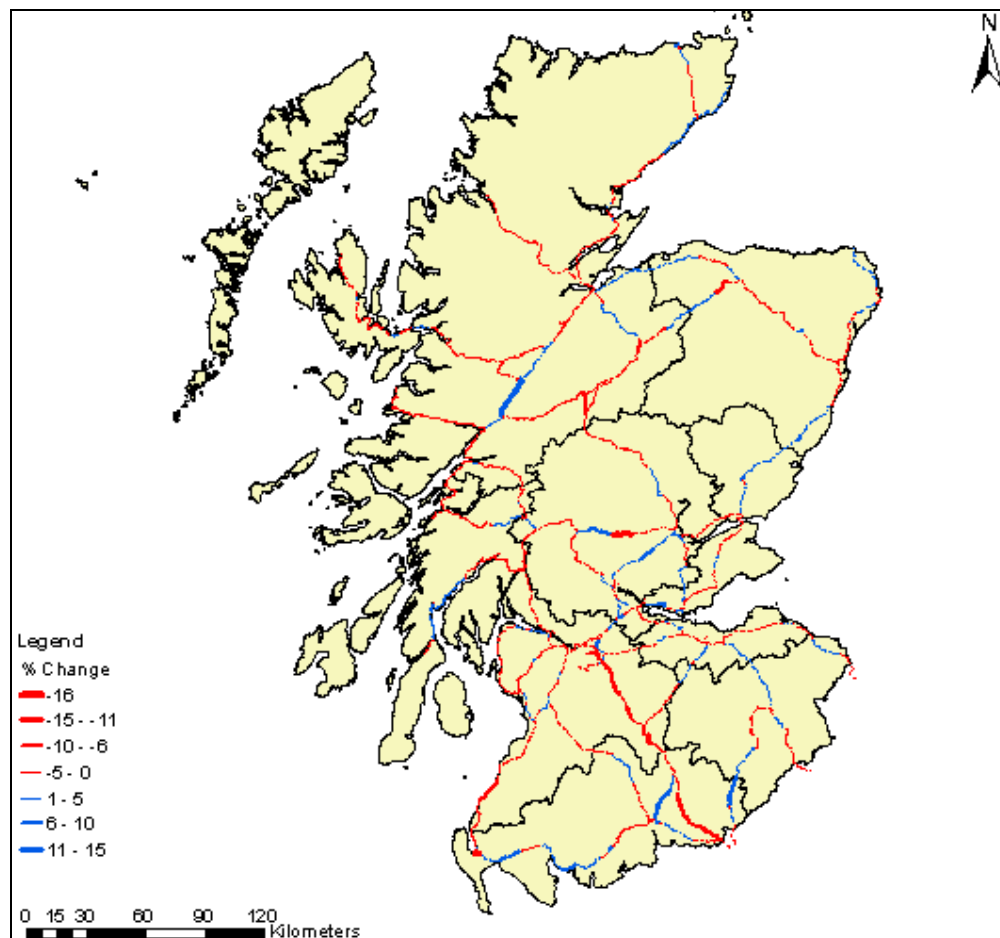
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HGV volumes on major routes generally peak (on an hour by hour basis) during the AM peak. There appears to be a particular peak around Glasgow during the AM period. The M74 and M80 also have particularly high volumes during the AM period. Edinburgh appears not to experience the same volumes of HGV during the morning however during the off peak period volumes are higher around the capital relative to Glasgow. As a general rule of thumb most roads have as many HGV vehicles during the off peak period as the combined AM and PM peaks.

There is a relatively low percentage of HGVs on the M8 and M80 whilst indicating that the A9, A1 and M74 routes and locations such as Peterhead have a high proportion of HGVs during the AM peak. During the PM peak these trends are more pronounced although in general the proportion of HGVs are lower than during the AM period. During the off peak period there is generally a higher proportion of HGVs on roads especially in rural areas such as the highlands and the southern sections of the M74.

Figures 6 and 7 show the projected percentage HGV as a proportion of total AADF for 2005 and 2010 respectively. With the stagnation in the growth in freight in Scotland but no definitive evidence to suggest that total traffic volumes will fall, the link-by-link projections generally show decreases in the percentage of freight as a proportion of total volume in 2005. This is most apparent on some of the motorways and arterial routes. However there are a number of roads where the total volume of traffic has been falling over the 1993-2001 time period and this explains the generally small increases in HGV as a proportion of total volume.

Figure 6 Total Average Annual Daily Flow – Projected AADF % HGV 2005

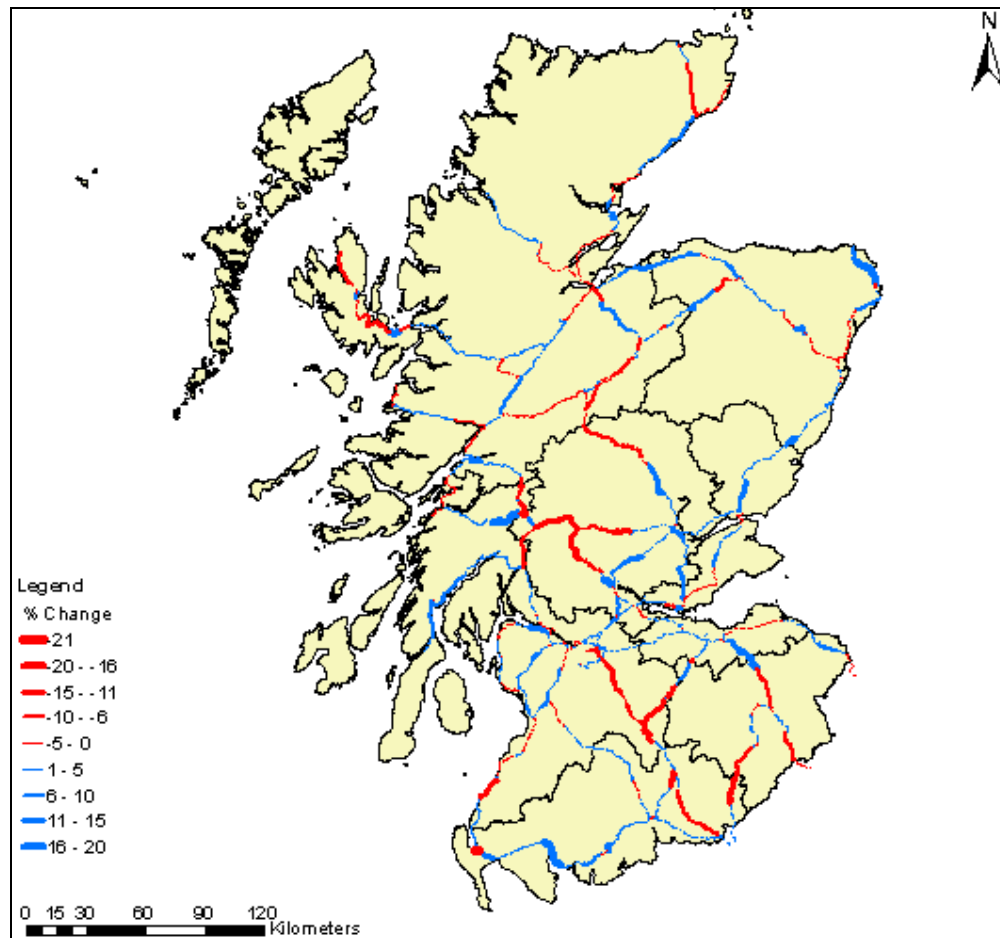


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By 2010 the growth in freight has been projected to increase based dually upon trends in the UK since 1985 and the introduction of the Working Time Directive that may increase the number of freight vehicles on the road but possibly

decrease the average haulage distances of freight. This is borne out by the projected flows with a number of the potentially longer haul routes such as the M74 projected to experience falls in the percentage of HGVs while a significant proportion of routes in the Highlands, South West and North East Scotland are projected to have increases in the percentage of HGVs. These rural routes may be characterised by shorter journey hauls.

Figure 7 Total Average Annual Daily Flow – Projected AADF % HGV 2010



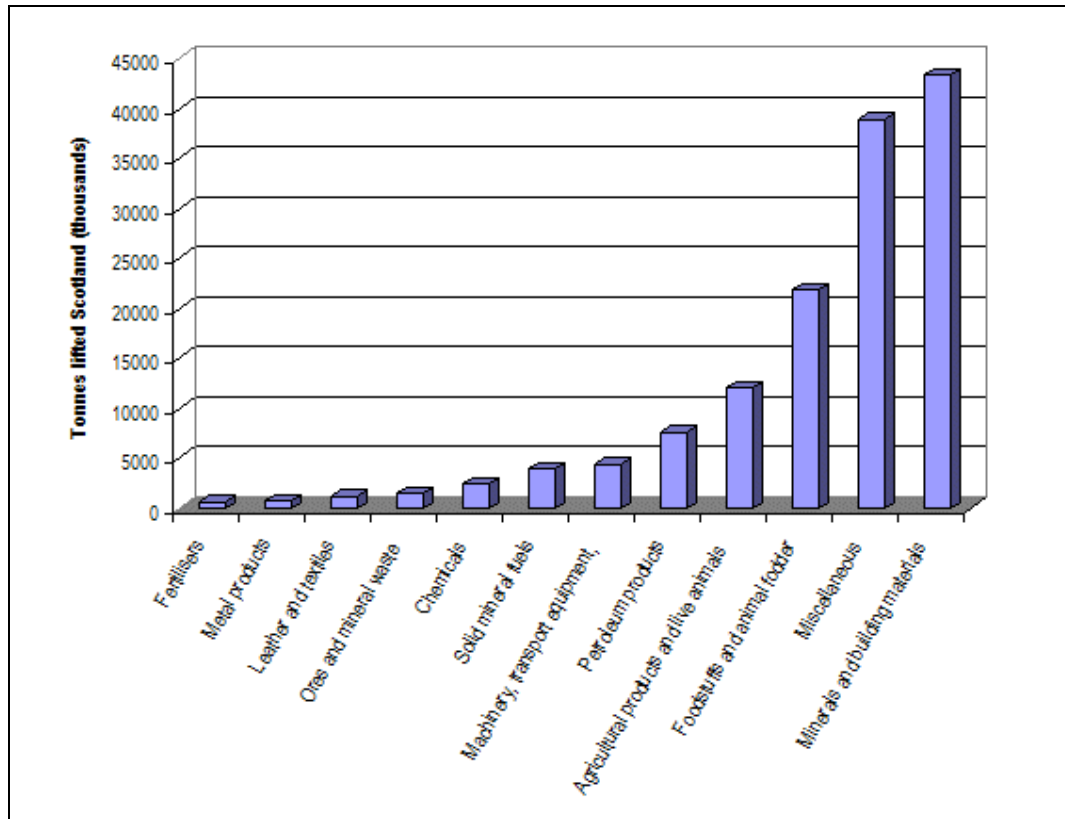
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3.2 Freight Products and Associated Journeys

3.2.1 FREIGHT COMMODITIES LIFTED: SCOTLAND AND UK

The goods lifted by freight in Scotland by commodity is not to dissimilar from the UK, with Agricultural products and live animals, Foodstuffs and animal fodder and Minerals and building materials representing 77% of freight lifted, as illustrated by figure 8 (excluding the miscellaneous category).

Figure 8 - Freight transport by road in Scotland: goods lifted by UK goods vehicles over 3.5 tonnes, Scotland 2002



(Scottish Transport Statistics 2003)

Table 3 highlights the relationship between commodity goods lifted, goods moved and the length of haul of the general freight sectors in the UK. Whilst bulk products represent a high proportion of the total goods lifted the average length of haul is substantially lower than the other sectors. Food, drink and tobacco are hauled the greatest distance in the UK with Chemical and miscellaneous products slightly further back. In the table miscellaneous products includes metal products, machinery and transport equipment and miscellaneous manufactured items.

Table 3 - Freight transport by road: goods lifted, goods moved, average length of haul by commodity, UK 2001

	Goods Lifted (million tonnes)	Goods Moved (Billion tonnes kms)	Average Length of Haul (kms)
Food, Drink and Tobacco	321	41.4	129
Bulk Products	592	39.8	67
Chemicals, petrol and Fertiliser	133	14.2	107
Miscellaneous products	534	53.9	101

(Transport Statistics Bulletin 2002)

Whilst most sectors of the freight industry have relatively low percentage empty running (below 25%), the Bulk Products sector tends to have relatively high levels of empty running, and as this sector represents both a substantial amount of the total goods lifted in the UK and goods moved this is a significant statistic. The sand, gravel and clay, other crude minerals and cements freight sectors are the least efficient in terms of backloading with over 42% of total movement being empty running. Other sectors outside of bulk products include petroleum products (36% empty running), agricultural products (33%) and fertiliser (28%) (Transport Statistics Bulletin 2002).

Finally, it is noteworthy that food, drink and tobacco freight sector, although still mainly dominated by public haulage companies, has a substantially greater proportion of mainly own account haulage companies operating than in other freight sectors; this is especially true in the foodstuffs sector.

3.3 Cost of Congestion

Quantifying the cost of congestion provides the planner with the justification for implementing solutions. However congestion often escapes adequate quantification partly due to the fact that data and information is difficult to obtain across the entire road network and in urban areas and the feeder roads leading to major arterial routes data is simply not available. Furthermore congestion often occurs during unpredictable traffic incidents such as events, short term roadworks and accidents. Congestion is often at its most prominent during these unpredictable times.

It can be argued that cost of congestion peaks in areas of high population density and high traffic flows; this is both a cause and effect as a larger population will ostensibly cause higher traffic flows and congestion but delays are also greater with a higher number of vehicles and people delayed due to sheer volumes of traffic. This last point is important for a number of reasons. Firstly because urban centres such as Edinburgh, Glasgow and Stirling are often the focal demand points for freight (especially retail, foodstuffs and just in time deliveries) and there is often limited choice, due to legislation and the timing and routes of freight deliveries, other than to ride out the congestion. With a continuing movement of the Scottish population to urban centres demand for goods and freight is increasing and with it the levels of congestion around these centres. However this increase in the tonnages of freight, as demonstrated by the analysis presented in this study, does not appear to be as significant a contributor to congestion as the increase in private (car) transport.

3.3.1 WHAT IS THE COST OF CONGESTION?

The likely effect of further traffic growth is estimated to increase the proportion of the motorway network that is subject to 100 per cent stress or more by about 90 per cent between 1998 and 2006 in the UK, and that of major roads by about 60 per cent. Estimates suggest that the cost of congestion amounts to billions of pounds each year. Motorways are currently subject to more widespread stress than major roads, and this difference is projected to increase markedly by 2006. Increases in congestion are directly related to increases in traffic. It has been estimated that road traffic could increase by more than one third over the next twenty years if no action were taken. There is evidently both an economic, social and environmental cost of congestion (Rogers 2003, Transport Statistics for Great Britain 2003).

The problem, what is traffic congestion and how it should be assessed, is usually subject to controversial discussions. It is clear that traffic infrastructure is not dimensioned to be empty and thus not every small delay should be accounted as a source of economic costs. But what is the minimum standard of quality - if there is any? According to social welfare theory the "optimal" level of congestion is reached, when all users would take into account the additional costs they cause on others due to their behaviour, while in more pragmatic approaches maximum delays are defined arbitrarily. In general, the results of different studies are often not directly comparable to each other.

3.3.2 WHAT IS THE COST OF CONGESTION TO THE FREIGHT INDUSTRY?

Much of the previous research on traffic congestion has focused on its direct costs to road users. Some broader assessments of the effect of congestion on the efficiency of logistical operations have been undertaken and these have included detailed discussions with freight managers at distribution centres in the UK to determine how congestion is impacting on the efficiency of internal operations and how freight companies are responding to congestion.

Some studies have suggested that the cost of congestion in the UK is in the region of £1.2 billion per annum but others argue that the estimation of vehicle operating costs in this case has been fairly crude and is unlikely to provide an accurate estimate of the true opportunity cost of congestion-related delays. Delays to freight traffic increase the amount of inventory in transit on the road network but the indirect effect of congestion on the efficiency of logistical operations at both ends of the journey are likely to be much larger, but are very difficult to quantify. Previous attempts to measure these indirect costs have relied heavily on managers' monetary valuation of 'additional scheduling costs' and 'journey reliability' (McKinnon 1998).

Congestion appears to be having little or no influence on inventory levels and labour costs and so far had little bearing on companies investment decisions in the areas of materials handling and IT. There is, studies argue, evidence of firms attaching growing importance to congestion in terms of the strategic planning of distribution systems, with some companies considering increases in depot numbers. In summary it is particularly difficult to quantify the indirect costs of congestion because of the problems of separating the effects of congestion from other schedule 'disturbances', allowing for variations in logistical process times and establishing the amount of importance attached to congestion in investment decisions.

3.3.3 HOW IS CONGESTION MEASURED?

Congestion can be measured in a number of ways – level of service, speed, travel time, and delay are all commonly used measures. However, studies have indicated that more important than the severity, magnitude, or quantity of congestion is the reliability of the road system. Travellers commuting between large urban areas may accept that a 40 mile motorway trip takes 20 minutes longer during the peak period, so long as this predicted travel time is reliable and is not 25 minutes one day and 2 hours the next. This focus may be on reliability and is particularly prevalent in the freight industry, where the value of time under certain just-in-time delivery circumstances is particularly high.

One particular study in the UK looked at road user perceptions of the best way to measure congestion on the road network. Responses were overwhelmingly in favour of measuring the extra time taken compared with free-flow time. This methodology is adopted in the section below, measuring the cost of inter-urban congestion.

Although it is impossible to be definitive about all techniques and technologies available to measure congestion it is apparent that the measurement or inference of travel times is key to forming the basis of congestion measurement. Techniques to measure travel time include:

Floating car survey - This uses instrumented vehicles that perform a number of traverses of pre-selected routes at different times in order to build up a sample of travel times. DfT and TfL have used the technique for a number of years. A variation that is now technically possible is to continually track a fleet of vehicles (e.g. buses, taxis, delivery vans) by means of an on-board satellite positioning system (GPS). The equipment in the vehicle records the time and the vehicle locations with a high frequency, typically once per minute but it can be more often. This approach gives a much richer data set, although it can be biased towards by the characteristics of the fleet operation and this may create an unrepresentative sample frame. However for the purposes of this study this may prove an advantage.

SCOOT data – SCOOT is a tool for managing and controlling traffic signals in urban areas. It is an adaptive system that responds automatically to fluctuations in traffic flow through the use of on-street detectors embedded in the road. Data is collated from this urban traffic control systems which can be provided as easily accessible information on current and historical traffic conditions. The system continuously monitors and stores traffic conditions for later retrieval and analysis. The system can also act as a reference against which to compare current traffic conditions. Recent versions of SCOOT support an add-on database system which collates and stores all the measurements collected and synthesised by the SCOOT system. This data can then be interrogated and statistics on network performance can be calculated. As SCOOT is primarily used on networks of streets close to urban centres the coverage may be insufficient to provide countrywide measures.

Travel time measurement using number plate matching - Manual collection and matching of vehicle registrations has been used for a long time in urban studies of origin-destination patterns and junction turning movements. Recent advances in computer image processing and optical character recognition have led to systems capable of automatically capturing images of number plates and extracting the registration for subsequent automated matching in a central computer. The accuracy is sufficient for statistical purposes and permanently installed systems can be used to monitor journey times between data capture sites on a continuous basis, including in near-real time. Helsinki in Finland has used

such a technique for monitoring the ring motorway. Trafficmaster have an extensive system on the trunk road network, including in urban areas, and the Highways Agency Traffic Control Centre will deploy a network of more than 600 data collection sites across the motorway and trunk road network. To date the information generated in has generally been used for near real-time traffic information but recently work has begun on considering such data for use on congestion measurement.

3.3.4 MEASURING THE COST OF INTERURBAN CONGESTION

In the centre for economics and business research report "*Impact of the EU working Time Directive (WTD)*" a summary of the impact of congestion upon the road haulage industry is presented. It is estimated that with the increase in the number of vehicles as a result of the EU WTD, and the predicted falling average speed over the period 2002-2010 from a base of 100 to 95.05 in 2010 the cost of increased congestion in the UK will be £710 million in 2005 rising to 4 billion by 2010. This is presented as a result of the WTD but also as congestion in the UK grows "organically". Neither a cost of congestion in Scotland, or a cost of congestion before 2005, is highlighted.

The following methodology was developed to examine the current cost of congestion on the inter urban Scottish road network in terms of hours lost to road haulage companies using the best figures available both in terms of actual freight journeys and the costs available for specific vehicle types from the freight industry.

A number of broad assumptions were made about congestion and these included:

- Congestion predominantly occurs during morning (8am – 10am) and afternoon peaks (4pm – 6pm); and,
- Congestion on the Scottish interurban road network is predominantly centred on the major routes around major cities.

The following data was used to develop a cost of congestion for 2001-2:

- AADF of HGV on the project network;
- Travel time data for 34 major routes across Scotland (between 17 urban locations) based on floating car surveys; and,
- Road Haulage Association: Goods Operating Costs 2002/2003.

Using a weighted methodology based on the number of freight vehicles in each class in Scotland an average Goods Vehicle Operating cost was developed for the Project Network. This was calculated to be £928.95 per week or £16.89 per hour (based on a 55 hrs week). The cost incorporates driver wages, taxes, vehicle depreciation etc. The total delay on each of the 34 routes defined for AM and PM peaks was compared to the "normal" or non-congested times and weighted by the AADF of HGV vehicles on each of the routes available from the SRTDb. The total delay (in hours) of all HGVs on these routes per day and consequently per year was calculated and the cost estimated using the Goods

Operating Costs. Table 4 below indicates this calculation and the estimated cost from 2003 – 2010 using the speed index estimated by the CEBR (2003) assuming that the congestion in Scotland grows by a similar rate to the UK.

Table 4 – Estimated interurban cost of congestion to the Road Haulage Industry (HGVs only) on major Scottish routes (2002– 2010)

Year	£ Million
2002	18.05
2003	18.08
2004	18.19
2005	18.44
2006	18.78
2007	19.27
2008	19.89
2009	20.72
2010	21.80

It should be noted that these figures are based upon the data available and calculated on a total route delay basis for major routes in Scotland although there are certainly additional routes within urban and rural areas that are congested daily, total volume of HGVs on these routes are not available. The congestion cost figures above should be viewed as interurban; a significant area of freight transport in Scotland as discussed in previous sections.

Whilst it is argued that rising congestion costs have been partly contained in recent years by the rising efficiency of the road haulage industry, this trend may be likely to reverse especially with the introduction of the WTD. The combined effect of a greater number of freight vehicles (estimates vary between 1-3%) as a result of the WTD, ostensibly greater operating costs (fuel costs, driver wages etc.) and the predicted rises in overall congestion on Scottish roads paints a relatively bleak picture, one that the study aims to address.

4. LITERATURE REVIEW AND BEST PRACTICE REVIEW

The primary objective of this stage of the study was to gain an appreciation of best practice, both in the UK and internationally, of measures introduced to the road freight transport sector with the aim of reducing road congestion and improving environmental performance.

The review of each measure considered the status of the measure, key objectives of the measure and problems to be addressed, an estimated financial cost (where data is available) and the impacts of the measure and any follow on measures/refinement. The review allocated measures into the following categories and examples are provided in under each section head:

- **Infrastructural and Operational Measures**
 - Recommended Truck Routes in Bremen (Germany).
 - 24h Economy 24h Transport: Nightmare or solution?
 - Shared HGV/Bus Lanes - UK – Newcastle.
- **Policy and Institutional Measures**
 - Dublin Delivery Management Strategy (Republic of Ireland).
 - Harmonisation and standardisation: Netherlands - To standardise vehicle restriction regimes in the Netherlands and further logistic chain integration.
 - Cooperative Measures: City Logistics Kassel (Germany) - Seven forwarding companies have formed a co-operation for delivering to the inner city of Kassel.
 - Leeds Delivery Curfew Initiative (lifting night-time curfews).
- **Potential for Intelligent Transport Systems**
 - e-DRUL (Netherlands) - initiative to stimulate the development of ICT services and facilities for the consumer.
 - Real Time Traffic Information - Telematics and Traffic Information – ROMANSE.
 - Commercial Vehicle Fleet Management System (Hungary).
 - Intelligent Vehicles and Networks - INVENT (Germany) - intelligent cars and the intelligent traffic networks.

- Increased Intermodality
 - LGZ Hochrhein, Rekingen (Switzerland) - logistics platform and freight village.
- Freight Quality Partnerships
 - City Centre Distribution in Groningen (Netherlands).
 - North East Scotland Freight Quality Partnership.
- Other Measures (such as the use of alternative fuels and driver training).
 - UK Driver Training Schemes.
 - Lorry Route Map for Worcestershire.

5. ROAD TRANSPORT DIRECTIVE AND IMPLICATIONS

5.1.1 EU DRIVERS HOURS RULES

In September 1986 the EU Drivers Hours Rules (EC/3820/85) became law in the UK. The rules define driving and total working hours limits for HGV drivers. Under the EU Drivers Hours Rules drivers can work an average of 68 hours week and drive for an average of 45 hours a week. The rules average working\driving time over a set period making it possible for a driver to work a maximum of 84 hours and drive for 56 hours in a single week. In addition to working time limits the Drivers Hours Rules also enforce mandatory break periods and weekly rest. A break of 45 minutes is required after 4½ hours cumulative or continuous driving, which may be divided into 2 or 3 breaks of no less than 15 minutes during or immediately after the driving period. The rules also require 45 consecutive hours of rest per week, which may be reduced to a minimum of 24 hours (dependent on when its taken) provided that rest is compensated within three weeks. The EU Drivers Hours Rules still provide the most significant working time regulations for employees in the road transport industry and take precedence over all current and proposed working time legislation.

5.1.2 WORKING TIME DIRECTIVE

Council Directive 93/104/EC Working Time Directive (WTD) was adopted by the European Commission on the 23rd November 1993. The directive introduced working time provisions for most sectors of employment, however selected sectors including transport, were temporarily excluded. On the 1st October 1998 the 'Working Time Regulations' (WTR) were implemented in the UK. The WTR was the UK Government response to the WTD (93/104/EC) and accordingly set out a series of basic rights and provisions for workers, including an average weekly working hours limit, rest periods and annual leave. The regulations represented a significant change for the UK where little legal legislation relating to working time existed and any regulations that did had been repealed during the 1980s and early 1990s. The WTR had few implications for the freight transport sector since it permitted individuals to voluntarily opt-out of the working hours limit and a number of sectors including road transport were specifically excluded.

5.1.3 EUROPEAN COMMISSION WHITE PAPER

In July 1997 the European Commission adopted a White Paper inviting social partners (industry representatives and stakeholders) to discuss and agree the basis for implementing working time legislation for the industry sectors temporarily excluded from the original WTD. Intensive negotiation during 1997 proved fruitless and the social partners in the road transport sector failed to reach an agreement. As a result the Commission decided to publish two sets of proposals, which followed its preferred differentiated approach to excluded sectors. The first proposal known as the Horizontal Amending Directive brought excluded sectors within the original WTD, the second known as the Road Transport Directive focussed on mobile workers in the transport sector.

5.1.4 HORIZONTAL AMENDING DIRECTIVE

The Horizontal Amending Directive (HAD) was agreed and adopted by the European Commission on the 1st August 2000 and was integrated into UK legislation two years later. The legislation extended in full all working time regulation to non-

mobile workers in the road transport industry and also included limited protections for mobile workers covered by the European Drivers hours rules (3820/85), namely entitlement to 4 weeks paid annual leave and health assessments for night workers. The HAD like the WTR has had limited impact on the road freight transport sector since it still excludes mobile workers (i.e. HGV drivers) from the working hours limit and allows protected workers to voluntarily opt-out of the working hours limit.

5.1.5 ROAD TRANSPORT DIRECTIVE

The 'Directive on the Organisation of the Working Time of Persons whose Occupation is the performance of Mobile Road Transport Activities' or 'Road Transport Directive' (RTD) was agreed and adopted by the European Commission on the 23rd March 2002 and is due to be implemented in the UK by 23rd March 2005. The RTD will extend the HAD provisions for mobile workers to include breaks, rest periods and working time limits. The UK Government is currently undertaking a consultation exercise for implementation of the directive. Mobile workers inside the scope of the RTD will be covered by the new UK regulations from 23 March 2005. Self-employed drivers (as defined under these regulations) will be covered from March 2009 onwards.

5.1.6 CURRENT STATUS OF UK LEGISLATION

In summary, three pieces of working time legislation are currently implemented in the UK, (1) EU Drivers Hours Rules, (2) Working Time Regulations and (3) Horizontal Amending Directive. The EU Drivers Hours Rules are currently the most significant and take precedence over the subsequent WTR and HAD legislation. WTR and HAD legislation have had limited impact on the road transport sector due to the working hours opt-out and industry sector exclusion. However this situation is set to change from 23rd March 2005 when the implementation of the proposed RTD legislation will radically alter working time in the road transport sector.

In summary the main provisions of the Road Transport Directive for the UK are:

- Weekly "working time" is restricted to an average 48 hour week (normally calculated over 17 weeks, but can be extended to 26 weeks under a relevant agreement). There is also a limit of 60 hours for the maximum amount of working time that can be performed in a single week;
- There is no "opt-out" for individuals wishing to work longer than an average 48 hour week, but break periods and 'periods of availability' do not count as working time;
- Periods of availability (PoA) - Loosely speaking, a PoA is waiting time whose duration is known about in advance by the mobile worker. Examples of a PoA might include accompanying a vehicle on a ferry crossing and waiting for a vehicle to be loaded / unloaded. For mobile workers driving in a team, it also includes time spent sitting next to the driver while the vehicle is in motion.
- Night time is between Midnight and 4am for goods vehicles and 1am and 5am for passengers vehicles. If any work is done during the night period, it must not exceed 10 hours (in a 24 hour period), unless there is a relevant agreement.

- Breaks: Workers must have a break after 6 hours of working time. A break of 30 minutes is required for 6-9 hours work; 45 minutes for over 9 hours. Breaks can be divided into 15 minute slots. Where mixed driving and other work is carried out, the break provisions under EU drivers' hours rules (EC/3820/85) take precedence.
- Rest: Same as drivers' hours rules (EC/3820/85) or failing that, the AETR Agreement - but also applies to trainees.

5.2 Implications for Road Freight Industry

The aim of this section is to identify the directives key implications and assess how these may vary for Scotland. The implications listed below are based primarily on estimates and evidence from the impact assessments reviewed previously, but other sources have been utilised as appropriate.

The key potential impacts and implications for the Road Freight industry in the UK include:

- Increase in number of HGV on the UK road network (estimated to be between 2-3% rise);
- Increase in cost of road transport in the UK (estimated to be around 2.5p per tonne km);
- Increase in daytime working (assuming no derogation to Article 7), decrease in night time driving and potential impacts upon congestion;
- Further increases in vacancy rates within the road freight industry;
- Extra employment opportunities for non-driving activities;
- Modal shift for freight product types that require flexible transport logistics (e.g. overnight rail delivery);
- Increase in demand for drivers in the UK (estimated 60,000 plus);
- Increase in driver hourly wages;
- Small short-term advantage for self-employed (as defined by the RTD) owner/operators over larger companies (until March 2009);
- Increased amalgamations between smaller firms/groups (not regarded as self-employed by the RTD);
- Expansion of larger firms at the expense of smaller more specialised firms who concentrate on specific mid-distance routes (4-8 hrs);
- Substantial increase in operating costs for companies within the road freight industry (estimated to be up to 5.9% per annum).

- Increased cost of congestion: time delays to freight operators as a result of congestion becoming more costly.
- Difficulty in continuing longer hauls without increasing the use of double manned vehicles.

The implications above are applicable to the UK Road Freight Industry as a whole and will be applicable to the Scottish industry. However Scotland's unique geography and road network structure means that certain implications may be more applicable to the Scottish industry.

The implications listed below are based on issues raised in the impact assessments which could have a potentially greater impact in Scotland:

- Increased difficulty for road freight access to rural or isolated areas e.g. Highlands – large number of driver hours required to reach these areas;
- Proportionally higher transport costs for rural or isolated areas along minor routes e.g. Highlands – potential requirement to double man vehicles to reach outlying areas; possible reduction in “trade” between urban and remoter rural areas in Scotland; and
- Reduced direct road haulage from Scotland to Europe as a result of journey length and limits on working hours.

6. STAKEHOLDER CONSULTATION

The purpose of the industry consultation phase of the project was to gauge the opinions of and gain feedback from the road transport sector regarding issues faced by the industry and potential solutions to improve the efficiency of freight in Scotland. The consultation exercise aimed to provide results which can be input to and inform the option development stage of the project.

6.1 Approach

To ensure successful delivery, the consultation exercise featured a three phase approach, whereby each phase builds on the foundations of the previous. The phases were as follows:

- Phase 1 – Mailed Questionnaire based survey;
- Phase 2 – Consultation workshop; and,
- Phase 3 – Wider Online E-Questionnaire survey.

Phase 1 consisted of a paper based questionnaire survey targeted at the key sub-sectors of the road haulage industry. Hauliers were selected from each sub-sector in order to provide a representative response from the industry. The questionnaire focussed on issues concerning the efficiency of the road freight sector. A copy of this questionnaire is included in Appendix A.

Phase 2 was a consultation workshop which involved those hauliers who had responded to the Phase 1 consultation. The workshop concentrated on the discussion of issues and solutions to improving the efficiency of the road freight sector. Discussions were guided by and built upon the results from the Phase 1 questionnaire.

Phase 3 was an online E-Questionnaire targeted at members of Road Haulage Association (RHA) and Freight Transport Association (FTA). The E-Questionnaire built on outcomes from the Phase 2 consultation workshop, focussing in detail on factors and measures which had been refined during Phase 1 and Phase 2. A copy of this questionnaire is included in Appendix B.

6.2 Phase 1 – Questionnaire

The Phase 1 questionnaire contained three ordinal questions which required consultees to rank a number of issues in order of importance. Responses from the ordinal or ordered list questions were collated in individual tables and overall rankings calculated for each element of each question, and subsequently used to create the pie charts shown in the following sections. Overall rankings were calculated using a linear index where the higher the rank, the higher the index number e.g. Rank 1 = 10, Rank 2 = 9.....Rank 10 = 1. The number of responses at each rank were multiplied by the index number and then totalled to give the Overall Ranking.

Phase 1 consultation highlighted and established a number of key issues. Question 1 opinions were distinct and results identified four key external factors affecting the efficiency of the road transport sector, namely:

- Urban and (Inter-Urban) road congestion;
- Driver costs;
- The Working Time Directive; and,
- Driver shortages.

Results from Question 1 show a significant consensus of opinion across all sub-sectors of the industry. However the four key factors received similar overall rankings suggesting that no single factor is the most important; rather all four are of equal importance.

Question 2 showed few distinct patterns, suggesting that industry opinion is mixed on the issue of which organisations are most important to improve efficiency. The results show Central Government to be the most important, although similar importance is given to Local Government, Road Transport Sector, European Union and Customers. Consultees seem to agree that Police are the least important organisation in this regard.

Question 3 again showed few distinct patterns with mixed response to measures, however respondents agreed that the majority of measures could improve efficiency whilst still being both achievable and sustainable. Detailed analysis has highlighted seven key measures, namely:

- Freight lanes / lorry use of bus lanes;
- Changed loading / unloading restrictions;
- Intelligent Transport Systems (ITS);
- Co-operative measures and communications;
- Recommended / agreed routes;
- Freight Quality Partnerships; and,
- Lorry road user charging.

Although Freight lanes / lorry use of bus lanes received the highest overall ranking the scores are very similar for the top seven measures indicating an equal level of importance to improving efficiency. Question 3 was the only question where respondents used the 'Other' option to specify their own measures.

6.3 Phase 2 – Consultation Workshop

The consultation workshop provided invaluable input from industry stakeholders and provided an important indication of industry views regarding efficiency. Highlights from the discussions include the following:

- Driver Issues are regarded as having the most impact on efficiency;
- No-car lanes, especially on motorways, are regarded as more feasible than freight lanes or lorry use of bus lanes;
- A need for stronger guidance from the Scottish Executive to Local Authorities on freight issues and a more appropriate measure of the value of HGV time saved by infrastructure measures;
- Lorry Road User Charging is viewed as a taxation issue and will have little impact on efficiency; however concern was expressed over Scotland's situation, with absence of motorways in the North and the prospect of general road user charging, particularly in cities and towns. *(Note: since the workshop was held the scope of the charge was revised to cover all UK roads); and,*
- There is scope for more support for training both drivers and in particular vehicle technicians.

6.4 Phase 3 - Online E-Questionnaire

Phase 3 consultation provided more focussed feedback on the key issues identified in Phases 1 and 2 whilst also providing consultees with the option to express their own ideas and thoughts. Despite wide distribution by both the RHA and FTA and ease of access via the World Wide Web, response to Phase 3 was particularly disappointing. However the limited feedback was of a high quality and represented some ideas and opinions of logistics planners and freight managers of some of the larger freight organisations operating in Scotland (respondents were asked to submit their name and organisation).

Question 1 focussed on factors impacting on efficiency and attempted to discover whether the factors highlighted by Phases 1 and 2 were supported by the wider industry. Results showed most respondents felt the following three measures were most important;

- Urban road congestion;
- Driver shortages; and,
- Working Time Directive.

Question 2 provided consultees with the option to suggest their own measures for improving efficiency and although many answers were similar to the suggested measures featured in Question 3 there were some different ideas worthy of note:

- Improved roadside facilities to prevent driver fatigue and discomfort;
- Increase public awareness of the vital role played by the transport industry; and,
- Improve transport industry image in order to attract younger and provide a career structure with more training.

Question 3 featured the top seven measures identified by the Phase 1 questionnaire and like Question 1 aimed to discover if these were strongly supported by the wider industry. Results showed most respondents felt the following three measures were most important:

- 24 hour operation / delivery;
- Recommended routes; and,
- Freight quality partnerships.

Question 4 highlighted a lack in the use of real-time traffic information services especially amongst those who responded, this can be seen as an opportunity and there are proven efficiencies of developing wider usage in this area. Question 5, although under utilised by the consultees, did provide a crucial point; that joined-up thinking between all agencies, organisations, industry and representatives should prevail.

7. RECOMMENDED MEASURES

7.1 Introduction

This section sets out a number of potential solutions and approaches, which, together as a package, aim to sustainably improve the efficiency of the freight sector in Scotland.

Initially, each of these is presented with an overview of the proposed measure together with the relative advantages and disadvantage of adopting that measure. The applicability and some working examples of each option are also detailed.

Each measure is then subsequently explored further in the following section focusing on a definition of the option, the objectives and aims and what an option is set to achieve and what problems will it be addressing, where and how the solution can be implemented and some examples of success. The next steps for the Scottish Executive, Local Authorities and the freight industry in taking these measures forward are lastly highlighted – again, it must be emphasised that for the measures to succeed, cooperation and support of all parties is vital, and the proposed approach recognises that each all have a key part to play in achieving this.

It should be reiterated that these measures should not be considered in isolation, but as part of a wider coordinated package. This is demonstrated in the final section, which contains a hypothetical case study of a city in which a range of the measures are progressed by the stakeholders as a package. This demonstrates a potential roadmap for implementing solutions and addressing some of the issues facing the industry.

7.1.1 OVERVIEW OF MEASURES

The table overleaf presents an overview of each of the proposed measures. This table has evolved from similar outputs presented to stakeholders during the various consultation phases, in which views were sought on a greater range of measures identified during the Best Practice review. Following the valuable feedback gained during consultation the full range of proposed solutions were streamlined and refined, and make up the package of solutions detailed throughout this section.

Element		Pro	Con	Applicability	Comments	Workable Examples
Title	Description of Measure	General advantages of adopting the measure	Disadvantages of adopting the measure	How applicable is the measure to the Scottish Freight Sector?	General comments	Any (Working) Examples?
Perception of Freight	Developing a positive image of Freight in the public and LA perception. Promoting careers in freight.	Improves public relations, reduces outside pressure on freight sector.	Long-term planning required with time intensive investments.	Applicable Scotland wide.	Key option development, should be implemented with any other options.	Some examples of Freight already being promoted in Schools
Freight Quality Partnerships	Utilise the expertise of public and private sectors to encourage and improve the sustainable operation of freight.	An excellent platform for discussion and a vehicle for promoting and operating other freight solutions. Requirement to deliver though.	Long term planning required. Promotion of objectives and advantages required to get all parties to sign up. Few examples.	Applicable to all regions in Scotland from Urban to rural.	Limited success may be a result of the way FQPs are marketed and the lack of organisations to lead the FQP.	Aberdeen (NESFQP)
Freight Information Service	Development of a real time and historical freight information service disseminated using current technologies.	Customised Freight Information based on data currently collated as part of projects such as NADICS. Improves real time logistic decisions.	Generally disseminated via mobile and internet technology - requires existing widespread usage.	Applicable to Scottish, UK and European travel and may be increasingly facilitated through interoperable incident data.	NADICS currently collate incident data.	None although real time information is widely disseminated if not customised for the freight sector.
Recommended Truck Routes/ Agreed Route Networks	Advisory Road Freight Routes - based on road and vehicle type. Aims to improve driver knowledge and reduce unnecessary driving/ fuel consumption.	Method of disseminating critical. Can include travel and traffic information. Reduction in Vehicle kms and emissions.	Extensive Consultation in agreeing scope of network. Work required to keep map up-to-date.	Very, especially with a hierarchical approach to road types. The network must be developed with the Freight industry.	Should be completed in conjunction with other options, environmental deliveries, 24hr deliveries.	Agreed Route Network (Scottish Timber) Truck Routes Bremen Lorry Route Map for Worcestershire

Element		Pro	Con	Applicability	Comments	Workable Examples
Loading and Unloading Zones	Dedicated Loading and Unloading Lanes, better management of kerbside access, lorry access to urban pedestrian areas.	Promotes cleaner use of vehicles and reduces congestion and Tonnage kms.	Requires cross-industry participation, regulation and policing. Parking is limited to specific road space.	Applicable to some larger cities in Scotland. Extensive preliminary work will be required to identify the appropriate and workable locations.	Requires political will behind the policy and well thought-out marketing to the public road user. The option must be developed alongside others.	Some successful trials in Barcelona.
Environmental/Green Urban Deliveries	Within "Environmental Zones" special regulations are implemented for environmentally friendly heavy goods vehicles. The zones are areas within built-up areas, which are especially susceptible to disturbances from traffic and where traffic regulations are implemented. Vehicles which do not have an environmental classification (noise and emissions) are not allowed to enter the Environmental Zones.	Promotes cleaner use of vehicles and reduces congestion. An excellent option to reduce pollution levels.	Requires cross freight participation, regulation and policing. Emissions from freight and goods vehicles represent a small proportion of pollution.	Applicable to some larger cities in Scotland where high pollution levels have been identified.		Implemented and in operation since 1996 in Stockholm, Sweden.
Environmentally Cleaner Vehicle Emissions	To reduce environmental pollution, including both noise disturbance and air pollution, in line with the stricter controls that are likely to be imposed in the future.	Environmental benefits.	No economic advantages initially.	Applicable Scotland wide but especially within Urban environments.	Must be implemented with other options.	TransportEnergy PowerShift grant scheme

Element		Pro	Con	Applicability	Comments	Workable Examples
Driver Training	Training of freight drivers to efficiently use vehicles, in safety awareness and vehicle maintenance.	A driver-training scheme can bring about a more efficient use of vehicles and safety benefits and can help to reduce energy consumption through improved fuel efficiency, cut vehicle emissions and reduce accident rates. It can also help to reduce maintenance costs.	Very few, if any, disadvantages. Generally requires government initiatives – cost	Already a proven option in Scotland.		Scottish Executive, many private freight operator examples.
24 hour operation/delivery	Shift of daytime delivery to night time, relaxation of rules.	Reduced impact of congestion on Freight Operators. Reduction in emissions and vehicle hours and an increase in average speed.	Noise, Social and Community concerns. Potentially requires a change in supplier and business working hours.	Very applicable to congested urban areas, there is evidence that night deliveries are already occurring (inter-urban).	Must be completed in conjunction with other options including environmental delivery options, perception of freight.	None in the UK but proposals for trial scheme being developed (Lifting night time curfew initiative)
Harmonising and Relaxing Restrictions	To standardise vehicle restriction regimes in urban environments.	Improve Urban logistics, freight efficiency and potentially open up pedestrian areas to freight. Greater awareness of the importance of freight.	Limits larger vehicles from city centres and some roads.	Applicable to major Urban environments especially Edinburgh and Glasgow.	Must be completed in conjunction with other factors such as adoption of environmentally improved vehicles and freight perception improvements.	Netherlands - Harmonised restrictions to categorise and restrict vehicles.
ITS, On Board Logistics	The use of ITS, real time traffic information, decision support systems and vehicle management.	Can improve efficiencies, local and national freight distribution.	Cost of infrastructure - although mostly available on Scottish Trunk Road network.	Applicable across Scotland		NADICS, Multiple European examples: - MOSCA, Stuttgart. - E-Drul, Netherlands,
Vehicle Technology	Improve on board logistics, vehicle safety, telecommunication.	Improve efficiency, reduction of congestion and improved real time logistics.	Cost of implementation, requires cross freight agreement.	Applicable to Scottish urban environments.	Could be promoted through a FQP.	Invent Project in Germany

Element		Pro	Con	Applicability	Comments	Workable Examples
Real Time Stock Information/ Back loading Database	Real time stock information feed from a centralised database to remote clients to promote back loading and improved efficiencies.	Promotes back loading, reduces empty running and improves economic efficiency.	Could be difficult to implement across disparate freight sectors. Agreements regarding data sharing may be hard to negotiate.	Applicable to Freight on a sector by sector basis. E.g. construction material or timber.	Operational successes have been promoted by real time champions with Government organisations.	Wales Harvesting and Marketing (WHAM - Timber), Wales.
Lorry Road User Charging	Charge for lorries using road network with associated tax cuts. Varying by distance, road, time of day.	Charge associated on a fairer as used basis.	Cost of regulation.	Applicable across Scotland		Lorry Road User Charging: Active – Austria, Switzerland and Germany Planned - UK (2008)
Access Control, Area Licensing, Congestion Charging	Controlled urban areas with access limited by means of policy or charges - specific improvements are relevant to the freight industry if implemented for all private vehicles.	Higher efficiency due to shorter lead times/reduction of waiting times, Higher reliability due to less congestion, Better predictability due to less congestion	All improvements come at a cost at point of delivery.	Congestion charging may be implemented in Edinburgh. Unlikely in other cities for the foreseeable future.		London, Rome, Copenhagen and Paris.
Intermodality/ Consolidation	Increasing Intermodality through urban logistic centres and initiatives such as the Freight Facility Grant scheme.	Reduction in congestion and Environmental benefits.	Costly initiatives to implement and justify economically.	There are a few successes in Scotland but larger economies of scale must prevail so only in areas of intensive freight movements are the projects justified.	Recent developments in the Rail Freight sector with the use of Freight Multiple Units has lowered the distance beyond which rail becomes economically viable.	New rail freight terminal buildings at Grangemouth (2002)
Freight Use of Priority Vehicle Lanes	Use of priority vehicle lanes by goods vehicles, limited to certain times of the day	Better use of available road space during non-peak bus flows. Improve freight efficiency and average urban journey times	Safety Issues for cyclists and other motorists. Width of priority vehicle lanes may be a problem.	Priority vehicle lanes in most major cities although issues muted with width of lanes. Some trials completed in Aberdeen.		Trials in Newcastle, Study in Aberdeen, M25 and M4 Studies

Element		Pro	Con	Applicability	Comments	Workable Examples
Freight Priority Through Minor Engineering/Physical Works	Minor projects (lane configuration, signal phasings) on urban road networks.	Low cost. Better use of available road space, particularly in relation to freight vehicles, with improved efficiency and urban journey times	Cost of implementation..	Potential to be widely applied throughout urban areas in Scotland.		Measures identified by NESFQP, and examples implemented in Aberdeen.

7.2 Perception of Freight

7.2.1 OPTION OVERVIEW

A key output from the consultation phase of this research study was the recognition that the freight industry must improve its image with the public and Local Authorities in order that road freight is viewed as an economic necessity and service rather than purely as a contributor to intra and inter urban congestion, pollution and transport problems.

To achieve this, two slightly different approaches for the public and local authority sectors are required. Firstly, it has been widely noted that there is an absence of an agreed form of measurement to assess the overall contribution of freight to the economic sector and accordingly an accepted methodology to assess the impact of congestion and delayed delivery on freight. Addressing this deficiency and the promotion of freight related contributions to the Scottish Economy within Local Authority planning and economic development departments, will help to improve the appreciation of freight and the regional and national planning approach to the freight sector. It will also be crucial to get freight issue moved up the agenda in the proposed Regional Transport Partnerships and the early adoption of key measures to sustainably improve freight in Scotland within these organisations.

Promoting the image of freight in the public sector will require a different tack with emphasis upon freight as a career within schools, promoting any environmental concessions being undertaken by freight operators and emphasising the economic contribution that freight makes to growing Scotland's economy.

Re-branding the public image of freight in Scotland would appear to provide the ideal place to start improving the sustainability of freight in Scotland and regional Freight Quality Partnerships would appear to be the obvious vehicle to achieve this.

7.2.2 OPTION IMPLEMENTATION

The following section sets out the methods and proposed way forward for implementing the improving the perception of freight option. As above, two strategies are set out, one for Local Authorities and one for the public. Specific solutions are presented and timescales for each are discussed. Lastly, and importantly, the linkages between this option and other proposed solutions is presented.

7.2.2.1 Local Authority and Government

Transport planning in local authorities is often dictated by national policy interpreted locally and quite rightly each local authority in Scotland has the interests of its geographic region and populace as its main concern. Freight, or logistics, as an industry tends to incorporate a number of regions but, as indicated in the analysis of the network stage of this project, there is a significant intraregional movement of freight. The poor perception of freight manifests itself in the value to the local economy that is attached to freight and subsequent lack of funding received through local government by schemes that directly benefit the industry. Improving the efficiency of freight is generally low on the list of objectives whilst the focus has been to fund projects with modal shift a key objective, such as rail and public transport schemes, including park and ride and bus prioritisation.

Assessment of the Value of Road Freight to the Economy of Scotland

Improving the image of freight, realising the value of the industry to the local and national economy and ultimately gaining dedicated funding for the road freight industry might be achieved through a number of broad strategies. Firstly an assessment of the value of road freight to the economy should be completed. This would firstly lead to a more accurate evaluation of the cost of congestion or delays to freight vehicles and further any attempts by local authorities to reduce localised congestion.

Assessing the value of logistical services to the Scottish or local economy is inherently difficult. Road freight services provide a crucial service for many industries which may simply not exist if that service was priced out of the market or dissipated. There are two ways to place a value on the logistics or freight services. The first involves considering the contribution of the logistics sector to the economy in terms of the industries which operate in this area, the number of people employed and economic value created by specific firms in terms of revenues.

The second method is to examine freight or logistics as a service which operates to fulfil a specific industry need, not too dissimilar from say the Post Office or a Water company. These industries lie in the slightly greyed area between public service and private sector as services that the market requires to function but often struggles to justify considerable expense upon. A significant societal opportunity cost of a world without road freight exists but evaluating these costs and these industries has always been notoriously difficult, but should work be completed to assess the freight industry the following should be considered:

- Overall economic contribution made by the freight and logistics industries in Scotland examining employment, job creation, growth etc;
- Contributive value to transport in general of continued support, relaxation of appropriate restrictions and dedicated funding for the Scottish freight sector in terms of reduced congestion, reduced emissions and industry stability and associated investment;
- Value of road freight sector to specific industries such as retail, building and construction and farm and foodstuffs; and,
- External benefits of the freight sector to rural economies not connected by rail or sea freight.

Raising the Profile of Freight in Local Authorities

The second strategy should be achieved through Freight Quality Partnerships or organisations such as NESTRANS or the new Regional Transport Partnerships. Raising the profile of freight and value of logistical services through such organisations is key but the deliverables of these organisations must be appropriately planned. Solutions to local issues must feed directly into Local Planning and Transport departments.

There have been limited success with regards to establishing Freight Quality Partnerships in Scotland and the North East Scotland FQP stands out as the single accomplishment. Whilst this example offers some hope for co-operation between private, public and representative industries the outputs have not necessarily fed seamlessly into Local Authority

planning departments. Improving the perception of freight within Local Authorities requires strategies for feeding research and information gleaned through FQPs directly into planning departments and as such some of the following measures may assist:

- Planning of deliverables: Ensuring outputs and proposed solutions are directly targeted at planning departments e.g. Surveys of local roads or intersections where there are specific freight issues/ Mapping of recommended or agreed routes.
- Increasing the number of representatives from Local Authorities and the Road Freight/Logistics sector on FQPs.
- Evaluation of the value of freight as a vehicle for greater appreciation of freight issues – local assessments of the value of freight run through a FQP.
- Ensuring FQPs have a defined role in Regional Transport Partnerships (e.g. NESFQP as part of NESTRANS)

The last strategy is more of a national policy that may influence local decisions. There have been recent attempts by the Timber Freight industry and strong economic arguments presented for the earmarking of a Timber Transport Fund. A recent report concludes that there is a strong economic case for Scottish Executive funding and it is calculated that a modest annual allocation to a Strategic Timber Transport Fund would generate significant economic benefits for Scotland worth approximately £340 million over a 20-year period. A similar study might be conducted that focused on the whole freight industry or a number of key freight industries in Scotland which would, at the very least, provide increasing credence for Local Authority appreciation of specific freight related issues.

7.2.2.2 Public Perception

The public generally has a negative and one-sided view of road freight movement, associating it with congestion, pollution, delays and often traffic accidents. The intensity of this perception seems to depend on the proximity of one's home to a major freight facility or corridor such as a motorway or a freight hub. Local neighbourhoods tend to view freight activities almost solely in terms of these negative aspects and the public either does not explicitly connect road freight with positive benefits, such as employment and efficient freight movement, or simply believes that the local costs outweigh any benefits. The key to this is either to increase the value of freight in the mind of the public or disconnect freight from negative aspects such as increased congestion and pollution.

Winning public support for road freight may be achieved in four broad strategies.

Positivising Road Freight

The first is to emphasise the positive impacts of road freight, and the dependence for our way of life on fast, efficient freight movement. Furthermore a significant proportion of the population are employed directly in the freight and logistics industry and there are numerous other industries whose very existence depends upon the continued successful operation of the road freight industry.

Positivising Road Freight involves a process of emphasising the positive aspects of road freight, and the role that road freight plays in our daily lives. A number of possible methods of achieving a more positive perception of freight are detailed below:

- Education – there are a number of successful examples of private organisations promoting freight or logistics as a career choice. Part of this approach has been to emphasise the more positive aspects of freight to school children and leavers such as the role of the industry in the economy of Scotland and the career paths available in the logistics sector.
- Sector Advertising, Research and Information Leaflets – Scottish Executive leaflets and research work, through organisations such as Scottish Enterprise and Sector Skills Scottish Labour Markets Group can be used as vehicles to promote positive industry aspects.

Figure 9 Skills for Logistics Sector Profile document



- Promotion of clean and efficient freight operation – simple vehicle information stickers emphasising “clean freight vehicles”
- Logistics Training – the greater availability of training courses such as the Young LGV Driver Scheme, the Scottish Driver Training Scheme and pre-Modern Apprenticeship programmes will not only improve skills in the industry but raise the profile and image of the industry as an attractive career option.

Rebranding of Road Freight

A second strategy would involve downplaying the role of road freight and focus instead on the role of logistics to economy and road freight-oriented projects. Road freight can be rebranded as an element within the logistics industry in order to shake off some of the old perception of freight.

Rebranding the road freight industry and the road logistics industry will give the industry a fresher, updated and modern image helping to promote the industry as a career and potentially improving the perception of the industry.

Raising the value of Freight

A third strategy is to raise the economic or monetary value of freight to the public. Value of an industry is generally manifested in what the public sees as the point of delivery. This is perhaps best illustrated by the Post Office which has a significant urban, inter-urban and rural logistics operation but is rarely an example, much less a negative example with the public, of road freight. The key fact is that the public experience some value in the delivery of letters and parcels. There is little if any experience, or perceived value, in a logistics operator moving unknown goods down the motorway. The challenge is to provide some value to the motorist or local community of each freight vehicle by promoting the value of the industry nationally and regionally.

Raising the value of the freight industry in the eyes of the public requires an association of day-to-day goods, such as groceries, newspapers and toiletries, with the essential role fulfilled by the logistics sector. This might be achieved by:

- Promoting the value of goods being transported by companies or vehicles on the side of HGV's;
- Working with local shop keepers in co-operation – promoting freight or *"I am supporting my local logistics operator"* and information leaflets;
- "Delivered by local freight/logistics operator" information on product packaging.

Mitigating Freight Vehicle Related Impacts

The fourth strategy is to mitigate freight vehicle related impacts. Most local authorities share common concerns about freight-related traffic, and there are many ways to mitigate these impacts including:

- Increased enforcement of existing road freight regulations;
- Reviewing local truck parking regulations;
- Operational improvements in local traffic management often through the use of better signage and ITS deployment;
- Agreed Routes Networks;
- Developing uniform road design guidelines for intersections, roundabouts, on/off ramps, and parking and loading areas should help preserve the road system and related infrastructure; and,
- Cleaner fuel use and critically making sure the public know of these developments within the industry.

7.2.3 TAKING FORWARD THE PERCEPTION OF FREIGHT OPTION

All stakeholders have a role to play in improving the Perception of the Road Freight Sector in Scotland. In partnership, this can be achieved by:

- supporting research to measure value of freight to Scotland's economy in terms of the employment, job creation, the contribution of logistics to regional and rural economies and the value of logistics to the operation of key industries in Scotland;
- working to promote freight through Freight Quality Partnerships, Regional Transport Partnerships and Local Authorities;
- exploring future ring fenced funding sources for freight in Scotland;
- supporting work to create a positive public image of the road freight sector through advertising, the promotion of environmentally friendly freight schemes, promoting logistics as a career and continued support of operation logistics training programmes; and,
- Working to rebrand the road freight sector as "road logistics" and working to raise the perceived value of freight to the public whilst mitigating any negative impacts of the industry.

7.3 Freight Quality Partnerships (FQP)

7.3.1 OPTION OVERVIEW

Freight Quality Partnerships (FQPs) aim to encourage best practice in an environmentally sensitive, economic, efficient and safe freight transport environment. They provide a forum for industry, local and regional government to work together and a mechanism for industry and local government to work together in partnership to produce tangible outcomes to localised freight transport problems. FQPs have taken many forms from Forums to Advisory Groups and from Liaison Groups to Specific Issue Groups.

Some specific objectives of existing Freight Quality Partnerships have included:

- Introducing measures to make efficient utilisation of vehicles;
- Reducing exhaust emissions and noise levels;
- Identification of all-hour networks for lorry movements;
- Provision of loading and unloading bays and adequate kerbside provisions;
- Shared priority lanes with buses;
- Identification and dissemination of preferable routing;

- Development of best practice guides; and,
- Provision of overnight parking/rest areas.

The development of Freight Quality Partnerships is a key element in the Department for Transport's Sustainable Distribution Strategy and it is hoped that through these partnerships industry and local government can work together to develop more efficient, safer and cleaner means of local goods distribution.

To assist with the FQP process, the Department's TransportEnergy best practice programme has produced two publications and it is intended that these will help local authorities wishing to set up FQPs:

1. **Good Practice Guide 335**, A guide on how to set up and run Freight Quality Partnerships provides step-by-step guidance on how to establish FQPs.
2. **Good Practice Case Study 410**, Freight Quality Partnerships highlights examples of existing best practice across a range of FQPs.

7.3.2 THE SCOTTISH SITUATION

FQPs utilise the expertise of public and private sectors to encourage and improve the sustainable operation of freight in a region and there is currently only one FQP in Scotland – the North East Freight Quality Partnership which aims to encourage and improve the sustainable distribution of freight within, and to and from, Aberdeen and Aberdeenshire.

The lack of support and leadership in many areas of the country has been highlighted by consultation conducted as part of this report as the reason behind the lack of more FQPs in Scotland. It has been argued that this lack of support and leadership has in part been a result of the unclear advantages or objectives of a FQP to the Local Authorities and private industry. The Good Practice Guide succinctly sets out the benefits, initiation and operation of a FQPs and the following sections examine how this can be applied successfully to Scotland in order to produce a greater number of FQPs concluding in a proposed way forward.

7.3.3 OPTION OBJECTIVES AND THE GOOD PRACTICE GUIDE

The FQP **Good Practice Guide** outlines a number of the reasons behind developing a FQP, some of the benefits of co-operation and the benefits of the outcomes of co-operation between private industry and public bodies. The Guide also provides detailed mechanism for two of the key aspects relevant to the Scottish experience: setting up a FQP and maintaining the organisation. A broad strategy for FQPs is set out, and this tries to fulfil the needs of differing sizes and types of partnerships across the UK much of which is applicable to the Scottish experience. Some of the broad objectives of a FQP are stated as:

1. **Co-operation:** Partnerships between industry and local government should facilitate the development of more efficient, safer and cleaner means of local goods distribution.

2. **Economic Efficiency:** FQPs should support sustainable growth and regeneration of freight by increasing the competitiveness of local businesses, improving supply chain efficiencies, reducing congestion and investing in supply chain infrastructure.
3. **Environmental and Community:** FQPs should at the same time work to protect the local built and natural environment whilst supporting the local community.

One of the main underlying themes of the Good Practice Guide is the importance of local issues and local management rather than a focus on wider freight issues – this is a theme that should resonate through any strategy for FQPs in Scotland. The following section looks at where and how FQPs can work in Scotland and what they can realistically deliver to best suit the sustainable development of the road freight industry.

7.3.4 WHERE AND HOW CAN FQPS WORK IN SCOTLAND

FQPs are applicable across Scotland – this is not to say that boiler plate partnerships will work across the country, rather solutions should focus on local issues and partnerships should be built around common local objectives. This will partially address two of the main problem areas concerned with FQPs in Scotland, that of *getting a FQP going* and secondly of *maintaining interest in the partnership*. The latter is also heavily influenced by achievability – the more the deliverables achieved by a FQP the more momentum it gains and interest levels and belief in the partnership are maintained. The following recommendations for promoting, initiating and operating FQPs in Scotland are divided into the two key areas identified above.

Getting a FQP going

1. National Directions – A national direction for FQPs has been published by the DFT as outlined above. The Scottish Executive should continue to promote this Good Guide and the benefits of FQPs to Local Authorities through literature and policy documentation.
2. Local Transport Strategies and Policy – the requirement for local authorities to provide “evidence of progress in establishing freight quality partnerships, identifying key organisations and companies involved” (DETR 2000) is currently a characteristics of a good Local Transport Strategy rather than a minimum requirement. Promoting this to a minimum requirement or placing greater emphasis on this objective will encourage a greater number of FQPs in Scotland.
3. National/Regional Co-ordinators – Setting up a FQPs requires a degree of knowledge and organisational skill. There are obvious economies of scale in a National Co-ordinator whose role is to promote and assist in the creation of FQPs across the country. The best example of success in this area comes from the Timber Transport industry and the appointment of Timber Logistics Project Manager whose remit was to co-ordinate research, help develop regional Timber Transport Groups and examine existing codes of practice. However, the changing political environment could mean that Regional Co-ordinators, linked to Regional Transport Partnerships, provide local authorities with the expertise and knowledge of the freight industry that otherwise

may not exist at this level. The Regional Co-ordinators would work closely with the National Co-ordinator, and could be the “champion” for each FQP.

4. Funding – Securing greater funding through Local Authorities and the Scottish Executive will ensure greater prevalence of FQPs in Scotland and greater success in delivery of freight solutions. Funding has been secured by FQPs from other sources including partners, private industry and organisations such as the RHA, FTA and Chambers of Commerce. Funding, in part, may be available in the form of an investment of time and resources by partners helping to complete specific work packages, surveys, research or organisation. Funding may also be available from other sections of the Local Authority. A national co-ordinator’s role might include developing a strategy or guide to securing funding for FQPs in Scotland.

Maintaining interest in the Partnership

1. Local Champion – the appointing of a local champion for the FQP is crucial to maintaining any success in setting up a FQP.
2. Researching the Market – As discussed in the Perception of Freight option above, and highlighted by the Good Practice Guide, it is critical that market surveys of hauliers, local businesses and an assessment of the value of freight is completed before a FQP’s mission statement and objectives are set.
3. Division of work plan – Given the scarce resources, time and funding that is available to FQPs it is crucial that all partners participate in managing and completing objectives. Key to this is setting realistic targets for the FQP.
4. Realistic – the objectives of a FQP should be realistic and inline with the objective of the FQP, whether the FQP is a local organisation or set up to inform Local Authorities on a number of issues. It is recommended that some of the following are considered realistic objectives taking cognisance of budgets and resources:
 - a. Agreed Routes, mapping and information – Local Authorities have the data and capabilities to produce Agreed Route maps and private industry should act to inform and assess the product. Once complete representative bodies and hauliers have the capacities to disseminate the information.
 - b. Business/Haulier Surveys.
 - c. Signing Strategies – identify local deficiencies in signage, Local Authorities can feed this information back to planning departments.
 - d. Identify key freight routes and intersection capacities – building on survey work, examine key pinch points in the network and how road design and planning might help improve the movement of goods and general traffic.
 - e. Identify bus routes that might be used by freight vehicles ahead of further investigation.
 - f. Feedback to a Freight Information Service.

5. Local Authority Synergy – key to maintaining momentum in a FQP is delivering. Key to delivering many of the objectives of a FQP will be the connections and synergies with the Local Authority. The local champion must ensure that transport planning and other representatives are briefed on the work of the FQP.
6. Promoting the FQP – the partnership should be promoted by all parties and any successes should be publicised through industry and local authority publications. The benefits of the FQP and the benefits of the outcomes of the FQP should both be highlighted.

7.3.5 EXAMPLES AND LESSONS FOR SCOTLAND

7.3.5.1 Tees Valley Freight Quality Partnership

The Joint Strategy Unit is an active member of the Northern Freight Group representing the interests of the Tees Valley authorities. The aim of the Group is to promote freight interests in the North East by allowing exchange of information; intelligence gathering from the transport industry's main players and decision makers; and to provide a coherent lobbying force on the key policy issues. The Tees Valley Joint Strategy Unit provides support for the boroughs of Darlington, Hartlepool, Middlesbrough, Redcar & Cleveland and Stockton-on-Tees and the Tees Valley Development Company formulating sub-regional strategies in partnership with the member boroughs.

The five Unitary Councils in the Tees Valley asked the Joint Strategy Unit to coordinate the establishment of a FQP for the Tees Valley. This includes representatives from the five Unitary Councils in the Tees Valley, Industry bodies (Freight Transport Association & Road Haulage Association), Individual businesses (producers, hauliers, distributors and retailers) and many other organisations.

General issues considered by this FQP include:

- Traffic Regulation Orders (Loading bays, no car lanes, access & loading restrictions etc);
- Signage;
- Targeted parking enforcement to assist lorry movements;
- Lorry parking;
- Information for lorry drivers (maps, leaflets etc); and,
- Noise and vehicle emission standards.

The Tees Valley Freight Quality Partnership is presently undergoing a scoping stage to establish the future path of issues and work that it can achieve.

The FQP is working with the Northern Freight Group which has developed a Freight Toolkit which draws together expertise from the freight operators and the relevant elements of National Guidance and Local Authority Best Practice to assist authorities engaged in developing and implementing a freight strategy as one component of their Local Transport Plans. A Freight Strategy is being developed, by the Northern Freight Group, within the context of the regional strategic aims contained in the Regional Planning Guidance for the North East (RPG1). The Freight Strategy will cover the period

to 2016 and will be monitored and reviewed as part of the RPG progress and development of a Regional Spatial Strategy.

The specific aims and objectives of the freight strategy are to:

- Assist in the promotion of sustainable development, by maximising use of existing transport infrastructure and services wherever possible.
- Ensure that the environmental impact of freight transport is fully assessed in the land-use and development planning process and that all decisions are taken within the context of an integrated transport strategy.
- Attract and retain inward investment and reduce the peripherality of the North East, by improving accessibility to, from and within the region for those who use or operate freight transport.
- Provide a vibrant, efficient and safe regional freight industry, by encouraging a range of high quality transport modes and services; and
- Involve both public and private sector interests, by encouraging partnership working to facilitate a better understanding amongst local and regional authorities of how modern supply chains operate.

The Freight Strategy should be completed in time to be included as a daughter document to the Regional Transport Strategy in Spring/Summer 2004.

Lessons to learn for FQPs in Scotland

- A wide range of organisations are brought together by the FQP and this has been facilitated by an existing, recognised organisation.
- The FQP is working with the North Freight Group to address regional issues, deliver results and produce a freight strategy for the region.

7.3.5.2 A local FQP concentrated on a large urban area – Reading

The urban area of Reading incorporates the fringes of West Berkshire and Wokingham Unitary Authorities and the cities LTP and Urban Area Package underpin their vision for the future of a safe, clean and vibrant environment by the year 2020. Central to the future development of the city is a balanced, efficient and sustainable transport system. The Council aimed to accommodate a range of modes and facilities for freight distribution into, out of and around Reading. To retain the economic vitality of the city and its regional prominence, the council recognised the need for some measures to ensure successful business activity will by controlling congestion. Equally, they also recognise their responsibility to provide a pleasant, safe and clean environment for all. Therefore a Freight Quality Partnership was set up for the city to encourage best practice and develop environmentally sensitive, economic and efficient delivery of goods.

The Freight Transport Association approached the council in 1998 to discuss the establishment of a FQP. A range of organisations were target to join the FQP including retailers, other large businesses, environmental organisations, the police and neighbouring local authorities.

An independent chairman was identified and the FTA agreed to provide the secretariat and administration functions. Meetings were held quarterly initially. The discussions focused on identifying the key issues and problems. To help clarify some of these issues and problems the FTA organised a survey of businesses within Reading.

The key deliverables from the FQP include:

- Two business surveys of retailers and hauliers;
- An initial report that acted as a position statement for the partnership and included objectives to improve the enforcement or parking restrictions to facilitate deliveries, improve signing and start work on a city centre freight access strategy, publicise the city's strategic lorry route and produce a map for delivery vehicle drivers indicating the most suitable routes. Further objectives included investigating the potential for out of hours deliveries and the promotion of distribution best practice through company travel plans.
- A two-tier map of the greater Reading urban area and the city centre showing Preferred lorry routes, Secondary routes, Delivery zones, Significant buildings, Access to fuel stations, Height restrictions, Signalised junctions, Banned movements and Restricted access areas.
- A mechanism for consultation on major works in the city, making sure that the views and needs of business and the haulage industry are represented. This function has recently proved beneficial during work to improve a major city centre street where individual business were surveyed about their delivery needs before loading bays were positioned and loading restrictions applied.

Lessons to learn for FQPs in Scotland

- Council and Industry organisations working together to establish a FQP.
- Realistic objectives based on local needs identified through an initial report and two business surveys.
- Tangible delivery of a preferred routes and information map, produced in partnership with the industry and a voice for industry on major roadworks.
- Obvious short term success built on clear and focused objectives but maintained with links to the council and clear deliverables.

7.3.5.3 Hampshire County Council and Winchester FQPs

Hampshire County Council established one of the very first Freight Quality Partnerships and was keen to implement emerging policy guidance on sustainable distribution entering into discussion with the Freight Transport Association (FTA) and the Hampshire Economic Partnership (HEP). Hampshire view their FQP as an 'umbrella' agreement providing

an established framework for developing local partnerships and two local FQPs have been established including the Winchester Freight Quality Partnership.

This FQP identified a number of key local issues including the shortage of overnight parking for commercial vehicles, poor advanced direction signing and knowledge of the most suitable delivery routes and times and enforcement of waiting and loading restrictions and adverse environmental impacts of noise from night-time deliveries. A study was commissioned to gather data on the effects of freight movements within the City and identified specific problems and recommended potential changes to freight deliveries and collections including:

- Allow delivery vehicles to use disabled bays and taxi ranks.
- Better enforcement of parking regulations against private cars.
- Allow access to delivery vehicles in the morning up to 10:00 am.
- Allocate space for delivery vehicles to park in the central square.
- Remove the 07:30 – 09:00 parking restriction.
- Encourage wardens to be more tolerant towards goods vehicles.
- Allow vans to park for 15 minutes on-street.
- Give local hotels/garages tax breaks to host delivery bays.
- Impose a 09:00 – 11:00 'delivery vehicle access only' in The Square.

Since the study the FQP has delivered an advisory freight route plan, which included information on main routes into Winchester, city centre street map and loading restrictions. A project to provide information boards at industrial estates is almost near completion.

Lessons to learn for FQPs in Scotland

- Specific road freight issues are promoted within a larger umbrella organisation.
- Business surveys identify key issues to road hauliers culminating in a detailed report.
- Deliverables in the form of an advisory freight route plan and information boards.

7.3.5.4 North West Freight Advisory Group

North West Freight Advisory Group objective is to inform the regional decision making process. Members are constantly appraising the impact of legislation and policy issues, which may affect the way in which freight movements are conducted in the region. One of the key aims of the Group is to work in partnership to address such issues and achieve manageable objectives.

The Group's aim is to make a positive difference to the way in which freight transport is conducted and facilitated in the North West. Achieving measurable objectives is paramount with the following criteria central to the Group's agenda:

- Influencing transport infrastructure developments, capacity and operation, across all modes.
- Understanding the Government to industry agenda (including Government Office for the North West, the Northwest Development Agency, the North West Regional Assembly and Local Authorities).
- Offering industry to Government feedback and information sharing.
- Industry to industry information sharing, both across modes and industry sectors.
- Sharing, encouragement and promotion of best practice, both within industry and between industry and Government.

Key deliverables of the group include:

- the North West Freight Conference to promote the freight industry in the North West, but to primarily start the debate on the issues that need to be addressed by a Freight Strategy.
- the North West Regional Freight Strategy to assist the promotion of sustainable development, to attract and retain inward investment, to provide a vibrant, efficient and safe regional freight industry and to involve both public and private sector interests by encouraging partnership work to facilitate a better understanding amongst regional and local authorities of how modern supply chains operate.

Lessons to learn for FQPs in Scotland

- The FQP is set up with the objective of advising both Local Authorities and private industry.
- Communication, information and data sharing across the freight industry.

7.3.6 NEXT STEPS FOR FREIGHT QUALITY PARTNERSHIPS

We would conclude that the Scottish Executive has a role to play in facilitating the start up of FQPs but ultimately the responsibility rests with other stakeholders, notably Local Authorities and industry, who should work together to develop such Partnerships across Scotland. This will encourage best practice in an environmentally sensitive, economically efficient and safe freight transport environment.

Notwithstanding, the Scottish Executive could implement a range of measures which in addition to promoting the start up of FQPs also ensure their longevity. Such measures include:

- promoting the Good Guide to FQPs and the benefits of FQPs to Local Authorities;
- working to ensure the need for FQPs is incorporated in upcoming Guidance for the Development of Local Transport Strategies; and,

- appointing national and regional co-ordinators for FQPs, who can assist Local Authorities with specific industry expertise which may not otherwise exist at that level.

The longevity of a FQP will be dictated by a number of factors but crucially the National and Regional FQP co-ordinators should assist in identifying funding, ensure the presence of a local champion, sharing key data and knowledge across FQPs and focussing the FQP to deliver tangible benefits. From experience elsewhere, this will ensure that the FQP continues to be fruitful in developing local and regional freight efficiency improvements.

7.4 Freight Information Service (FRIS)

7.4.1 OPTION OVERVIEW

Whilst only a few organisations or freight operators used national driving and transport information services such as the National Driver Information and Control System (NADICS), it was widely accepted that the information provided was extremely useful and could lead to improvements in the efficiency of freight. Whilst there are national strategic objectives to provide road side information (through Variable Message Signs etc) there are other means of providing greater market penetration through the provision of traffic, roadworks and incident information using technologies such the internet, SMS, e-mail or radio (RDA). Currently, NADICS provides detailed traffic and roadwork information via its web site – also included are popular traffic cameras. This service is often limited to the central belt and there are increasingly other private services available.

What NADICS does not provide is detailed information geared for the freight industry. For instance, traffic information is often geared for private car owners and route diversions or congestion warnings are not relevant to the freight sector. A Freight Information Service might take a number of forms, these are:

- A portal simply directing Freight Operators and interested parties to services either run by government agencies or private traffic and transport firms;
- A dedicated freight service run through an organisation such as NADICS; and,
- A service offering actual real time data exchange, such as the Open Travel data Access Protocol (OTAP).

The following sections examine these three approaches examining where these services would work, how they could be implemented, some examples or successes and lastly how to take this option forward.

7.4.2 FRIS: A SCOTTISH SOLUTION?

A number of studies have examined the value and benefits of providing web based traffic information, weather information and web based CCTV cameras. These include the Analyzing the Effects of Web-based Traffic Information and Weather Events in the Seattle Puget Sound Region study which concluded on a positive impact of web based information and the Features of Traffic and Transit Internet Sites which concluded that the most sought-after traffic

information is not available in most urban areas of the country. The Phoenix Metropolitan Model Deployment Initiative Evaluation Report showed that users attached the most value to Radio broadcasts and Variable Message Signs whilst web site information is much lower down the scale. It must be noted though that web sites often provide radio broadcasters with information that is in turn broadcasted to the public. This last study does highlight the importance of the medium for dissemination.

The coverage of ITS equipment across Scotland is predominantly limited to the trunk road network with a concentration in the central belt. Increasingly systems are available to collate data on minor routes and rural areas. These technologies include Automatic Number Plate Recognition (ANPR), mobile phone data and Floating car surveys. Freight industries also supplement this data with real time data collated by their individual firms, where traffic/logistics departments are in constant contact with their drivers – information is disseminated to other drivers.

The Scottish e-Business Survey 2003 was conducted by Scottish Enterprise in partnership with Highlands and Islands Enterprise. The survey captured information from over 12,500 organisations of all sizes and types across Scotland on their attitudes to e-business and its importance to their operations, what technologies and e-business applications they own and how they are using them, and their sources of e-business advice and information

Some of the key findings from the Scottish e-Business Survey, a survey include:

- There has been an increase in ownership of each of the primary e-business technologies in 2003;
- The presence of an Internet connection has grown to 74% of organisations;
- Ownership of email rose to 69 per cent;
- Website ownership has grown to 46 per cent;
- 13% of all organisations now use a broadband connection, a significant increase on 2002; and,
- The proportion of businesses that believe 'the advantages of e-business outweigh the costs' has increased year-on-year.

The type of information useful for freight operators differs from that which is provided for public consumption. Recent freight portals have concentrated on providing some of the following information:

- Restriction information on major routes and urban roads;
- Truck Services such as rest areas, service stations and breakdown services;
- Business Park locations;
- Harbour and Railhead Information;
- Driver Time Regulations;

- Weather and Safety Details;
- Route Planning; and,
- Real Time Traffic Information

Freight operators are often concerned with longer distance travel and so access to information from agencies from a number of countries or simply seamless data is often required.

In conclusion there is significant value and cost benefit in providing traffic and travel information to the freight industry. Whilst the coverage of ITS equipment is limited to central parts of Scotland and the trunk road network, new technologies are providing an increasing coverage. Sectors within the freight industry are already technology rich whilst some smaller companies are less so but do use mobile phones and site based information dissemination - web, e-mail and SMS services are extensively used within the industry. The type of information the freight industry requires differs in type, time and extent from the average private traveller and should be accordingly customised before being disseminated.

7.4.3 MAKING A FRIS WORK

A Freight Information Service is a package of measures which can be delivered via a variety of media and is customised to suit the needs of the freight operator. This section outlines a strategy for implementing a FRIS in Scotland and how the Scottish Executive and Industry can make the service work.

A Freight Information Service requirements survey of freight operators in Scotland will provide the Scottish Executive and any agencies (such as NADICS) with a detailed profile of the service that would be of most use to the industry at large. This survey, conducted via the web, letter and e-mail, should focus on the following areas and be a full customer analysis of the freight sector in Scotland:

1. Information Requirements
 - a. Does the industry value Real Time Traffic Information? What Real Time information does the industry need? How should this be displayed?
 - b. Does the industry feel "static" information on harbours, regulation, truck services etc. would be useful?
 - c. Is there a demand for actual Real Time data that can be accessed and used by specific freight operators?
2. Dissemination
 - a. Determine the value of e-mail, SMS, web based dissemination
 - b. Links to radio for freight information.

3. Key Route Information

a. What are the key routes in Scotland for which Traffic Information is required?

Results from this survey will provide the basis for the implementation of a Freight Service via existing Agencies, Traffic Data Exchange and a Freight Portal.

National Driver Information and Control System background: The NADICS Web Service currently provides real time traffic information for travellers on Scotland's road network, live images captured from CCTV cameras and future roadworks and events affecting road travel throughout Scotland.

Figure 10 NADICS Web Service



7.4.3.1 Freight Service Through NADICS

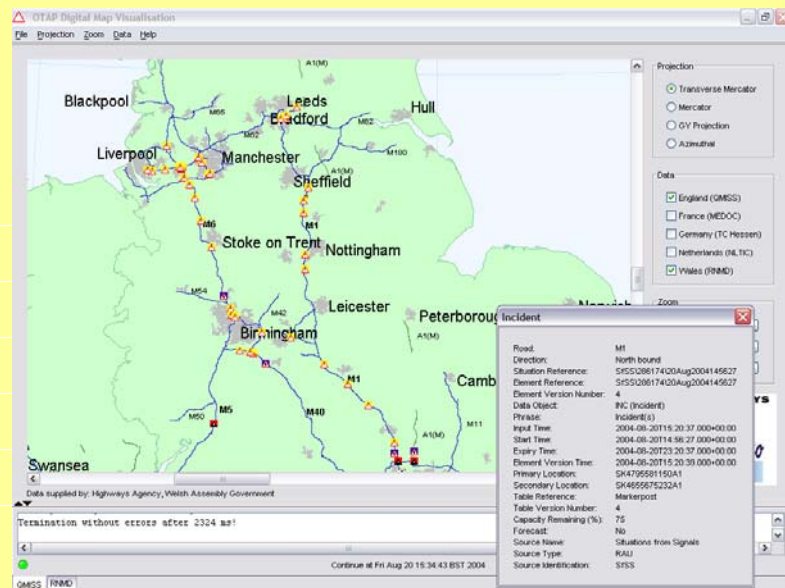
Following on from this survey and after the definition of a clear scope and method for delivery of a FRIS, the service can primarily be delivered through NADICS. The current NADICS Web Site may simply be customised to provide a freight section. As the NADICS service expands into e-mail and SMS services the freight service should develop customised services accordingly. Data and routes identified from the survey can be used to develop this service. The advantage to the Scottish Executive of pursuing a service through NADICS is obvious: existing data, existing hardware and existing data dissemination combined with some economies of scale.

7.4.3.2 Freight Data Exchange

The second phase of a FRIS may involve Data Exchange. There has been a general push in the past few years in Europe to share data between Road Operators, Traffic Information and content providers with third party organisations such as value added service providers and media organisations. The Open Travel data Access Protocol is one such attempt to share data. As indicated by the consultation exercise, a number of freight companies in Scotland are using advanced logistics and route planning systems – providing traffic and incident data may further improve logistical decision making.

OTAP allows service providers to easily and cost effectively access the real time traffic data held in the databases of road operators, traffic information centres and other content providers.

Figure 11 Demonstrator OTAP Service



7.4.3.3 A Freight Portal for Scotland

The last phase of a FRIS is to provide a single location for sourcing Freight Information – the advantage of this is that resources can be pooled to advertise or promote a single source which “links” available data and data services together. In addition services like NADICS, services offered by representative bodies such as the Road Haulage Association and Freight Transport Association together with private organisations and their traffic information services. This service might also be used to deliver static information such as Agreed Route Networks.

7.4.3.4 An Example of Best Practice: The Portail Service Fret

The Portail Service Fret (Freight Portal Service - <http://www.freteuroservice.com/>) provides freight companies operating near the northern coast of France with access to a number of service related to real time traffic conditions, freight operation, truck services, port information, rest area information, safety and driving regulation.

Figure 12 Portail Service Fret: Web Portal



Figure 13 Portail Service Fret: Examples of some Linked Services



7.4.4 NEXT STEPS FOR FRIS

The Scottish Executive should continue their work to date by building on existing platforms, such as NADICS, as well as in partnership with the Freight Transport Association and Road Haulage Association to develop a Freight Information Service for Scotland, potentially as part of a wider "Traffic Scotland" information service. This service should form part of a broader ITS strategy for Scotland but should be delivered as a package that includes:

- A freight portal simply directing Freight Operators and interested parties to services either run by government agencies or private traffic and transport firms;
- A dedicated freight service run through an organisation such as NADICS; and,
- A service offering information on key routes/sections outside of the Scottish network, which can be achieved through the utilisation of real time data exchange – the Open Travel Data Access Protocol (OTAP) mechanism, which has recently been implemented by NADICS, permits this.

Any Market Research or customer analysis completed through Freight Quality Partnerships should feed into the development of a FRIS for Scotland ensuring the delivery of the best real time information, focussed on the most desirable locations and disseminated on the most widely used media.

7.4.4.1 European Commission Long Distance Corridors Demonstration Project

There is the potential for a first freight service to be implemented through the European Commission STREETWISE project (of which the Scottish Executive is a partner – www.streetwise-info.org) and more appropriately the Long Distance Corridors (LDC) project. This project, which has been set up by STREETWISE and 2 sister projects CENTRICO and CORVETTE, seeks to stimulate and develop cross-border and cross regional traffic information and management over longer distances on the Trans- European Road Network. The corridor considered in the project runs from the Republic of Ireland and United Kingdom through BeNeLux, northern France and the south western part of Germany via the Alpine countries to northern Italy.

The demonstration phase of the project, where a series of potential measures to benefit and aid freight traffic on the corridor, will proceed in 2005.

7.5 Advisory or Recommended Freight Routes

7.5.1 WHAT ARE ADVISORY OR RECOMMENDED ROUTES

Advisory or Recommended Route networks have generally been developed to highlight the most appropriate routes through a region and a network that the public agencies and freight operators are both in agreement with. Advisory or Recommended Route networks were highlighted in the Industry Consultation as a key solution to freight problems by all parties as they provided a balance which was required between commercial responsibility and social responsibility. There are proven examples of success in a number of areas and international experience highlights the benefit of both static and online mapping as a mechanism for disseminating advisory route information but also for providing further key information.

The objectives of Advisory or Recommended Routes can be viewed as:

- Provide details of advisory freight routes that have been agreed as the most suitable for HGVs by Local Authorities and the haulage industries.
- Highlighting key information such as industrial estates, HGV fuel filling sites, lorry parking and lay-bys and their relation to the lorry route network.
- Highlight route network information such as height and weight restrictions, long term roadworks and freight signage.

7.5.2 WHERE AND HOW CAN AGREED ROUTES BE DEVELOPED

A strategy for implementing advisory routes must consider:

- Where advisory routes can be implemented?
- Which organisations should manage the development of these routes?
- What data should be included with maps?
- What form maps should take?
- How advisory routes should be disseminated?
- Whether a national map/database is required?

Where advisory routes can be implemented? and, Which organisations should manage the development of these routes? There are currently numerous examples of the successful implementation of advisory lorry or freight routes in England and Scotland. These range from relatively high level and longer routes down to town specific information – the advisory route option lends itself to implementation across the country on a region-by-region basis or for specific urban areas. The FQP provides a mechanism for determining whether an advisory route for the region is required. As

discussed previously, this provides the FQP with a solid and tangible deliverable and there proven successes of FQPs implementing advisory routes.

What data should be included with maps? To gain the maximum return from the implementation of advisory routes, pertinent data that will be of use to the road logistics industry should be identified. This could be achieved by a regional FQP as part of a survey prior to the implementation of a advisory routes. Data that might be considered to be included with an advisory route publication includes service station locations, major long term roadworks, alternative routes, low bridge and weight limits, proposed construction, detailed maps of industrial estates, rest areas, motorway services and contact details for local authorities, FTA, RHA etc.

What form maps should take? and, How advisory routes should be disseminated? There are two options that are available in terms of providing advisory routes, static maps delivered in electronic and hard formats via the internet, web sites, e-mail newsletters or simply by mail shots, or dynamic map via the internet or CD ROM. Whilst static maps can be used to illustrate the recommended routes, the information may be treated dynamically and monthly publications may be produced. Each option has a specific advantage but the former will certainly be less expensive to implement and should be considered as the first phase. The later dynamic mapping dissemination will be considerably more expensive but can provide users with a broad range of information and differing scales – ideally both methods should be considered but as a minimum the provision of static mapping in a hard and digital format should be considered.

The methods for disseminating advisory route information are numerous but in the interests of managing updates and ensuring the widest coverage possible the following strategy should be considered:

- Provide a single web site source offering online maps and downloads;
- Provide a online mechanism to subscribe to receive e-mails notifying users of updates or additions;
- Provide a non-web solution by publicising either an e-mail or postal address that users can request the latest paper copy of the agreed routes.

The Scottish Timbermap solution (detailed below) provides an implemented example of this solution.

Whether a national map/database is required? There are obvious advantages of implementing a national map or spatial database solution for advisory routes given that a significant proportion of freight moves between regions and there is an obvious benefit of having a single source of seamless data and maps for advisory routes across Scotland. Freight operators can request data from one source and do not require to get updates from each region, local authority or FQP every time advisory routes are updated. However there is a significant amount of work involved in co-ordinating, managing and implementing a national map which may unnecessarily delay regional implementations. The most effective solution would appear to be to allow each region, FQP or regional transport partnership to develop their own advisory routes and have one central “portal” linking to all the information. Again the Scottish Timbermap solution provides a working example of this solution.

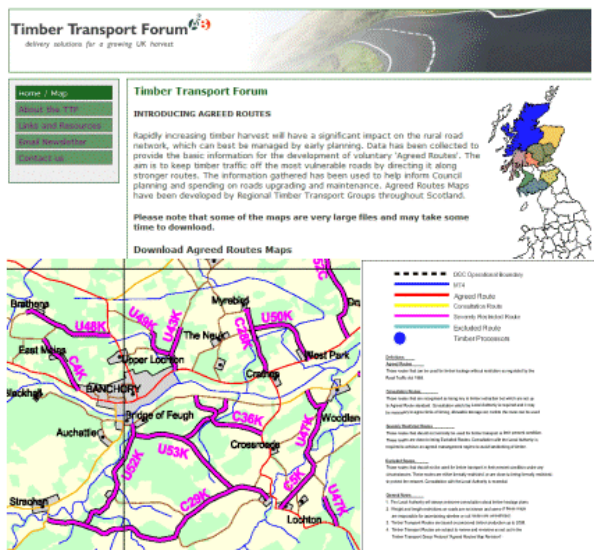
7.5.3 EXAMPLES

7.5.3.1 Scottish Timbermap

Data has been collected through a number of sources to provide the basic information for the development of voluntary 'Agreed Route' network for Timber Transport in Scotland. The aim of the project and associated web site is to keep timber traffic off the most vulnerable roads by directing it along stronger routes. The information gathered has been used to help inform Council planning and spending on roads upgrading and maintenance. Agreed Routes Maps have been developed by Regional Timber Transport Groups throughout Scotland.

The route agreements have been based on forecasts of timber extraction at different locations. This information was collected in surveys carried out by the Timber Growers' Association (now Forestry & Timber Association) and the local Timber Transport Group.

Figure 14 Timber Transport Forum: Timbermap.org



In addition to Agreed Route Maps for Scotland the web site also provides a Agreed Routes Map Leaflets and information which detailed Agreed Routes through urban areas and a facility (in Dumfries only) to report Road Defects via a Report Form. This information can then be disseminated back to freight operators but also passed on the Local Authority.

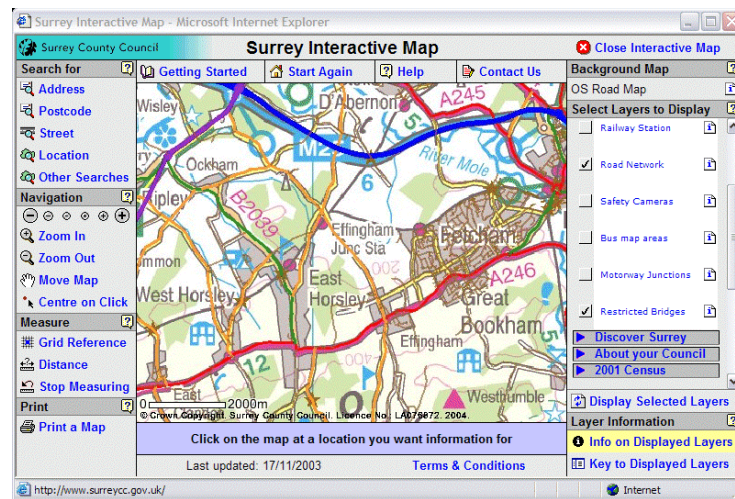
7.5.3.2 The Surrey Interactive map

The Surrey Interactive Map is intended to help freight operators plan their journey and take account of any restrictions that are shown. The online facility allows users to view events, services, locations and facilities in Surrey, using a range of interactive maps. In addition, when operators have to use local roads, they are asked to be aware of the size of your vehicle and the impact it has on the environment. Included with the map is the lorry driver's checklist which includes items such as:

- Use the highest category road available
- Look for the signed routes
- Plan long distance diversions around the restrictions shown on the advisory route map
- Always drive to the signs

- When using local roads, respect those who live there
- Keep engine noise to a minimum
- Weight restrictions are there for your safety and the publics, most indicate a weak structure, do not breach them.

Figure 15 The Surrey Interactive Map



7.5.3.3 Lorry Route Map for Worcestershire and the Kidderminster Town Centre Delivery Map

Worcestershire Freight Quality Partnership has developed an Advisory Lorry Route Map which highlights information such as industrial estates, HGV fuel filling sites, lorry parking and lay-bys and their relation to the lorry route network.

Figure 16 Worcestershire Advisory Lorry Route Map and the Kidderminster Area and Town Centre Map

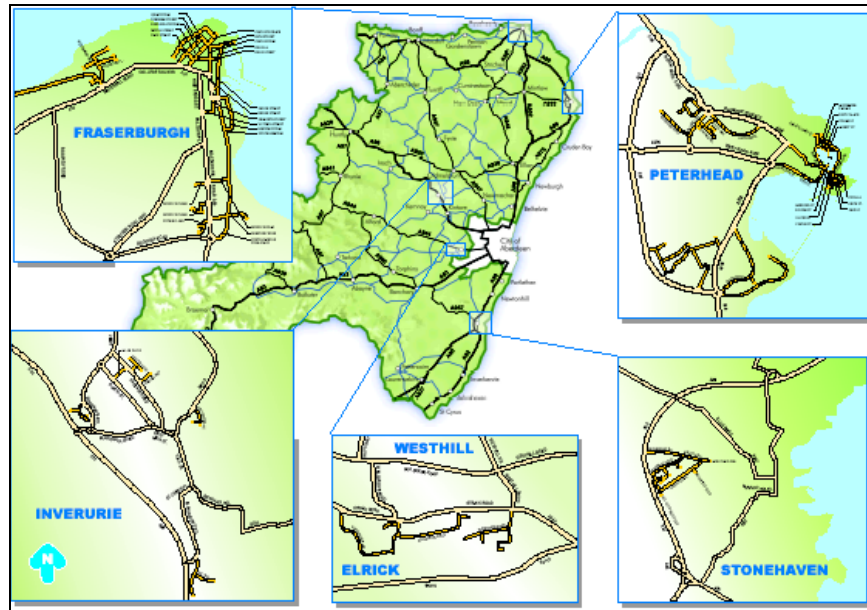


To complement the Advisory Lorry Route Map, Worcestershire Freight Quality Partnership are planning to develop a number of localised delivery maps. The first map to be completed is of Kidderminster Town Centre and the surrounding local access routes.

7.5.3.4 NESFQP – Advisory Routes and Information for Aberdeen and area

The NESFQP are in the early stages of developing an Advisory Route Map for Aberdeen and surrounding area. These initial maps, although not yet released, include detailed maps for the harbour area and industrial estates. The intention is to release the maps and advisory leaflets in early 2005 after consultation with key stakeholders.

Figure 17 Developing an Advisory Map for Aberdeen



7.5.4 NEXT STEPS

Developing Recommended Truck Routes for Scotland might be considered a relatively “soft” or quick win solution to assist in improving the sustainability of freight but must not be viewed independently of other solutions but rather integral to the delivery of a number of other options. Local authorities and freight industry organisations should work together, and where appropriate in consultation with the Scottish Executive, to promote the development of Agreed and Advisory Routes for road freight through Freight Quality Partnerships and Local Authority transport departments.

Ultimately a single source for advisory routes should be developed that acts as a portal for all regions in Scotland and provides online maps and downloads. A mechanism should also be developed that allows freight operators to subscribe to notification e-mails of updates or additions – an ideal vehicle for such a facility would be the FRIS outlined in the previous section.

In addition, the stakeholders should also work together to provide non-web solutions, such as postal addresses, from which users can request the latest paper copy of advisory routes.

7.6 Loading and Unloading Zones

7.6.1 CURRENT LOADING AND UNLOADING PROBLEMS

Problems associated with the final delivery in urban areas were identified during the industry consultation as having a particularly negative impact on operations. This is acknowledged in the Scottish Executive's Planning Advice Note 'PAN59 – Improving Town Centres', which states that "...many centres still lack effective rear or basement servicing, and the absence of loading/unloading bays, the increasing size of vehicles, and more frequent deliveries to shops can aggravate problems of congestion, conflict with other uses, and pedestrian safety". The note continues by stating that "it is essential that adequate physical provision is made for access by service vehicles..."

Potential solutions discussed during the industry consultation, and which were perceived favourably, focussed on the provision of dedicated access arrangements, including the provision of loading and unloading areas, improved management of kerbside access, and access to pedestrianised areas.

7.6.2 OBJECTIVES OF A SCHEME

The objectives of introducing dedicated loading and unloading zones would assist freight vehicles in making deliveries in urban areas in a number of ways, including:

- Reducing the overall time for deliveries with zones provided in appropriate locations
- Reducing the need to search for available on-street parking
- Removing the need to consider illegal parking

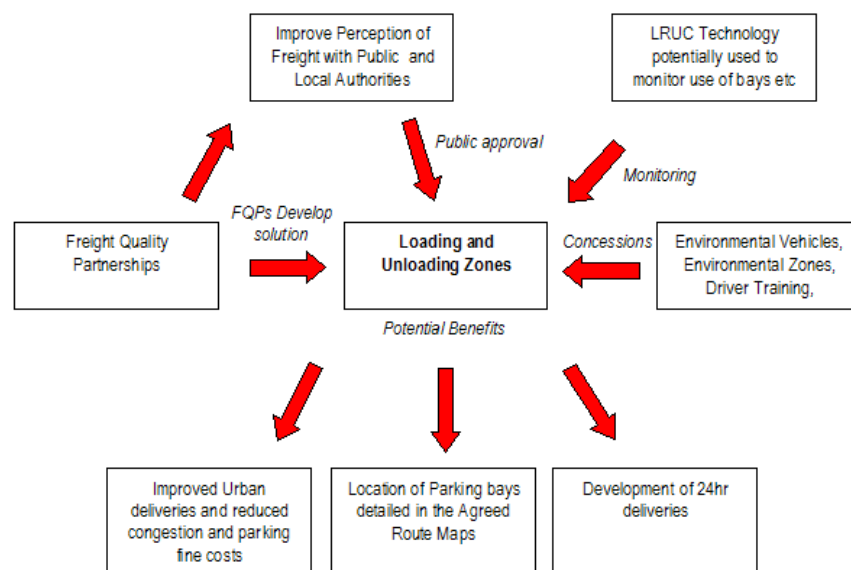
This would provide the industry with improved performance and in turn economic benefits.

In addition to improving the efficiency of freight operations, these also have the additional benefit of reducing the volume of circulating traffic and of illegally parked vehicles restricting traffic movement, which in turn reduce emissions and noise, and improve air quality in the urban environment. In addition, such provision should also assist in ensuring the continued attractiveness and viability of town centres to retailers.

7.6.3 IMPLEMENTING ZONES

There are examples of such dedicated zones throughout Europe which have the potential for being replicated in Scotland. It should be borne in mind, however, that such measures have typically been introduced with accompanying restrictions and environmental objectives, such as addressing congestion through reducing demand on the network during peak periods, introducing maximum vehicle weights, and restricting access to vehicles which meet emission requirements. We would therefore recommend that such measures be considered only as part of a package, and potentially as an incentive to freight operators to use the congested urban network during off peak hours with more environmentally friendly vehicles and efficiently trained drivers.

For example, in the case of Barcelona highlighted in the Best Practice review, the dedicated loading and unloading zones pilot scheme has proved to be successful. This scheme provides for dedicated kerbside access to goods vehicles on selected roads, but restricted to off-peak hours and with a maximum stay of 30 minutes. Advice on which areas are accessible is provided through the use of Variable Message Signs at junctions, with manual enforcement by police authorities. For further expansion of the scheme, the authorities have recommended a series of refinements and improvements, including automated enforcement, to reduce the high cost of enforcement experienced and the burden on the regulating authorities. This underlines the need for recommended measures to be considered as part of a holistic approach, including the use of ITS – which may be made easier through the introduction of the Lorry Road User Charge, and potentially urban Congestion Charging, or through other measures, such as access control. This approach is illustrated in the diagram below.



It will be beneficial for such measures to have strong local support, particularly as it would almost certainly result in the reduction in on-street parking available for private cars, underlining the importance of the perception of freight recommendation. As such, a Freight Quality Partnership having a strong role to play to ensure the interests of all stakeholders are properly addressed.

7.6.4 RECOMMENDED APPROACH

It is recommended that the Scottish Executive, in partnership with a FQP or in advance of these a Local Authority and the freight industry, consider implementing a trial scheme to provide such dedicated loading and unloading zones. An initial stage of this trial may be straightforward to test suitability and reaction of the freight industry and other stakeholders, and would involve reallocation of existing kerbside spaces for this purpose, new road markings, and appropriate signage on approaches to and around the trial area. In terms of enforcement, it would be proposed that this be undertaken as part of the role of existing parking enforcement officers. Any publicity exercise for the scheme also offers a good opportunity to raise the profile of road freight and reasons why the scheme provides a range of benefits.

A number of Scottish local authorities have included such an objective in their existing Local Transport Strategies, and any one of these may offer a suitable trial site.

Should any pilot scheme be deemed to be a successful, further schemes could be implemented, potentially as part of a wider package including some of the environmental objectives detailed above. Further schemes may also have a greater degree of sophistication and utilise some ITS tools to automate enforcement.

7.7 Environmental/Green Urban Deliveries

7.7.1 THE CURRENT SITUATION

The current situation outlined in Section 7.6 above in respect of problems associated with the final delivery in urban areas also applies to this option. However, the approaches considered suitable to address the problem are more acute and focussed on achieving environmental objectives.

7.7.2 WHAT ARE THE OBJECTIVES

The best practice review highlighted the approach being taken in the Swedish cities of Stockholm, Gothenburg and Malmo to improve urban environmental conditions through the introduction of a series of 'environmental zones' created in the central area of the city. These zones are located within built-up areas, particularly those where residential premises are susceptible to disturbances from goods traffic.

Access to the zones is restricted to those vehicles which comply with a stringent environmental classification (covering both emissions and noise criteria). Furthermore, the responsible authorities also have the power to prohibit vehicles over a certain weight, length or age, and implement temporal restrictions.

Such a scheme could be replicated in Scotland, with similar cities. Again, this would be appropriate in towns or cities where there is a mix of residential and commercial use, or indeed should there be further applicable criteria – such a historic central area.

7.7.3 IMPLEMENTATION AT THIS STAGE?

Whilst the benefits of implementing such a scheme are clear, initial focus may be better geared towards implementing less stringent measures. Notwithstanding, consideration of such an approach has merit, and should be part of a longer term framework to change the manner in which freight traffic accesses urban areas. For example, the provision of dedicated loading and unloading zones would be an acceptable first step in improving the efficiency of urban road freight operations, and this could subsequently be followed by an environmental-objective driven element.

This would also go some way to addressing concerns raised during the consultation phase from hauliers who have followed Government guidance to invest in cleaner, more efficient, vehicles, but at the same time see no disincentive towards those hauliers who have not made similar investments.

However, one difficulty in successfully operating such a scheme would be the issue of enforcement. Whilst manual enforcement would be simple, it would also be particularly labour intensive, and therefore costly. For example, it is envisaged that vehicles complying with the prescribed criteria would be granted a permit – likely paper based – displayed on the vehicle. To fully control the zone would require a manual presence at each entry point, or possibly within the zone, although this latter option could be undertaken by existing traffic enforcement officers.

An automated approach would therefore be more desirable. This would be achieved through the use of appropriate ITS technologies, for example, utilising an inexpensive tag read by beacons on accessing the controlled zone. Should a vehicle not comply with the provisions of the scheme, cameras would record the license plates of these offending vehicles and the enforcement process commences.

7.7.4 RECOMMENDED APPROACH

Again, it is clear that there are demonstrable benefits to be had from introducing an Environmental Zone(s) in some Scottish urban areas. However, it is recommended that greater priority be initially given to other measures, such as the provision of dedicated loading and unloading zones, although with a view to future migration to including environmental aspects. Introduction of such measures would benefit from having strong support from a Freight Quality Partnership.

Development of this option would also benefit from an ITS Architecture for Freight being in place, and potentially also from the technology deployed as part of the UK Lorry Road User Charging scheme.

7.8 Driver Training

7.8.1 WHAT IS DRIVER TRAINING? WHAT ARE THE OBJECTIVES?

HGV and LGV driver training schemes concentrating on more fuel efficient driving habits have been run by the Scottish Executive over the past year and have generally been accepted as being very successful in providing an immediate visible benefit to the economics, safety and sustainability of the Scottish Freight sector. Training of freight drivers focused upon methods of efficiently using and driving vehicles, safety awareness and vehicle maintenance.

Funding for a number of training schemes has been available through the Road Haulage Modernisation Fund (RHMF) which offers grants and solutions to allow hauliers to upgrade vehicles, making them more fuel efficient and environmentally friendly. The RHA and FTA have both fully supported the schemes in Scotland.

The ongoing strategy is to operate a simulator research project and Safe and Fuel Efficient Driving (SAFED) schemes for the next two years but the Scottish Executive hope that the freight industry will eventually maintain and continue the training scheme.

There are currently a number of schemes either running or planned in Scotland:

- Young LGV Driver Scheme and pre-Modern Apprenticeship programmes - enable participants aged between 16 and 21 years to follow a fast track programme to a full LGV licence and a Level 2 qualification.

- The Scottish Driver Training Scheme (SDTS) – LGV driver-training scheme for existing adult (aged over 21 years old) employees and new recruits into the road freight sector providing support for the acquisition of Cat C and C+E LGV licences, the Driving Goods Vehicles SVQ and where needed, support for literacy and numeracy skills. Funding for the Scottish Driver Training Scheme (SDTS) comes from the Scottish Executive's Road Haulage Modernisation Fund. It complements the existing Young LGV Driver Training Scheme (YDS), open to 16-21 year olds.
- Safe and Fuel Efficient Driving – the development of a Safe and Fuel Efficient Driving (SAFED) standard was completed in July 2003 with a detailed analysis of a number of drivers before and after completing the training and a proven increase in the efficiency of each (average 7% reduction in miles per gallon). Under the Road Haulage Modernisation Fund, The Department for Transport has funded a programme of driver development training based on the SAFED standard. The funding was free to drivers in England until 31st March 2004 and has provided training for 200 specialist SAFED instructors, developed the driving skills of 3,500 experienced drivers to the SAFED standard and developed 500 newly licensed drivers to the SAFED standard.

In addition there are a number of other schemes available in the UK many of which have been funded through the initial Road Haulage Modernisation Fund or the latest extension. These include the Fuel Economy Advisors (FEA) Scheme, Skills for Logistics, New Driver Development Training Scheme, Modernising Operator Scheme and a Careers Website which provides a 'one stop shop' on careers in the road freight industry for employers, careers advisors and work seekers. The website will promote best practice on recruitment, retention, training and development issues and highlight industry initiatives aimed at tackling the skills shortage

The objectives of a driver training option in Scotland must be seen as threefold:

- To continue to promote training at all levels within the logistics sector;
- Continue to provide initial training as part of Road Haulage Modernisation Fund; and
- To ensure the longevity of driver training by putting in place a framework for the self funding and management of driver training initiatives by the industry.

7.8.2 ENSURING THE LONGEVITY OF DRIVER TRAINING IN SCOTLAND

Existing evidence from research and agencies such as the Sector Skills Development Agency and Skills for Logistics points to a shortage of 4,000 – 6,000 drivers in Scotland which could ostensibly be exaggerated by the Work Time Directive. To ensure the future sustainability of the sector it is crucial that the industry remains attractive to the existing workforce, that that workforce remains efficient and skilled and more drivers are recruited. Training at all levels will help to meet these objectives.

Whilst there have been successful training programmes run in Scotland over the past four years as part of the Scottish Road Haulage Modernisation Fund, the Fund is only planned to continue until March 2008, and with reduced funding. Driver Training has been one of the major beneficiaries of the fund and significant work has been completed to put in place a training framework which has been promoted and supported by the RHA and FTA. A Safe and Fuel Efficient

driving standard has been developed which has been accepted a means of reducing costs and increasing efficiency and the freight industry in Scotland are also keen to see the SAFED rolled out as soon as possible.

The Scottish Executive must work with the RHA and FTA in Scotland to explore the possibility of an industry lead and self funded training program. This must be economically justifiable to freight operators and the SAFED program, which has an immediate impact in terms of cost savings, seems an appropriate test bed. Whilst the initial set-up costs might be met by the Scottish Executive through any remaining funding from the RHMF, training should be paid for at point of delivery. It is critically important that training is promoted and publicised as means of improving efficiency and there is an immediate financial benefit of freight operators completing the program despite the initial cost.

7.8.3 THE WAY FORWARD

As indicated, there have been a number of successful driver training schemes implemented in Scotland as part of the Scottish Road Haulage Modernisation Fund over the last four years and the Scottish Executive should continue to support these. The Safe and Fuel Efficient Driving (SAFED) programme presents an opportunity for the road freight and logistics industry to provide a self funded training scheme. The Scottish Executive should examine ways of supporting the set up of the SAFED scheme with a view to allowing the freight industry to operate independently of funding.

The Scottish Executive should continue to support the training schemes in the short term that encourage more young people to join the industry such as the Young LGV Driver Scheme and pre-Modern Apprenticeship programmes. However, in the medium to long term, the responsibility for promotion of the industry as an attractive career option through career long training and “upskilling” programmes, such as the Scottish Driver Training Scheme, should rest with the industry. Importantly these training schemes should be publicised both within and outwith the road freight industry.

7.9 24 Hour Operation/Delivery and Curfew Relaxation

7.9.1 CURFEW RELAXATION AND 24 HOUR DELIVERY

Relaxation of curfews for the operation of road freight in Urban areas centred around the view that hauliers will operate more efficiently and there will be an associated reduction in overall congestion levels as a result of the greater window within which hauliers can operate. The central issues relate to impact of night time and ‘out of hours’ operation in terms of noise levels of delivery and loading/unloading and secondly whether suppliers and retailers will be willing to accept deliveries during the ‘out of hours’ time slots. There is, however, little argument that relaxed curfews will improve the efficiency of freight operators, the issue is how this option can be suitably implemented.

7.9.2 WHERE CAN A CURFEW RELAXATION BE IMPLEMENTED

On the face of it the best locations to implement relaxed curfews would appear to be in larger urban areas. The reasons include:

- Greater demand for 'out of hours' deliveries by retailers and more potential economies of scale for hauliers;
- Greater requirement for 'out of hours' deliveries, more congestion in larger urban areas;
- Larger Central Business Districts and a less populated centres than smaller towns; and,
- A greater number of retail parks.

The obvious locations in Scotland include Edinburgh, Glasgow, Stirling, Aberdeen and Dundee all of which currently operate night time delivery curfews of at least 10pm to 7am.

7.9.3 HOW CAN IT BE IMPLEMENTED

The Freight Transport Association are currently promoting a Delivery Curfew Initiative through which the organisation is investigating the effect of night time deliveries on daytime congestion with the objective of identifying conditions under which delivery curfews imposed on retail stores could be relaxed in exchange for the adoption of best environmental and social practices through and at the point of delivery. Much of this work has focused on the guidelines set out by the Office of the Deputy Prime Minister which is responsible for planning guidelines for town centres and retail parks. This approach is very aimed at changing the national policy and the directives handed down to local authorities.

Other work has focused on a bottom up approach and attempting to agree local policies and initiatives ahead of trialling a city specific initiative. Whilst there would appear to be considerable work to be undertaken by the FTA in the area of national policy there is a deficiency in available research into the effectiveness of the relaxation of curfews at local levels especially and crucially whether suppliers and retailers will be willing to accept deliveries during the 'out of hours' time slots. Research of this nature could be commissioned through a FQP as part of a wider business survey.

At a national level the Scottish Executive and FQPs should continue to work with the FTA and RHA to develop Best Practice Guidelines for night time deliveries focussing on better delivery planning, reducing vehicle noise and reducing delivery and unloading noise and building on the work completed by the FTA and other organisations in Leeds.

Crucial to the success of the out of hours freight deliveries is the method and mechanism that are used to 'sell' this option to Local Authorities and the public. As such building on any business or retailer research completed by the FQPs in Scotland, the Scottish Executive should consider completing short location based studies to assess the impact of out of hours deliveries both on the efficiency of the freight sector but importantly on the impact on congestion. As detailed above in the Perception of Freight option it is important that the value of relaxing night time curfews to the wider Scottish economy is emphasised.

Finally, a trial of relaxed night time curfews in a major Scottish city with a detailed assessment of any economic benefit to industry and the impact on congestion should be considered by the Scottish Executive. This “proof of concept” would help develop a model for Scotland but also feed into the national research will help inform the national debate. With a FQP acting as a vehicle to assess business needs for out of hours delivery and the links to Local Authorities through FQPs a city with an this existing organisational structure would seem appropriate. As a freight hub with existing harbour, good infrastructure, a key Scottish Industry and the only current FQP, Aberdeen seems a good candidate for a future trial.

7.9.4 THE WAY FORWARD

All stakeholders should work together to explore ways of operating a trial of “out of hours” freight delivery in a Scottish city – ideally such work would be driven by a FQP. Any trial should be based on Best Practice Guidelines for night time deliveries previously developed and also build on the work completed by the Freight Transport Association at a national level in attempting to implement such schemes.

7.10 Relaxing and Harmonising Restrictions

7.10.1 WHY RELAX AND HARMONISE RESTRICTIONS?

There is no current policy on parking and loading for freight in urban areas, Local Authorities in Scotland set there own regulations and restriction within some broad national guidelines. Decriminalised parking enforcement enables local authorities in Scotland to administer their own parking penalty schemes and to retain the penalties collected to finance its parking enforcement procedures.

Problems arise for freight operators when there are blanket or strict bans on freight vehicles parking and unloading in city centres and within pedestrianised areas regardless of vehicles types or sizes. Significant work has been completed in Holland by the Forum for Physical Distribution in Urban Areas (PSD) to collate regulation data and develop an uniform approach for establishing vehicle parking and loading regimes in Dutch municipalities. The Vehicle Matrix identifies four classes of vehicles and levels of access with smaller, lighter and cleaner vehicles having access to pedestrian areas at all times. The PSD argue that this has not only encouraged more efficient and cleaner vehicles but improved the long term freight efficiency and sustainability.

7.10.2 WHAT ARE THE OBJECTIVES?

The objectives of relaxing and harmonising restrictions are complementary with some Local Authority parking policies, such as Glasgow where there is an aim to “reduce the provision of long stay commuter parking whilst providing short stay parking for business, shopping and tourism.” (Glasgow Local Transport Strategy 2001 - 2004). Edinburgh Council have also identified a need to ensure that developments in parking regulation include adequate provision for loading/unloading. It has also been noted by the Scottish Executive in the Planning Advice Note: Improving Town Centres, that timed access to town centres may be necessary. Objectives of this option include:

- To collate information on current parking and loading restrictions for freight vehicles in urban areas;
- To collate information from industry, DVA, DFT and other organisations to determine the breakdown of vehicle types, size, weight and environmental compliance. Much of this information is already collated by the Department for Transport;
- To develop a matrix of vehicles based on size, weight and environmental compliance and associated city access regulation that reflects the impact of these vehicles but ultimately improves freight efficiency;
- To consult with Local Authorities promoting the Vehicle Matrix and relaxation of restrictions; and,
- To inform the Freight Industry of harmonised regulations thereby promoting cleaner vehicles.

7.10.3 HOW CAN IT BE IMPLEMENTED?

Implementing relaxed and harmonised regulation with regards to parking and unloading in Scotland will require a number of distinct approaches, these are:

- Data collation and analysis – collating data for parking and loading regulation from across local authorities in Scotland, sourcing key vehicle data from the Department of Transport, the freight industry and representative bodies. Analysis of this data to build a profile of vehicle types in Scotland and a profile of current city centre parking, loading and access restrictions for freight vehicles.
- Vehicle Matrix development – based on the analysis of the available data and with the objective of improving overall efficiency of urban freight deliveries to town centres, a hierarchy of vehicle type and associated restrictions could be developed. The diagram below has been adapted from the work completed by the Forum for Physical Distribution in Urban Areas and is provided for illustrative purposes only. The size of vehicle or the footprint of a vehicle is ostensibly a measurement whose use should be considered as the issues of freight access to city centres and pedestrianised areas relate to space rather than say weight related road damage.

Table 5 – Vehicle Matrix Example

Vehicle Class	Vehicle characteristics	Town access regulation.
1	<i>Weight</i> : 3,5 – 7.5 tonnes <i>Length</i> : max 7 metres <i>Width</i> : max 2.6 metres <i>Environment</i> : Euro II, LPG, electric, gas, etc	<i>Always</i> allowed access. Minimal parking restrictions. Access to pedestrian areas have time frame restrictions – preferably between 06.00am – 12.00am.
2	<i>Weight</i> : 7.5 – 18 tonnes <i>Length</i> : max 10 metres <i>Width</i> : max 2.6 metres <i>Environment</i> : Euro II or more, LPG, electric, gas, etc	<i>Often</i> allowed access. Parking restrictions in peak hours. Access to pedestrian areas have time frame restrictions – preferably between 06.00am – 12.00am.
3	<i>Weight</i> : 18 – 44 tonnes <i>Types</i> : various <i>Length</i> : 10 – 18,75 metres <i>Environment</i> : Euro II or more, LPG, gas, electric, etc	<i>Frequently</i> allowed access. Parking restrictions in peak hours. Access to pedestrian areas but only with special permission for inner cities.

- Consultation and Promotion of Vehicle Matrix and Relaxation of restrictions – key to a successful delivery of this option is the promotion of the relaxation of restriction to Local Authorities who will ultimately chose whether to implement the Matrix. The FQP provides a forum for not only collating the data required to develop the Vehicle Matrix but also present the potential benefits to the local economy, town centre and the environment.

7.10.4 THE WAY FORWARD

The Scottish Executive, in consultation with Local Authorities, should support the development of a Vehicle Matrix with the objective of relaxing and harmonising restrictions for parking and loading in urban areas in Scotland. The Vehicle Matrix should be based upon data collated from the Department for Transport, FTA and RHA and directly from Local Authorities and should be promoted through FQPs.

7.11 ITS and On Board Logistics

7.11.1 BACKGROUND

Intelligent Transport Systems (ITS) involve the use of modern electronic techniques to better utilise existing transport infrastructure. ITS tools are based on three core features:

- Information;
- Communications; and
- Integration.

It was acknowledged during the consultation phase that ITS is increasingly a key element in improving the efficiency of freight, and in particular road freight, operations. This is backed up by research which has shown that, where coordinated ITS systems have been implemented, vehicle mileage has been reduced in urban areas by about 10%, leading to similar reductions in fuel consumption and pollutant emissions. For example, the following types of measure can provide the operator with quick and reliable information on resources and processes and thereby permit more efficient planning and operations.

- Optimal route planning;
- Dynamic traffic information;
- Mobile communications; and
- Tracking and tracing.

7.11.2 ITS IN SCOTLAND

The key ITS instrument in Scotland is NADICS – the National Driver Information And Control System. As the name suggests, NADICS provides integrated driver information and traffic control for the majority of the Scottish trunk road network. Information is disseminated to road users via Variable Message Signs located at strategic points across the country and on the NADICS website (www.nadics.org.uk). The NADICS future strategy seeks to introduce new information services which may provide further benefits to the road freight sector – such measures include the provision of real time traffic alerts and making the NADICS website accessible from mobile devices.

During the consultation it was apparent that freight users find NADICS particularly beneficial for the provision of information on network conditions.

In an urban context, a number of cities and towns operate UTC systems, which with advances in technology are becoming increasingly dynamic and also have a focus on improving the network performance for other key road users, particularly public transport. However, freight is typically overlooked.

7.11.3 POTENTIAL MEASURES

The following examples demonstrate that ITS measures can cover a wide range of applications. Where these measures have been covered in detail elsewhere in this section the appropriate reference is noted.

However, the list below details all typical measures, to demonstrate how the application of ITS can be used to achieve these other recommendations.

A comprehensive summary of typical ITS applications for freight include:

- Traffic information systems
- Freight and fleet management systems
- Tracking and tracing of vehicles, loading units and consignments
- Traffic monitoring and traffic control
- Electronic management of lanes, electronic management of zones of delivery
- Navigation systems and route guidance systems, tour planning tools, truck routing signalisation
- Electronic freight exchange systems
- Driver assistance systems
- ITS applications for the management of dangerous goods transport
- Electronic Fee Collection for Road User Charging
- Automatic Vehicle Identification

A number of these measures are considered elsewhere in Section 7 (e.g. Freight Information Service, Lorry Road User Charging, Access Control), so will not be considered here.

The focus therefore in this section is on ITS applications which will assist in the delivery process, and those which assist operators in fleet management.

In this section, the following applications will be detailed:

- Door to Door Deliveries – Decision Support Systems
- E Commerce Enabled Logistics
- Commercial Fleet Management

As important, however, is the overall framework in which ITS applications for Freight can be introduced and progressed, and this will also be discussed.

7.11.3.1 Door-to-Door Deliveries: Decision Support Systems

In summary, this involves the creation of a decision support system, envisaged to be a local authority for an urban area. The spatial decision support system acts like a air traffic controller unit using historic data and transport modelling tools (network analysis) to plan assess and control freight transport according to their needs. Private freight operators have access to the support system and can access historical and incident data. Freight operators are able to book delivery windows with retailers. Whilst this solution has only been trialled and there are obvious drawbacks such as the degree of user acceptance etc., there is some applicability to the Scottish situation as the majority of deliveries made are daily or weekly returns and local authority optimisation of these deliveries to reduce congestion may be an option.

7.11.3.2 E-Commerce Enabled Logistics

Solutions focus upon the business to consumer market in an urban environment, with a fleet of freight operators connected to a single operation centre into which feeds consumer orders. Consumers may chose to pick up goods delivered to a pick-up location through-out the city; goods have been generally ordered online or through catalogues – the solution is marketed to individuals unable to receive the goods at home due to work commitments. The freight operators act in a similar fashion to a fleet of taxi drivers picking up a batch of goods from one location (often out-of-town) and delivering to a pick up point.

7.11.3.3 Commercial Fleet Management

There are numerous examples of successful commercial fleet management products on the market. Most, if not all, of medium to large sized logistics organisations' fleets are equipped with such tools, which allows the better management and coordination of vehicles. However, one weakness in terms of the industry as a whole is the access of small, or indeed single vehicle hauliers, to such equipment. It is these types of organisation, without any supporting infrastructure, who could stand to gain most from their utilisation, particularly if some new services (such as FRIS or real-time traffic updates) can be integrated with some commercial services.

Critically, it is important with a large proportion of very small operators to investigate how smaller, cheaper solutions might be made available.

7.11.4 FRAMEWORK FOR IMPLEMENTATION

7.11.4.1 ITS Freight Architecture/Blueprint

It is widely acknowledged best practice that for a successful use of transport telematics applications it is necessary to establish an architecture at a national level, and simultaneously to work at standardisation of ITS across Europe. The European Commission have undertaken significant work in this regard, having completed the KAREN (Keystone Architecture Required for European Networks) initiative, in which a potential European architecture was defined, and continuing the dissemination and support of this through the FRAME project.

There is a general view within the industry that ITS measures can be perceived as “in-vogue” rather than as part of a coordinated strategy for solving freight transport issues, and that a piecemeal approach to freight ITS planning has been adopted. The key issues surrounding these include:

- Connectivity;
- Interoperability; and
- Standardisation.

To address these issues, and taking account of the numerous potential ITS-related applications detailed in this section, as well as other existing and planned applications, it is clear that there is a need to progress towards the establishment of an ITS Freight Architecture, or at the very least an ITS “Blueprint”. This will ensure that measures implemented by the Scottish Executive, Local Authorities, or indeed by other jurisdictions or organisations, will be modular and interoperable, thereby ensuring maximum return on investment, and will not become prematurely outdated or redundant.

The approach taken to this includes:

- Identification of key stakeholders and interrelationships;
- Description of required activities and functions;
- Definition of interconnections and interdependencies between functions;
- Development of a blueprint for integration of systems.

In the end, the architecture will normally comprise two interrelated aspects:

- a logical architecture; and
- a physical architecture,

which combined ensure that functional requirements and user needs are properly addressed.

This will ensure that systems deployed by freight organisations are integrated within a national approach, ensuring accessibility to services deployed by national, regional or local authorities.

7.11.5 NEXT STEPS

As indicated above, ITS measures can be utilised in a multitude of applications. Some of those, such as Traffic Management and Traffic Control, would be the responsibility of the authority responsible for the road network and is not considered here. Other measures which would also be the responsibility of the authority, such as information services and electronic access control, are considered elsewhere in this section.

For those measures detailed in the above paragraphs, such as decision support systems and commercial fleet management, there is no doubt that these improve the efficiency of freight operations. However, responsibility for taking these forward rests with the freight industry,

Notwithstanding, the introduction of the Lorry Road User Charge in 2007/8 (see section 7.13) is likely to see a major progression in the use of technology throughout the industry, with each vehicle likely to be equipped with an on-board computer with positioning capability. It is envisaged that such a computer would provide the platform upon which different ITS services could be provided (such as real time information alerts or dynamic route guidance), or measures utilising ITS could be implemented (such as access control or environmental/green areas).

However, an important role which the Scottish Executive has is to provide the framework within which such technology can be easily introduced, and to this end we would recommend that the Executive consider the preparation of an ITS Architecture or Blueprint for freight. This will ensure systems deployed are integrated within a national approach, and provide maximum accessibility to available services. It also ensures that ITS systems for freight are interoperable within overall National ITS Frameworks, not only in Scotland and the UK, but further afield, where compatibility with European ITS Architectures will allow freight operators to invest in technology without fear of it being superseded or becoming redundant and subsequently have access to a range of value added services which aim to improve the effectiveness of the industry.

7.12 Real Time Stock Information

7.12.1 WHAT IS REAL TIME STOCK INFORMATION

Real time stock information is provided to freight operators and hauliers through a number of mediums in order that the logistics of distribution can be effectively optimised. This real time database may take the form of requests posted by retailers of suppliers looking for a freight operator or a more tightly organised sales recording package (SRP) which applies the electronic point of sale principle to real-time stock information. Working examples include:

- Wales Harvesting and Marketing – Real time stock information is feed from a centralised database to remote clients to promote back loading through route optimisation and improved efficiencies in the Forest Industry.

- e-DRUL (Netherlands) – an innovative pilot scheme in urban freight distribution, advanced IT solutions and integration with e-Commerce / e-Business infrastructures allowing on-demand planning of the distribution of goods. Freight operators pick up and deliver goods to drop off points using access to a central database as a means of planning optimal routes.

The two examples highlight two distinct levels of real time stock information implementations; the first implemented over an entire country and the second trialled in a single urban centre focussing on last mile solutions. Furthermore, central to a number of other urban freight solutions such as freight villages, intelligent routing and e-commerce is real time stock information.

It should be noted that other real time stock information solutions have been implemented by many large retail organisations to operate as countrywide initiatives but these solutions do not provide a ubiquitous template for all industries. Rather the concept should be examined only where there will be a clear and distinguishable improvement in the efficiency of freight operation. Ultimately this solution can only be applied where the locations of goods drop and the next goods uplift are close (e.g. to avoid backloading for the sake of backloading without demonstrable improvements in efficiency) and where the required technology can be relatively easily employed.

7.12.2 OBJECTIVES OF REAL TIME STOCK INFORMATION

Real time stock information provides a facility upon which freight solutions can be built. Technically the database can be built relatively easily but the interfaces, security and property rights of the information present obstacles to developing this option. Regardless it has been demonstrated both in the UK and beyond that successful implementation of real time stock information can lead to benefits such as increased back loading, reduced urban delivery miles and efficiencies in the delivery of high demand goods in an urban environment. The objectives of this option are then:

- To promote and encourage increased back loading and reduced empty running;
- To promote optimal urban freight deliveries thereby reducing total mileages; and,
- To encourage sustainable practices through the adoption through the wider adoption of appropriate Information Technologies.

7.12.3 IN WHICH INDUSTRIES/SITUATIONS CAN REAL TIME STOCK INFORMATION BE IMPLEMENTED?

The real time stock solution has been trialled successfully in the timber industry in Wales, although this has been possible because of a single organisation controls 70% of the market and has access to all stock information; therefore mitigating any business to business data sharing issues. Other trials have been completed across industries that operate as separate organisations but in the same sectors and have compatible supply chains. The key to success in these scenarios has been the similarities on the demand and supply side and the similar operating practices of the freight operators or hauliers.

It can be argued that real time stock databases will only work in specific scenarios where the requirements of all sectors of the supply chain are similar and all security and data sharing issues have been overcome.

7.12.4 NEXT STEPS

The potential for using real time stock information should be considered by the freight industry, with support from the Scottish Executive and Local Authorities, given the latter's objective to reduce vehicle numbers and improve air quality in the urban environment, examining both the data that currently exists and the level to which freight organisations would be willing to share information to meet the common goal of improved road freight efficiency in urban areas. This work should build on previous trials both in the UK and Europe and should ultimately result in short trial in a urban environment in Scotland.

7.13 Lorry Road User Charging

7.13.1 CURRENT STATUS OF LORRY ROAD USER CHARGING & OPPORTUNITIES

The last few years has seen an increase in activity across Europe in the implementation of lorry road user charging schemes, made possible by the European Commission directive 1992/62/EC. Switzerland was the first of these countries, the Heavy Vehicles Fee commencing in January 2001, and was followed by a similar Austrian system which began earlier this year. Initial implementation of the German 'Toll Collect' scheme commenced on 1st January 2005, with the UK's own Lorry Road User Charging Programme scheduled for introduction in 2007/8. These latter two schemes present a range of opportunities for the Scottish Executive and the road freight industry in Scotland by virtue of the technology being deployed.

In first providing some background to the mechanics of the UK charge, it is intended that hauliers will pay an amount related to the distance that they travel on all UK roads, regardless of their nationality. Overall, the charge will be fiscally neutral for hauliers as a result of complementary reductions in haulier's fuel duty. The charge will apply to all HGV's with a plated weight of 3.5 tonnes or above, and may vary according to lorry size, road type, and possibly time of day.

As noted, the opportunities may arise from the technology being used to support the charge. It is intended that each HGV will be equipped with an on-board unit, which will determine distances travelled, and will likely utilise satellite technology for positioning. As such, there is the potential for a vast amount of data to be mined from these units, including detailed freight movement data, should aspects such as privacy be satisfactorily addressed. Such data could prove valuable to the Executive to assist in planning for the freight industry and in determining the need for and the viability of other options.

The on-board units may also be of such a type that can support other ITS applications, such as commercial fleet management and interactive route guidance (intelligent vehicles and networks), although this is dependent on the final technology selected and the system offered by the successful contractor.

Furthermore, it may also be possible to use HGV's as floating vehicles to attain real time information across the national road network, which could play a key role in supporting a proposed FRIS.

7.13.2 NEXT STEPS

Implementation of the Lorry Road User Charging Programme rests with HM Customs & Excise, with the procurement process currently underway. Whilst no options are directly proposed in this study, it is recommended that the Executive retain a watching brief on the programme, and identify areas where information and data which potentially could be available from equipped HGV's could be utilised to assist with and improve the efficiency of the Scottish road freight transport sector.

7.14 Access Control, Area Licensing, Congestion Charging

7.14.1 CURRENT SITUATION

In a similar vein to the problems associated with the final delivery in urban areas highlighted in previous sections, these measures are also aimed at addressing such problems. However, experience has shown that the introduction of these types of measures is symptomatic of a much greater problem, notably linked with excessive pressures on urban centres from conflicting road users.

Each of the approaches aims to achieve a significant reduction in the numbers of vehicles in the central city area: In general, the measures are implemented through the introduction of a cordon (either physically with barriers or through signage) which applies for all or part of the day, coupled with a fee for accessing the restricted area.

The best practice review highlighted a small range of such schemes which have been introduced throughout Europe, either as small pilot demonstration projects through to full implementation of major initiatives. However, common strands running through each of these is the need to address the damaging impact traffic congestion has on the economy of these areas, and also the highly politicised nature surrounding their introduction.

This has been evident in London and Rome, who have both introduced such measures, and also in Edinburgh, where a congestion charging scheme is being developed for potential implementation in 2006.

7.14.2 WHAT ARE THE OBJECTIVES

As stated, the common theme in the similar measures introduced elsewhere is to reduce congestion in urban areas. However, access control and congestion charging are directed at all road users rather than focussing purely on freight movements. As such, the implementation of such measures would aim to reduce overall traffic volumes and improve conditions on the network, which would have positive impacts on the efficient operation of, road freight.

Again, such measures should ensure the continued attractiveness and viability of town centres to retailers.

7.14.3 IMPLEMENTING THE SOLUTIONS

In the short term, we would not propose recommending further schemes for implementation in Scotland other than the congestion charge scheme currently being progressed in Edinburgh. It is our view that the introduction of other measures detailed in this section would have a considerably beneficial impact on the efficiency of the industry

Notwithstanding, should traffic conditions in urban areas or strategic sections of the road network continue to deteriorate, the application of such schemes should be considered at that time to ensure that the performance of the network, in addition to environmental conditions in urban areas, do not decline further. As access control and congestion charging are targeted at reducing all road traffic rather than measures focussing purely on freight, they remain options in their own right and should be considered as potential solutions for addressing particular problems should the need arise. Again, we would reiterate that responsibility for taking forward such schemes would rest with Local Authorities. .

One element that is important if such initiatives are to be progressed is to ensure that the introduction of such a scheme takes full cognisance of the requirements of the freight industry. This sentiment was strongly presented by industry representatives during the consultation phase. It is considered that the presence of a strong Freight Quality Partnership, for example, would play a key part in achieving this.

7.15 Intermodality/Consolidation

7.15.1 OVERVIEW

The main focus in this report on intermodality is considering the potential for logistics centres to assist in the final consolidated delivery of goods.

7.15.2 OBJECTIVES

The aim of a consolidation type scheme is to minimise the impacts of freight operations in urban areas through deliveries being consolidated in a centre away from the problem area, typically on the edge of towns. Through this, it is possible to achieve a number of positive targets, such as

- Reduce number of vehicles in the target area;
- Contribute to traffic reduction;
- Improve air quality;
- Negate conflict and waiting of vehicles to access delivery or loading bays; and
- Contribute to a reduction in the delivery/supply chain costs.

The perception of the freight industry in Scotland is that such schemes add to the costs borne by the industry, as well as introducing inefficiencies to the logistics process. However, feedback from the recent Freight Consolidation Scheme trial project in Bristol, where the City Council has been working in partnership with neighbouring authorities and the freight industry, counters this view.

The Council are undertaking the Freight Consolidation Scheme is part of the European Commission supported VIVALDI project. The trial, which began in April 2004, is scheduled to operate for 8 months. The focus of the scheme is the central retail area in Bristol, known as Broadmead, which covers an area of 1.4 sq km, and more than 300 retailers, and includes a large centre spread over 3 floors. In addition the objectives above, the scheme also seeks to offer retailers the opportunity to take advantage of value-added services, such as waste and packaging collection, item level inventory and seasonal and peak storage facilities.

Prior to the contract to operate the scheme being awarded, the Council completed an extensive survey of retailers to fully understand the current freight distribution situation in the area. Following award, the Council and the successful contractor built on this earlier work by undertaking further consultation to ascertain particular needs and delivery requirements of retailers. For the purpose of the trial, the target number of retailers has been set at 20.

Initial feedback from all parties has been that the trial scheme has been a success. However, one important aspect which must be considered is that all costs, including those of the retailers utilising the consolidation centre, are borne by the VIVALDI project – on completion of the trial period the opportunity to extend the operation of the scheme will be investigated.

7.15.3 SUITABLE FOR IMPLEMENTATION

It is recommended that the implementation of a pilot or trial consolidation scheme, similar to that, but at the same time building on, the scheme implemented this year in the Bristol area, be considered by a Local Authority with appropriate support from the FTA, RHA, Scottish Executive and Regional Transport Partnerships. For such a scheme to be successful would require support and buy-in from all stakeholders, and again this is one of the key areas where the creation of a FQP would assist with its implementation.

7.16 Freight Use of Priority Vehicle Lanes

7.16.1 SHARED PRIORITY VEHICLE LANES FOR FREIGHT VEHICLE

There are a number of existing examples where freight vehicle sharing of priority vehicle lanes has been successfully implemented. In general these are limited to larger urban areas with greater congestion issues and freight use has been limited to certain time periods. In Newcastle the time periods have included 24 hour access and limits to the peak hours of the day. A key concern for Local Authorities has been one of safety and public reaction to freight use of priority vehicle lanes. There is wide support for the use of priority vehicle lanes by freight vehicles from within the freight industry, industry representation and from some Local Authorities. Other organisations such as Friends of the Earth (Northern Ireland) have support an integrated approach to freight use of priority vehicle lanes.

The key benefits of shared priority vehicle lanes has included a better use of available road space, a reduction of goods vehicles diverting on to other, less suitable routes, increased use of environmentally efficient vehicles as use may be limited to certain standards of vehicles and potential safety improvements as private car road users are separated from larger road vehicles. These initiatives have and should be implemented with other options such improved traffic management, priority signalling for buses and freight vehicles and improved road and intersection design.

7.16.2 OBJECTIVES

The objective of shared priority vehicle lanes centre around the attempt to use the available road space more efficiently but in a safe and sustainable manner. As such the objectives of this option are:

- To improve urban access for freight vehicles with jeopardising public services or endangering pedestrians or cyclists;
- To contribute to Government objectives of best use of highway capacity; and,
- To improve freight journey time reliability and reduce noise and emissions.

Priority vehicle lanes are now prominent through out many of Scotland's urban areas and there have been differing levels of success in implementing them. Adopting a policy of freight use of priority vehicle lanes requires significant prior investigation but in general where priority vehicle lanes exist there is a potential for shared use.

7.16.3 HOW CAN SHARED PRIORITY VEHICLE LANES BE IMPLEMENTED

The implementation of shared priority vehicle lanes in Scotland will require significant work to address sustainability, best practice and safety concerns from both the public and Local Authorities. As such implementing this option can be seen in two phases; the first is to examine the use of existing priority vehicle lanes for freight vehicles and the second is inform the road planning and design processes such that freight operations are included in future developments.

7.16.3.1 Better use of the existing road space

An approach to better utilising the existing priority vehicle lanes in an urban environment should be bottom-up approach rather than dictated by policy. As such the role of FQPs or Local Authorities should be to asses existing priority vehicle lanes and examine the case for freight use of priority vehicle lanes. This work must focus on:

- Potential to improve efficiency of freight deliveries;
- Impact on existing public transport and cyclists;
- Impact of time windows for shared use of priority vehicle lanes; and,
- Safety impact of shared use of priority vehicle lanes.

An initial role for a FQP should be to examine specific locations and routes where shared use of priority vehicle lanes would improve the efficiency and sustainability of freight. This should be achieved in partnership with Local Authorities and Freight operators.

7.16.3.2 Future design and planning

The key to an improved future use of road space and priority vehicle lanes is informed planning and design undertaken by the Local Authority. As part of future assessment of priority vehicle lanes, consideration should be given to integrating shared use of this space with freight vehicles. In essence, this may influence the design of the road, intersections and potentially issues such as the width of lanes which may assist in improving safety for all users, cyclists included.

The freight use of priority vehicle lanes may in, some instances, provide further economic justification for the construction of priority vehicle/freight lanes. The construction of lanes that are not justifiable solely on the basis of priority vehicle usage may well be so under a shared banner.

7.16.4 NEXT STEPS

A trial of freight vehicle use of priority vehicle lanes should be undertaken by a Local Authority and can be developed through a FQP based on previous research and the developing best practice presented by the FTA. This trial should be the end product of significant work completed through the FQP to assess local priority vehicle lanes that are appropriate in terms of improving the efficiency of freight, safety and impacts upon existing public transport. The Scottish Executive should support this trial and an evaluation of the results of the trial with a view to providing appropriate national guidance to Local Authorities on this issue.

7.17 Freight Priority through Minor Engineering/Physical Works

7.17.1 OBJECTIVE

In addition to the potential for permitting freight vehicles to use priority vehicle lanes, there is also the opportunity to provide freight vehicles with greater priority on urban road networks through implementing minor projects. This can range from the provision of dedicated freight lanes and physical junction improvements through to changing traffic signal phasings and timings.

7.17.2 APPROACH

The NE FQP undertook a survey of local freight drivers on their experiences of the road network throughout the area, and this highlighted issues relating to congestion and why drivers chose to travel particular routes. In addressing these, the Council's involved (Aberdeen City and Aberdeenshire) have developed a package of small schemes. Some measures which come under this category include

- Review and amend lane configuration at junctions to accommodate particular HGV flows. This could include segregated left turn only lanes, or reconfiguring roads to smooth out conflicting traffic movements.

- Adjust traffic signal phasings – similar to lane configuration, allow a left turn phase when there is an opposing green phase, to provide greater green time for left turning HGV movements.
- Adjust traffic signal settings – consider adjusting signals to detect the approach of HGV's and provide additional time to allow passage of vehicles, thereby mitigating any additional time and energy for stopping and starting.
- Where cities and towns have SCOOT systems, the link times could be adjusted to cater for the additional time required for HGV's on a link as opposed to cars.
- Allow use of restricted points (such as bus gates) by HGV's.
- Minor civil engineering works at junctions to facilitate long vehicle movements.

Where such measures warrant, these could be married to measures aimed at achieving environmental objectives or goals identified earlier in this section, e.g. access to or through particular sections could be restricted to vehicles complying with minimum environmental standards, and can be enforced through the use of ITS technologies such as vehicle tags or digital enforcement systems.

7.17.3 RECOMMENDED NEXT STEPS

Such measures can have a considerable positive impact on freight operations in urban areas, but most importantly can be implemented at very low cost, potentially as part of local authority maintenance regimes, and as such can be initial "Quick Wins". In addressing known trouble spots, the measures would almost certainly be welcomed by the industry.

It is recommended that the Scottish Executive should consider via Guidance for the Development of Local Transport Strategies, or as part of a Freight Quality Partnership Best Practice guide, that Local Authorities undertake a review of their road network to identify where such measures would be appropriate, and consider a programme for implementing these measures. Such recommendations may require some form of guidance to be published. The involvement of the freight industry is a crucial element of this approach.

8. IMPROVING THE EFFICIENCY OF FREIGHT: A SCENARIO

The following section details a hypothetical scenario of how some of the measures proposed can be implemented in a city as part of a wider cohesive package.

The city has a busy commercial centre, with some pedestrianisation, and suffers from congestion for large parts of day, exacerbated during peak times, particularly on radial routes. The Local Authority has been working in partnership with industry as well as the Scottish Executive and the newly created Regional Transport Partnership, with the aim of improving the efficiency of freight in the city. The Local Authority are keen that road freight is not marginalised by the increasing congestion and lack of available parking in the city centre leading to reduction in economic activity in the central urban area.

Both the Local Authority and local logistics industry are concerned, not only about congestion, but also about the impact of the Working Time Directive/Road Transport Directive, the growing number of vacancies in the freight sector and shortage of young drivers, together with the poor perception of the industry as a whole.

There are a number of issues and policies that are assisting the Local Authorities objectives and these include:

- All stakeholders in the Scottish freight industry have banded together to run a long term campaign to improve the perception of freight with the publication of a number of leaflets, the promotion of a web site detailing the value of freight to the Scottish Economy and a number of small conferences bringing together local Authorities and national and local freight operators;
- The Guidance for the Development of Local Transport Strategies includes a desirable aim for a Freight Quality Partnership to be developed in their area;
- The appointment of National/Regional Freight Quality Partnership coordinators for Scotland;
- Expanded Driver Training initiatives, increasingly operated as industry initiatives;
- Continued development and expansion of the Scottish ITS architecture which in turn supports travel information facilities (third party radio and broadcasters);
- A national initiative promoted by the Scottish Executive, Freight Transport Association and Road Haulage Association to develop Advisory Route Maps for freight through out Scotland; and,
- Research into the development of a Freight Information Service for Scotland which aims to provide traffic, port, restriction and policy information for the Scottish freight sector and integrate this with the dissemination of this information via web, SMS messaging, e-mail and newsletter.

Prior to completing any work the Council's economic development and transport department jointly complete a survey of local retail businesses and freight operators. The main conclusions from the survey for improving freight operation

include improving roadside facilities, increasing public awareness of the industry, more driver training, relaxation of city centre restrictions, lorry use of bus lanes and reduce curfew, parking and unloading restrictions.

Based on advice and feedback from the Scottish Executive, the Freight Transport Association and Road Haulage Association, the newly appointed national FQP coordinator and on the local survey results, the Local Authority scopes a broad strategy and roadmap for sustainably improving freight in and around the city. The strategy falls into a number of categories; long and short term and national contribution and locally controlled options.

1. Action: Set up a Freight Quality Partnership.

Priority: High.

The FQP will include members from the Local Authorities Transport and Economic Development Department , representatives from the FTA and RHA, representatives from the Chamber of Commerce and other bodies and crucially a number of locally based logistics managers from Freight Operators. The Local Authority aims to draft the first draft of strategy and agree at an early stage the explicit aims and allocate specific projects and targets to members of the FQP.

The main projects for first year of the FQP are:

- a. Complete a comprehensive survey of Business – retail operators will be surveyed regarding issues such as parking, deliveries and opening hours with regards to out-of-hours deliveries; freight operators are to be surveyed on specific improvements to the urban road network. This initial survey also serves to increase awareness of the FQP.
- b. Explore in detail the possibility and the impact of relaxing delivery curfews.
- c. Identify where and how bus lanes may be safely used for freight vehicles.
- d. Draft a preliminary version of the an Advisory Freight Route Network.
- e. Scope and deliver a public relation exercise to improve the perception of freight. This will focus on the local public but will also include local freight operators going to local schools to promote the industry as career opportunity.
- f. Commission a study to investigate how Loading and Unloading zones might improve efficiency and how these zones might be implemented.
- g. Complete a road engineering improvements study and identify key pinch points in the urban road network which ITS or improved signalling of road layout will improve freight operations.

2. Action: Develop an Advisory Route map.

Priority: High.

Design and Develop and Advisory Freight Map in partnership with the local freight operators. Submit to national database.

3. **Action: Contribute traffic and local information to the Scottish Freight Information Service.**

Priority: High.

Collate and submitted locally held traffic and road information to the newly commissioned Scottish Freight Information Service. Data includes local roadwork information, restrictions, maps and traffic data.

4. **Action: Relaxed access restrictions.**

Priority: Medium.

In partnership with a group of local authorities, examine the existing legislation and policy with regards to freight vehicle access with a view to rationalising and relaxing specific restrictions such that freight operators have better access to central retail centres without jeopardising pedestrian safety.

5. **Action: Local Railhead improved Access.**

Priority: Medium.

Improve access to a number of local railheads and expand lay-down areas.

6. **Action: Develop a local ITS Strategy in line with the Scottish Executive ITS Architecture/Blueprint.**

Priority: Medium.

The local ITS strategy, of which freight will be an integral element, will be developed to indicate where ITS measures will be utilised or introduced to help the City achieved its priorities and goals

7. **Action: Host, with the RHA, FTA, and Scottish Executive, an event focussing on Applications of On-Board Logistics and the Road Transport Directive.**

Priority: Medium.

Such an event would focus on the measures implemented or trialled, and highlight the best practice developed and lessons learned.

APPENDIX A – STAKEHOLDER CONSULTATION – PHASE 1 QUESTIONNAIRE

QUESTIONNAIRE

Instructions:

- If you are completing this questionnaire electronically please click in the boxes provided to record your response e.g. ☐
- If you have accessed this questionnaire via our website please save it to a local directory before completing any questions e.g. File > Save As.. and select Local Disk C:\.
- Please check to ensure you have completed all 3 sections before returning this questionnaire.

1. Do you consider that if external factors are not modified by remedial measures, a loss of efficiency in the road freight transport sector will result?

☐

Yes

☐

No

If yes, please rank the following external factors from 1 to 10 in order of impact on efficiency (1 = largest impact, 10 = smallest impact):

☐

Urban Road Congestion

☐

Inter-Urban Road Congestion

☐

Rural Road Congestion

☐

Driver Costs

☐

Driver Shortages

☐

Working Time Directive

☐

Road Haulage Taxation

☐

Construction & Use Regulations and Enforcement

☐

Traffic Management Schemes

☐

Environmental Pressures

☐

Other (please specify).....

2. Do you think there is scope to improve the efficiency of the road freight transport sector?

☐

Yes

☐

No

If yes, please rank the following parties from 1 to 6 in order of their importance to improving efficiency (1 = most important, 6 = least important):

☐

Road Freight Transport Sector

☐

Customers of the Road Freight Transport Sector

☐

Police

☐

Local Government

☐

Central Government

☐

European Union

☐

Other (please specify).....

3. Please check the following boxes where you consider the Measure would (a) improve efficiency, (b) be achievable, and (c) be sustainable in terms of “reducing costs, pollution and congestion”. Please rank the Measures from 1 to 16 in order of importance to improving efficiency (1 = most important, 16 = least important)

Measure	Efficiency	Achievability	Sustainability	Order
Recommended freight corridors / routes				
Lorry use of bus lanes				
Freight lanes / no-car lanes on motorways				
Changed loading / unloading restrictions				
Lorry access to urban pedestrian areas				
Improved signage / traffic info				
Lorry road user charging				
Consideration of freight industry needs in new developments				
Increased co-operation to reduce empty running				
Use of intelligent transport systems and services				
Improved road access to existing / proposed railheads				
Improved business access to railheads / rail services for smaller road hauliers				
Improved Freight Facilities Grants to encourage use of rail/sea for trunk haulage				
Development of urban transshipment / consolidation centres				
Development of Freight Quality Partnerships				
OTHER (please specify)				

Thank you for your cooperation and assistance. Completed questionnaires should be returned by post or email to Mr David Spaven:
 Post - David Spaven, David Reid & Associates, 6 Manor Place, Edinburgh, EH3 7DD
 Email - david.spaven@reidrail.com

APPENDIX B – STAKEHOLDER CONSULTATION – PHASE 3 ONLINE E-QUESTIONNAIRE

 SCOTTISH EXECUTIVE

Examining Sustainable ways to Improve the Efficiency of the Road Freight Transport Sector in Scotland Questionnaire

Instructions: Please ensure you have completed all five sections before submitting.

Name

Organisation

1. Which of the following factors do you believe impact on the Efficiency of Road Freight Transport in Scotland? (mark appropriately)

Urban Road Congestion ☐

Driver Costs ☐

Working Time Directive ☐

Driver Shortages ☐

Other (please specify below) ☐

2. What measures, if any, do you feel will help improve the Efficiency of Road Freight Transport? (please specify, maximum 200 words)

3. Do you believe the following measures will help improve the Efficiency of Road Freight Transport? (answer Yes/No and give a brief Reason)

i). Recommended Routes - Predefined Road Freight Routes based on road and vehicle type. Aims to improve driver knowledge and reduce unnecessary driving/ fuel consumption.
☐ Yes ☒ No
Reason

ii). Lorry use of Bus Lanes - Use of bus lanes by goods vehicles, limited to certain times of the day.
☐ Yes ☒ No
Reason

iii). Road User Charging - charge for use of roads, all vehicles. Aims to reduce overall congestion.
☐ Yes ☒ No
Reason

iv). ITS / Traffic Information - The use of ITS, real time traffic information, decision support systems and vehicle management.
☐ Yes ☒ No
Reason

v). Freight Quality Partnerships - partnerships between freight sector and Local Government. Develop an understanding of freight transport issues and problems and promote constructive solutions which reconcile the need for access to goods and services with local environmental and social concerns.
☐ Yes ☒ No
Reason

vi). 24 hour Operation / Delivery
☐ Yes ☒ No
Reason

vii). Dedicated Loading and Unloading Lanes - better management of kerbside access, lorry access to urban pedestrian areas.
☐ Yes ☒ No
Reason

4. Do you use Real-time Traffic Information Services? Please indicate which services in the box provided.
☐ Yes ☒ No
Services

If so, do you use the National Driver Information and Control System Web Site www.nadics.org.uk.
☐ Yes ☒ No

We would appreciate your feedback and encourage you to take a few minutes to complete a further on-line questionnaire on this service (please click the following link).

[NADICS Questionnaire 2004](#)

5. Any Further Comments? (maximum 200 words)

Thank you for your cooperation and assistance. Any questions or queries should be directed to Duncan Elder, e-mail: delder@ibigroup.com.