



# **A framework for considering policies to encourage sustainable urban freight traffic and goods/service flows**

## **Report 1: Approach taken to the project**

**A research project funded by the EPSRC as part of the Sustainable Cities Programme**

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The views expressed in the report are entirely those of the authors.

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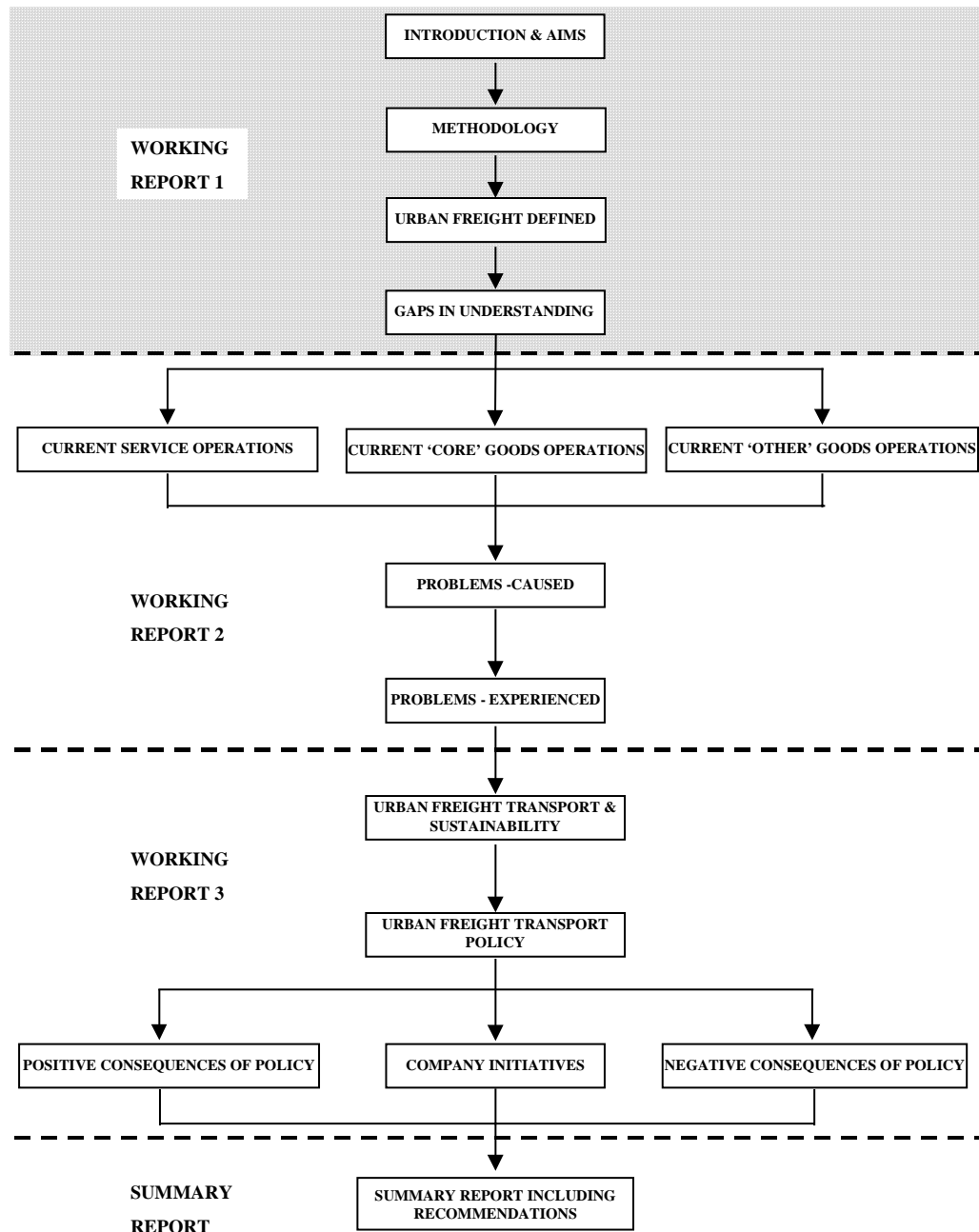
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## 1. Introduction and aims of the project

The research carried out during the project has been written up in three working reports, of which this is the first. Figure 1 shows how the complete set of reports is structured and what topics are covered by each report.

**Figure 1: Layout of Working Reports**



This report covers the following aspects of the research:

- Introduction and aims of the project.
- Methodology used in the project.
- Defining urban freight transport.
- Gaps in understanding and data collection.

## 1.1 Introduction

The project, entitled “A framework for considering policies to encourage sustainable urban freight traffic and goods/service flows” (Grant reference number: GR/L 77201), was funded by the EPSRC as part of their Sustainable Cities Programme. The project commenced in April 1998 and was completed in June 1999.

The Transport Studies Group project team was as follows:

Principal Investigator: Professor Michael Browne  
Co-investigator: Professor Peter Jones  
Researchers: Julian Allen, Stephen Anderson

Norfolk County Council collaborated in the project. The principal Council staff involved in the project were: Bryan Stead (Assistant Director of Transport and Planning), Jill Fisher (Head of Transport Studies) and Ian Parkes (Transport Studies).

A Steering Group was set up to co-ordinate the project. This Group met on several occasions during the project. The organisations represented on the Steering Group were: Transport Studies Group (University of Westminster), Norfolk County Council, Norwich City Council, South Norfolk District Council and Broadland District Council.

## 1.2 Background to the project

While traffic levels and its impacts in British towns and cities is received growing attention in recent years, much of this has been directed at public transport and private car traffic with relatively little consideration paid to road freight transport. However, environmentalists and policy advisors have been expressing concerns about urban freight transport and its environmental consequences (see for example World Wildlife Fund, 1995; SAFE, 1994; and Royal Commission Report on Environmental Pollution, 1994).

Freight transport has been identified as a key component of any attempt to define a sustainable transport sector (for example, see UK Round Table on Sustainable Development, 1996). However, this has resulted in little new research or policy initiatives. In fact, there has been very little research into urban freight transport in UK towns and cities since the 1970s; for example, work conducted by the Greater London Council (the studies undertaken by the London Freight Conference as well as the Greater London Traffic Surveys - Greater London Council, 1982) and the Transport Research Laboratory (freight study locations including Swindon and Hull - Hitchcock, Christie and Cundill, 1978, and Bartlett and Christie, 1978).

In the past twenty years there have been significant changes and developments in areas such as manufacturing, retail and service sectors and these have dated the work of the 1970s and some of the reasons for undertaking the original work. First, distribution systems have changed considerably, with a significant degree of centralisation of manufacturing sites, stockholding points and retailing. These new retail outlets, factories and warehousing generate very different goods flows and freight activity to their 1970s counterparts. Second, the delivery patterns required by manufacturers, retailers and other businesses have changed substantially, with a tendency towards more frequent, smaller deliveries. This move towards just-in-time systems has resulted in a rapidly growing use of smaller commercial vehicles. Third, the level of current concerns about the environmental impacts of our urban activities, and especially our urban transport systems, were not present at the time of these earlier studies. It is now widely acknowledged that new urban sustainability policies are necessary if urban areas are to continue to be desirable places in which to live and work. Fourth, there has been a major growth in the servicing sector (from installers to repairers) which was not considered in previous studies. Insight into the goods and service needs of businesses and the freight transport operations that deliver them is essential if coherent and successful urban freight transport policies

that help to bring about economic vitality and environmental sustainability are to be developed and implemented.

### 1.3 Importance of urban freight transport

Urban freight transport is important for many reasons (Meyburg and Stopher, 1974; Hassell et al, 1978; Ogden, 1992). Among the most significant are:

- the environmental effect of urban freight movements (in terms of energy use and environmental impacts such as pollution, noise, visual intrusion etc.);
- the total cost of freight transport and logistics is significant and has a direct bearing on the efficiency of the economy;
- the effect of freight transport and logistics costs on the cost of commodities consumed in that region;
- it is fundamental to sustaining our existing life style;
- the role it plays in servicing and retaining industrial and trading activities which are essential major wealth generating activities;
- the contribution that an efficient freight sector makes to the competitiveness of industry in the region concerned.

As Plowden and Buchan note (1995) “Freight transport is essential to the modern economy. An efficient system must provide the customer with a good service at a reasonable cost.” However, increasing congestion in urban areas has called into question the ability to achieve high levels of efficiency and as the Freight Transport Association have observed: “While industry has achieved significant success in improving vehicle productivity and utilisation, urban congestion imposes major constraints on further improvements” (Freight Transport Association, 1996).

### 1.4 Project aims and objectives

The key aim of the exploratory research was to develop and apply a Framework for understanding urban freight transport in its broadest sense, to reflect the breadth of goods and service-related transport activity in urban areas as a basis for exploring ways of making the sector more sustainable. The intention was to do more than simply study vehicle activity. Instead, the project would examine all the goods and commercial service requirements of a sample of urban premises and investigate how, through logistics decision-making in the supply chain, these requirements are met by vehicle activity in the urban area, and thereby identify links between: (i) physical freight transport movements in an urban area, and (ii) company/organisation activities, behaviour and demand for goods and services. This required the adoption of a supply chain perspective in the research. It was felt that by taking a broad definition of urban freight transport and a supply chain perspective it would be possible to: (i) better understand why freight vehicle activity takes place in the way that it currently does, and (ii) investigate policy measures implemented by local authorities and initiatives introduced by companies that could potentially play an important role in bringing about more sustainable patterns of freight transport in towns and cities, and the barriers to achieving this.

The Framework was applied both in Norwich and in parts of London in order to illustrate its potential role and usefulness in understanding the needs of freight transport users and the impacts of freight transport activity, and how this knowledge can be incorporated into sustainability policy considerations.

### 1.5 Meeting the aims of the EPSRC Sustainable Cities Programme

The project has met the two key aims of the Sustainable Cities programme:

**(i) to stimulate collaborative, interdisciplinary research:** as already mentioned, the project has been carried out by the Transport Studies Group at the University of Westminster in conjunction with Norfolk County Council, Norwich City Council, Broadland District Council and South Norfolk

District Council. The work has investigated all aspects of the goods and servicing needs of a wide range of urban premises, and the vehicle activity that supports these requirements, bringing together considerations of town planning, transport management and engineering, urban design and logistics/supply chain management. A wide range of companies including freight transport companies, service companies, retailers, manufacturers, suppliers and wholesalers have participated in the research.

**(ii) to provide practical tools for use by public sector organisations, freight transport operators and industrial and commercial firms who are working towards establishing a more sustainable urban environment:** one of the key outputs of the project has been the development of a Framework which can be used to help local authorities better understand: (i) the current goods and servicing needs of urban premises, (ii) the current patterns of urban freight and service operations, (iii) the problems that are caused and experienced by goods and service vehicle activities in urban areas, and (iv) potential policy measures and company initiatives that could help to improve economic and environmental urban sustainability. The method could be repeated in other urban areas to help other local authorities to gain a better understanding of freight and service-related issues in their towns and cities.

The companies that have participated in the discussion group sessions held during the research have had the opportunity to consider what actions they might implement (either by themselves or in conjunction with their commercial partners) in order to make the supply of goods and services easier to perform, and at the same time reduce the environmental impact of the transport activities involved.

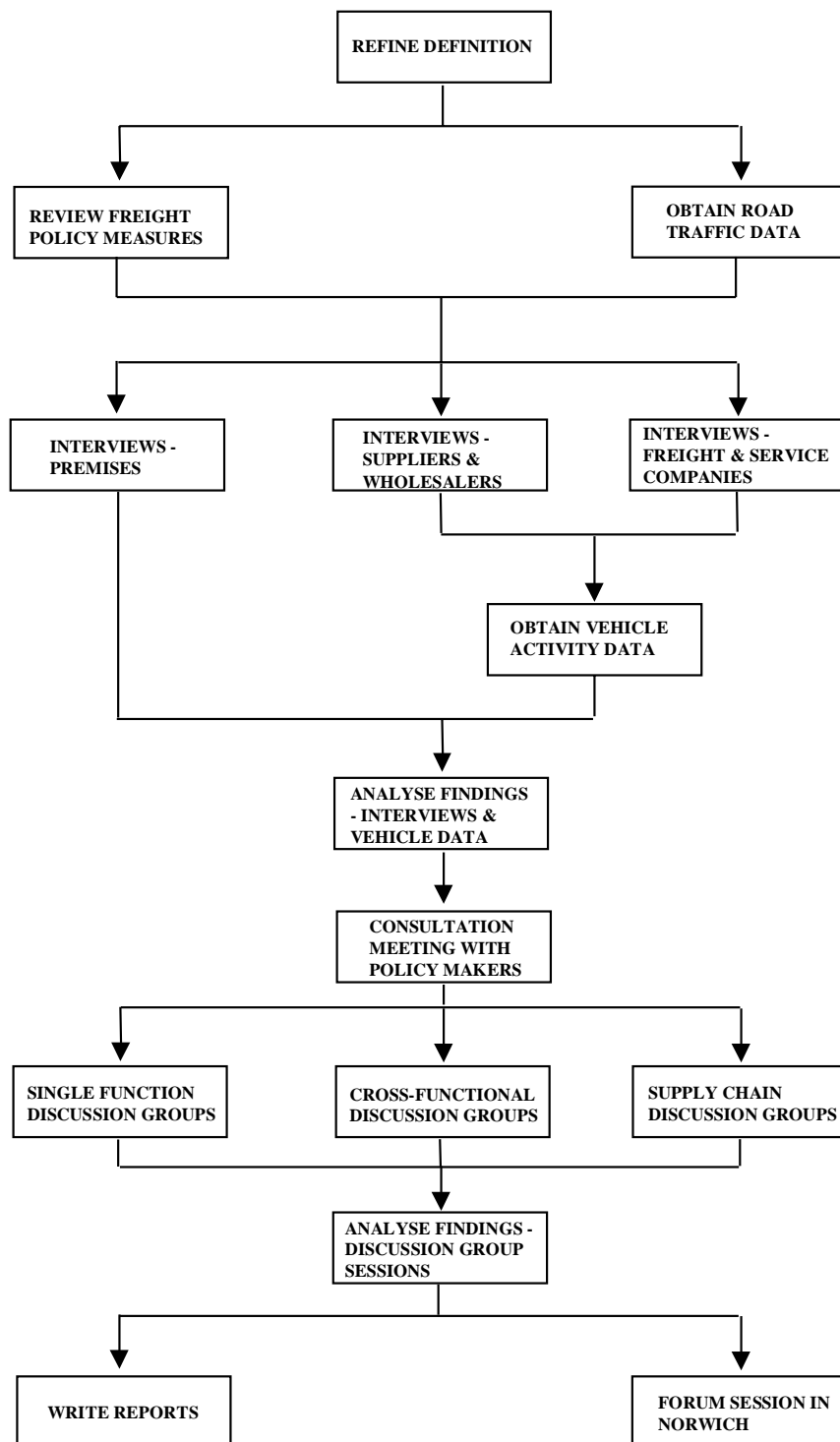


## 2. Methodology used in the project

### 2.1 The sequence of research activities in the project

Figure 2 shows the sequence in which the research activities included in the project were carried out. Each of these research activities is described in the following sections of this chapter.

**Figure 2: Sequence of research activities in the project**



## 2.2 The Framework developed to research urban freight transport

One of the key objectives of the research was to develop a Framework for researching urban freight transport. It was decided that in order to improve understanding of urban freight transport and to consider company initiatives and transport policy measures that could make urban freight transport more sustainable, the Framework developed in the project would need to be able to lead to better understanding of:

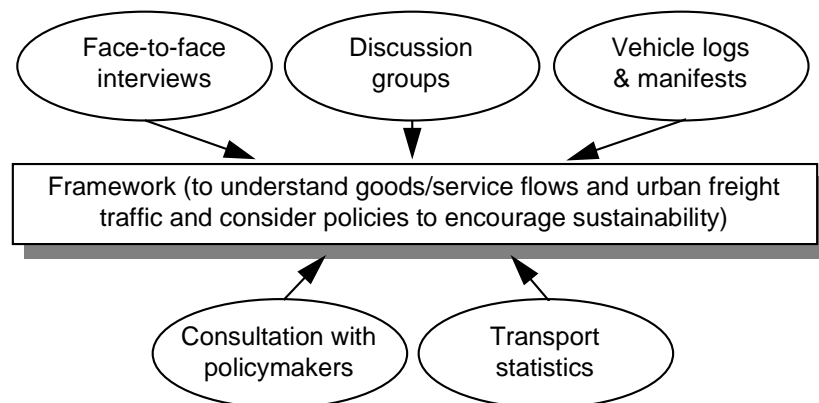
- i. the relationship between goods/service flows and vehicle activity;
- ii. the decision-making process that takes place between supply chain parties that determines how and why vehicle activity takes place in the way that it does;
- iii. how supply chains would potentially react to new transport policy measures and the effect that this would have on vehicle activity;
- iv. how supply chains or individual companies in the supply chain could potentially alter their behaviour to reduce environmental impacts of vehicle operations and the barriers to these changes being implemented;
- v. how changes to urban freight transport could be discussed and planned by supply chain parties, and policy makers.

In order to address all of the above objectives, the Framework needed to include several different research techniques and survey instruments. These are discussed in the next section.

## 2.3 The research techniques and survey instruments used in the Framework

The primary and secondary research techniques employed in the study are shown in Figure 3. These fed into the development of the Framework devised and applied in the project to investigate goods and service flows and freight vehicle activity in urban areas and to consider policy measures and company initiatives that could help to make urban freight transport more sustainable.

**Figure 3: The research techniques used in the project**



The project concentrated on premises located in Norwich and was supported by Norfolk County Council, Norwich City Council, Broadland District Council and South Norfolk District Council. This was supplemented by research at premises in parts of London in order to compare similarities and differences between the two cities. Several different survey instruments were used in the primary research. The following types of participant were included in the surveys:

- owners/managers of a range of different types of premises in the urban area;
- managers of suppliers and wholesalers supplying goods to premises in the urban area;
- goods vehicle drivers and service engineers working in the urban area;
- managers of freight transport companies supplying goods in the urban area;
- managers of service companies visiting premises in the urban area;
- policy makers with responsibility for transport policy in the urban area;

Table 1 shows the types of survey instruments used in the project and the types of participant to which they applied. Table 2 shows the extent of the primary research carried out in the project.

**Table 1: Survey instruments used with different groups of participants**

	<b>Face-to-face interviews</b>	<b>Consultation meeting</b>	<b>Discussion groups</b>	<b>Vehicle activity logs/vehicle manifests</b>
<b>Managers/owners of premises</b>				
<b>Managers of suppliers and wholesalers</b>				
<b>Goods vehicle drivers &amp; service engineers</b>				
<b>Managers of freight transport companies</b>				
<b>Managers of service companies</b>				
<b>Policy makers</b>				

**Table 2: Extent of primary research carried out in the project**

<b>Primary research technique</b>	<b>Extent and coverage</b>
<b>Face-to-face interviews</b>	58 interviews held with owners/managers of premises in Norwich and London receiving goods and services 8 interviews with managers of suppliers and wholesalers providing goods to premises in Norwich and London 7 interviews with managers of freight transport companies carrying out collection and delivery work to premises in Norwich and London 5 interviews with managers of service companies providing services to premises in Norwich and London
<b>Consultation meeting</b>	1 meeting held with policy makers (8 participants)
<b>Discussion groups</b>	7 discussion group sessions (4 to 8 participants in each)
<b>Vehicle activity logs/vehicle manifests</b>	Vehicle logs and manifests from 6 freight transport companies

### 2.3.1 Desk research and analysis

The desk research and analysis in the project included:

- initial literature review of urban freight research in the UK and Europe;
- development of research approach to be used in the Framework;
- analysis of results and findings from the survey work;
- writing of reports.

### 2.3.2 Existing urban freight data and information gathering

Data and information gathering in the project involved:

- obtaining literature on other urban freight research in UK and other EU member states.

- obtaining road freight traffic data for several UK cities<sup>1</sup> in order to consider goods vehicles as a proportion of all road traffic, and the split between different categories of goods vehicles (i.e. light and heavy vehicles).

Obtaining reports and documentation on urban freight transport research conducted in other European countries proved relatively difficult to achieve, in terms of identifying projects that have or are currently taking place, obtaining a contact person for the project and then obtaining literature about the project from that person. There is a need for a better method of cataloguing and disseminating urban freight research in Europe; it is hoped that the Thematic Network to be funded as part of the EU Fifth Framework could provide this.

### 2.3.3 Face-to-face interviews

Face-to-face interviews were held with four different types of participant during the project in Norwich and parts of London:

- i. interviews with owners/managers of premises located in urban areas (Norwich and London);
- ii. interviews with managers of suppliers and wholesalers working in the urban areas in which above premises are based;
- iii. interviews with managers of freight transport companies working in these urban areas;
- iv. interviews with managers of service companies working in these urban areas.

#### Face-to-face interviews with urban premises

The following range of urban premises were interviewed during the project:

##### Retailers

- Chemist (1 independent, 1 multiple)
- Convenience grocer (2 multiple, 1 independent)
- Supermarket (1 multiple)
- Florists (2 independent)
- Newsagents (2 independent)
- Book shops (1 independent, 1 multiple)
- Stationers (1 multiple)
- Off-licences (3 multiple)
- Shoe shops (1 independent, 1 multiple)
- Photocopy/printing shop (1 franchise)
- Clothing shops (2 multiple, 1 independent, 1 stall in market)
- Clothing/furnishings/grocery shop (1 multiple)
- Department store (1 independent)
- Variety store (2 multiple)
- Electrical shops (2 multiple)
- Bakers shop (1 independent)
- Greengrocers (1 independent, 1 greengrocers stall)

- Dry cleaning shop (1 multiple)
- Gift shop (1 independent, 1 multiple)
- Furniture shops (2 multiple, 1 independent)
- Record/CD shop (1 multiple)
- Hardware shop (1 independent)
- Builders merchant (1 multiple, 1 independent)

##### Office/administrative

- High street travel agents
- Large purpose-built office development (2)

##### Food and leisure

- Pubs (1 free house, 2 multiple)
- Restaurants (3 multiple)
- Hotels (2 multiple)
- Cinema (1 multiple)

##### Manufacturing

- Retail warehouse
- Double glazing manufacturer/installer
- Chemicals factory
- Bakery

As can be seen from the above list, the sample of urban premises included was diverse in terms of the range of functions included (e.g. shops, factories, offices, warehouses etc.). It was decided that the function of the premises studied should be wide-ranging (rather than limiting the research solely to

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<sup>1</sup> Data for London was obtained from the London Area Transport Survey 1991 (Department of Transport and London Research Centre, 1994), data for Norwich was obtained from Norfolk County Council and Norwich City Council and data for Chester, Southampton, Aberdeen and Birmingham was obtained from the relevant local authorities on our behalf by the Freight Transport Association.

retail premises, as has been the case in some previous studies) so as to gain a fuller understanding of the diversity of the urban freight and service requirements of an urban area.

Independently-owned premises as well as premises that are owned by large companies, which have multiple premises were included in the research (many previous research projects, especially those concerned with supply chain organisation and management, have limited their scope to the latter). This was important as it was felt that the scale and ownership of the premises could have a bearing on the goods supply system used and vehicle activity. The research has subsequently demonstrated that the scale of the company that owns the urban premises can affect the supply chain structure within which the premises operates, and this in turn affects the freight vehicle trip generation and vehicle activity pattern at the premises.

The research team initially compiled a list of land uses and activities that would ideally be included in the research into goods and service flows at urban premises. Obtaining interviews with suitable staff at premises was achieved in one of two ways:

- a) calling into the premises in person and asking if they would be prepared to participate in a face-to-face interview either immediately or at another date and time convenient to them;
- b) telephoning companies to ask if they would be prepared to participate in a face-to-face interview and arranging a convenient date and time.

The participation of approximately half the urban premises was achieved with the first approach - virtually all of these were retail premises. In some cases in which the first approach was used, it was apparent that using the second approach would have resulted in non-participation of the premises as it was the immediacy of the situation and the assurance that the interview would not take too long that secured the respondent's participation.

All the non-retail premises surveyed were either unable or unwilling to participate in an interview at the time of calling when visited in person (so a later date/time had to be arranged if they were prepared to take part). This approach was quickly abandoned due to its low success rate and all non-retail premises were subsequently initially contacted by telephone.

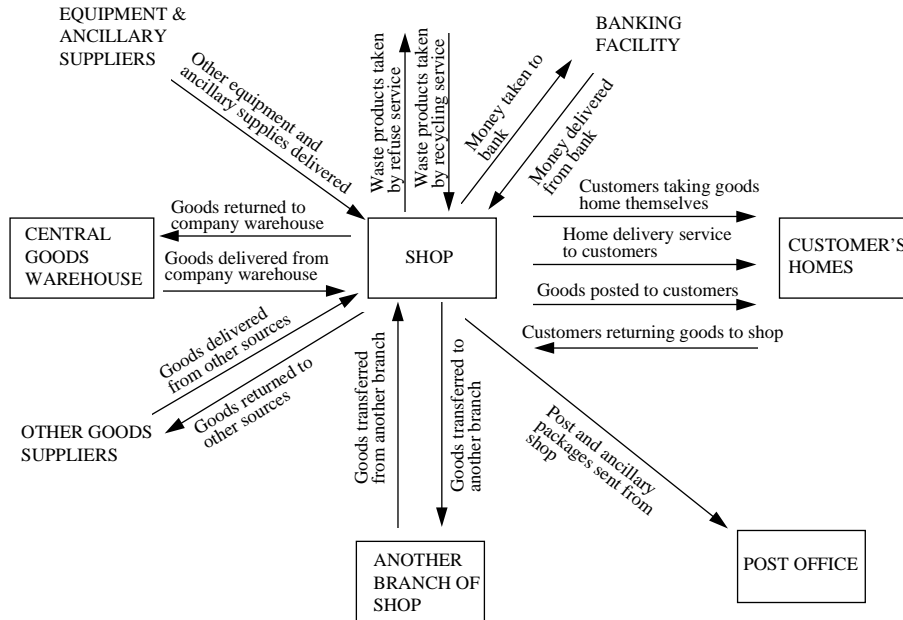
The interviewee tended to be either the owner or manager/assistant manager of the premises. During each of the interviews the following issues were addressed:

- the complete range of different goods trips that take place at the premises both for goods coming in and goods being sent out;
- the frequency with which each of these goods trips take place (and whether this has changed over time), the means of transport, the type/size of vehicle used, who operates the transport vehicles;
- the supply system used for main and ancillary goods coming in and out of the premises (i.e. the number of suppliers used, the degree of centralisation in the supply system, how the ordering process takes place and who does this etc.);
- the time at which, and days on which, goods movements take place, how these times and days are arranged and whether there is scope to change them;
- the size of the delivery/collection, the time taken to load/unload the vehicle, where the vehicle is parked during loading/unloading, whether checking/signing for delivery is necessary etc.;
- the stockholding policy at the premises and whether this has changed over time;
- the entire range of services required by the premises that result in trips to the premises, and the frequency of these visits;
- problems experienced by the premises in receiving goods and services, scope for changing the current arrangements for goods and services.

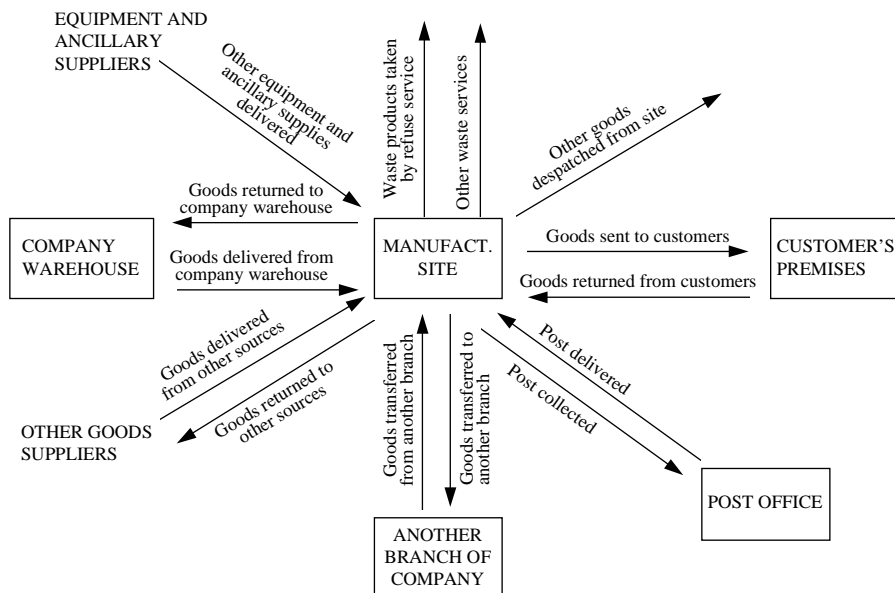
These face-to-face interviews made use of several innovative approaches. This included getting the interviewee to help draw diagrams depicting the goods supply system within which the premises

operated and all the different categories of goods trips that take place at the premises (examples are provided in Figures 4 to 7). These diagrams were then used as the basis for a discussion in which it was possible to gather further details about how these trips are organised, frequency and numbers of trips, and times of operation. Interviews lasted for between 15 and 60 minutes, with a typical interview taking approximately 20-30 minutes.

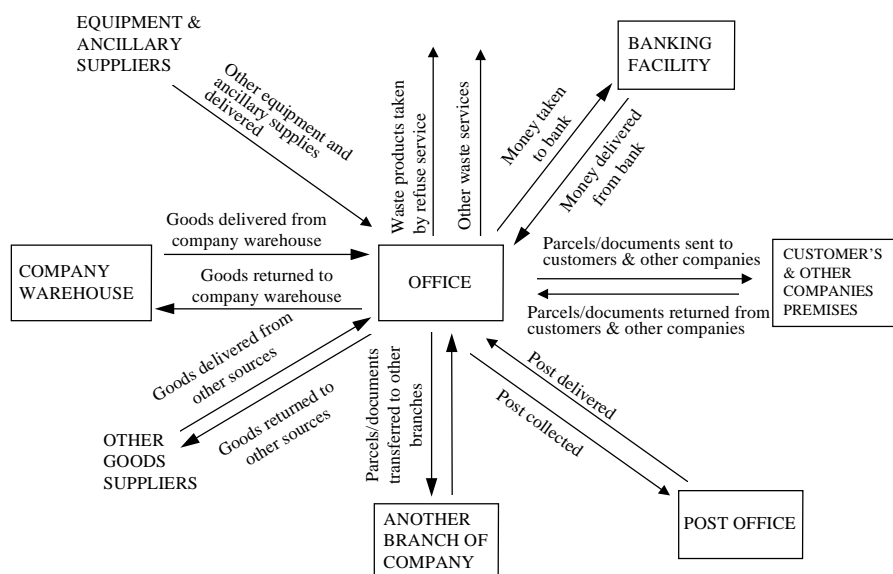
**Figure 4: Base diagram of goods flows through a retail site**



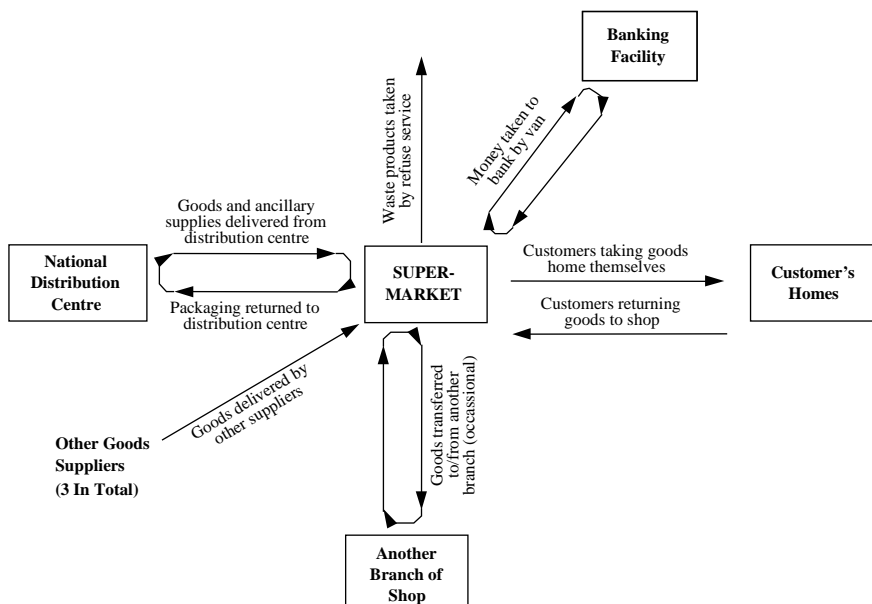
**Figure 5: Base diagram of goods flows through a manufacturing site**



**Figure 6: Base diagram of goods flows through an office site**



**Figure 7: Example of goods flows through a multiple supermarket**



**Face-to-face interviews with wholesalers, suppliers, service and transport companies**

The following range of wholesalers, suppliers, service and transport companies were interviewed during the project:

Wholesalers/suppliers making their own deliveries

- Fresh produce (fruit & vegetable depot)
- Newspapers and magazines (2 companies)
- Meat wholesaler (meat depot)
- Pharmaceutical and medical supplies
- Milk and dairy supplies (milk depot)
- Bread and bakery supplies (bakery/depot)
- Building material supplies

Service companies

- Laundry/dry cleaners
- Fire and security alarms

- Drain and pipe cleaning
- Photocopier provision and maintenance
- Telecommunications service provider

Freight transport companies

- Courier/Express (2 companies)
- Brewery/drinks transport
- Postal services
- Waste disposal
- General haulage/tankers
- Own account retailer

As with urban premises, a diverse range of wholesalers, suppliers, service and transport companies (in terms of the range of activities they perform) were included in the face-to-face interviews. Again this was a decision made by the project team so as to give insight into the wide range of goods supply and service requirements of premises in an urban area.

Interviews with suitable representatives (usually operational managers) of wholesalers, suppliers, service and transport companies were arranged by telephoning companies in advance of a visit. This was necessary for two reasons: (i) we quickly found that these companies were less inclined than retailers to participate at the time of initially visiting them, so a return visit was necessary if they agreed to participate, and (ii) these companies tended to be located outside the city centre and therefore travel time between each one could be substantial; it was therefore necessary to secure participation by telephone to avoid unnecessary journeys and wasted effort.

The interviews covered the following range of issues (the full topic guide is included in Appendix B):

- current operations (supply system used, types/number of vehicle used, trip patterns, time of operations and how time of delivery/service are arranged with customers/receivers, loading/unloading/parking arrangements, checking and signing procedures for goods/services, order placement process, vehicle routing and scheduling etc.);
- problems currently experienced (road conditions, traffic and transport regulations, and customer/receiver-imposed constraints, impact of other road users);
- transport policy measures that could potentially make their operations easier to perform;
- transport policy measures that could potentially make their operations more difficult to perform;
- initiatives their company and their supply chain partners could implement to reduce the environmental impacts of vehicle operations.

The interviews each lasted between 30 and 60 minutes. The face-to-face interviews proved to be a very good means of obtaining details of current goods and service flows and the vehicle activity that facilitated these flows.

On several occasions interviewees told us that they operated in the manner that they did because it was required of them by their supply chain partners, and that they could not change their current operations because their supply chain partners would not accept this. Because the other supply chain partners were not present it was not possible to ascertain quite how inflexible the other supply chain partners really were to change. However, the discussion group session helped to address this issue.

#### **2.3.4 Consultation meeting with policy makers**

A consultation meeting was held with eight policy makers with responsibility for urban freight policy in the UK. The policy makers represented all tiers of government. Representatives were present from:

- DETR.
- Regional Government Office.
- County Council.
- District and city councils

The purpose of the consultation meeting was to discuss with policy makers:

- Their views on role of urban goods and service transport and its impact.
- Current policy approaches used - both for urban goods/service transport and other transport and non-transport measures which have an impact on urban freight.
- Their views on the role of industry in finding more efficient and less damaging ways of performing urban goods and service transport.



Approach taken to the project

- Policy measures that could be used in the future especially those targeted at achieving sustainability (both policy measures directly aimed at urban freight transport and those with knock-on effects for urban goods and service transport).

The consultation meeting was led by two of the Transport Studies Group project team. A topic guide had been drawn up prior to the meeting and the project team guided the discussion so as to cover all the points on the topic guide within the duration of the meeting (The topic guide used for the consultation meeting can be found in Appendix C). The meeting took the form of an open discussion in which any participant was able to contribute their thoughts and comments whenever they wished to do so. The meeting lasted for approximately two and a half hours.

Ideas about freight transport policy measures and other points arising during this consultation meeting were then used in the discussion groups described below.

### **2.3.5 Discussion groups**

Seven discussion groups were held with a range of different participants during the project the details of which are given below:

- Goods vehicle drivers and service engineers (Norwich).
- Service engineers and managers, and ancillary goods vehicle drivers and managers (London).
- Managers of office and retail premises (Norwich).
- Managers from freight transport, retail, and vehicle manufacturing companies (London).
- Book supply chain partners (London).
- Department store supply chain partners (Norwich).
- Drink supply chain partners (London).

Each discussion group session focused on the specific nature of work carried out by, and knowledge of, the participants and proved to be of great value in its own right. However, in addition, several different categories and composition of group discussion were organised so as to test the advantages and disadvantages of each type of group session when researching the urban freight decision-making process, urban goods and servicing problems and potential solutions to those problems. Three categories of discussion group sessions were used in the research:

- i. all participants have essentially the same or similar function/job, or are from companies that represent a single activity in the supply chain;
- ii. participants are from different companies which collectively represent the range of roles and activities that make up urban supply chains but participants are drawn from different supply chains;
- iii. participants from different companies which represent the range of roles and activities that make up urban supply chains and are from the same supply chain (i.e. they actually work together in the course of their jobs).

We were interested in comparing the success of each of these categories of discussion group, and also comparing the advantages and disadvantages of these group discussions with the face-to-face interview approach used, in which a single person from a company is interviewed at a time (see above).

Each of the discussion groups incorporated the following points of discussion:

- Participants current goods/servicing operations/arrangements.
- The problems experienced in carrying out these goods/servicing operations.
- How participants would respond to a range of new policy measures (including measures that would potentially assist their goods/servicing operations and measures that would make their goods/servicing operations more difficult).

- Company/supply chain initiatives - what their companies and supply chain partners could do themselves to increase efficiency/reduce damage caused by their goods/servicing operations.

Full details of the topic guides for several of the discussion groups can be found in Appendix D.

Between four and eight participants were recruited for each discussion group session. Recruiting participants for the discussion groups proved to be relatively complicated and time consuming process. This was especially true in the case of the supply chain discussion groups in which the participants did actually work together on a daily basis, because all of these people had to be present for the session to work most successfully. However finding a day and time suitable for up to eight participants (ten people including the project team) was difficult to say the least.

In the case of the supply chain discussion groups it was necessary to first identify companies that worked together in the supply chain and then identify suitable participants from each of these companies - this was a lengthy and sometimes laborious process in which the recruiters found themselves having to speak to numerous people within the company before reaching a person with the required role and knowledge for the group session.

The difficulty in organising these group discussions indicates how problematic achieving good communication between companies that work in the same supply chain can be in instances where efforts have not been made to do so in the past by the companies themselves.

Each discussion group session lasted for between two to three hours. The discussion groups were led by two members of the Transport Studies Group project team. A topic guide had been drawn up prior to the meeting and the project team led the discussion so as to cover all points on the topic guide within the time available for the meeting. Each discussion group session was taped so that (i) the project team could concentrate on the discussion itself rather than trying to make notes during the session, and (ii) the richness of the conversation could be captured.

Despite the difficulty of organising the discussion group sessions, this survey instrument provided the most insight of all the research techniques used in the project. These qualitative sessions were extremely helpful in more fully understanding the decision-making process in supply chains, within individual companies and by employees of those companies (e.g. drivers, service engineers, etc.). It proved very effective for:

- i. researching the rationale for current supply chain operations;
- ii. examining how supply chain operations could change both proactively (i.e. initiatives that companies and the supply chains within which they work could implement) and reactively (i.e. how supply chains would be likely to react to new policy measures); and
- iii. investigating the barriers and obstacles to achieving change in supply chain operations.

The supply chain discussion group attended by participants who worked in the same supply chain proved to be the most successful type of discussion group in terms of leading to a better understanding of freight transport problems resulting from supply chain decision-making, and how supply chains would potentially react to new transport policy measures. It also proved very useful in terms of its potential to help resolve how, by working together, supply chains parties could implement company initiatives that would reduce the environmental impacts of freight transport operations.

### **2.3.6 Self-completion vehicle activity logs/copies of vehicle manifests**

Self-completion vehicle activity logs were designed for respondents to complete during the course of their working day. Four different types of activity log were designed:

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- goods vehicle logs for collection/delivery work (single and multi-drop work) - for completion by drivers;
- service vehicle/engineer logs for servicing work - for completion by service drivers/engineers;
- goods vehicle deliveries and collections at premises - for completion by premises;
- service vehicle visits to premises - for completion by premises.

These self-completion forms contain a range of detailed information about the activity of an individual goods or service vehicle and its driver over the course of a day or a number of days, or all goods and service vehicle movements at an urban premises over the course of day or several days. Details captured by these logs include trip time and distance between premises, goods loaded/unloaded, dwell time of vehicle, where the vehicle was parked and difficulties encountered on each trip.

We were able to get several freight transport companies to complete goods vehicle logs and also managed to obtain freight and service vehicle manifests (which were already produced by the companies for the purpose of informing their drivers of the rounds/work they had to carry out on a given day) from several companies. Although we did not attempt to get many companies to complete these logs it is clear from those completed logs that we did obtain that this type of information provides another valuable source of quantitative data about goods and service trips that does not currently exist.

It may well prove difficult to get large numbers of companies to complete these logs, and getting companies to participate involves persuading the management of its value and importance and then the management persuading the drivers, engineers or other staff. Some of the companies we asked to complete these logs were not prepared to do so, usually because they had already participated in a face-to-face interview and were unwilling to give more of their company's time and effort to the project. However the logs could clearly play a useful role in gathering an understanding of vehicle activity in the urban area that is not currently exist for policy makers and researchers at present (copies of each of the logs are included in Appendix A).

### **2.3.7 Reason for not using questionnaires in the project**

In the original project proposal it had been intended to use self-completion questionnaires in the research in order to gain the type of details that were ultimately gathered through face-to-face interviews with retailers, manufacturers, other urban premises, wholesalers, supplier and freight transport and service companies. It was felt that using self-completion questionnaires that were either posted to potential respondents or delivered in person could have resulted in responses from a greater number of companies than was possible by interview, with the resources available.

However, when the task of questionnaire design began, it quickly became apparent that there were several problems with using questionnaires to gather this type of information:

- the size of the questionnaire necessary to gather the breadth of information we required would deter companies from responding;
- we were studying a wide range of different types of companies and each would have required a different questionnaire (at least five different questionnaires - retail, non-retail, supplier/wholesaler, service company and freight transport company);
- the complexity of subject matter did not lend itself to a questionnaire - the respondent was likely to raise many queries about the questions posed;
- the terminology/definition problems (see Section 3.4).

It was ultimately decided that studying supply chain decision-making and organisational issues did not lend itself to a questionnaire approach and that a face-to-face interview technique which allowed

the opportunity for discussion and clarification (from both interviewer and interviewee) would be a more beneficial and rewarding approach in terms of the results it could deliver.

## **2.4 Success of the survey instruments used in the Framework**

### **2.4.1 Goods deliveries and collections - quality of feedback from interviews**

In general the managers/owners of premises interviewed in the study were able to provide a good quality of feedback about goods vehicle trips to and from their premises. In general they tended to find it more difficult to provide details about some aspects of these trips than others. Those questions that interviewees generally found it most difficult to answer were:

- The size of the vehicle used. (Some respondents were only able to distinguish between “lorries” and “vans”. Many respondents were only able to distinguish between three types of vehicle: “large lorries”, “medium sized lorries” and “vans”. A few respondents could tell the difference between rigid and articulated vehicles but very few could tell us about the number of axles on the vehicle or gross vehicle weights).
- The time the vehicle arrives at the premises. (Lack of precision about vehicle arrival times were caused by three main factors: (i) at some premises the arrival time for a given vehicle will differ significantly from one visit to the next, (ii) some premises receiving several “core” goods deliveries each day, receive each delivery at a different time during the working day, there is consequently no single delivery time or delivery time window, (iii) the person interviewed was not sufficiently involved in the collection and delivery operations at the premises to know about specific vehicle arrival times).
- Quantity delivered for “core” goods deliveries. (The two main reasons as to why some interviewees found this question difficult were that (i) the quantity ordered from a given supplier varied significantly from one delivery to another, or seasonally, due to changes in customer demand, and (ii) premises receiving “core” goods from several different suppliers tend to receive delivery quantities from each supplier. However many interviewees were able to provide an idea of the minimum and maximum delivery quantities that they received).
- Time taken for “core” goods deliveries. (The person interviewed was asked about the typical time taken for “core” goods deliveries at the premises. The main reason as to why some interviewees found this question difficult to answer was that the time taken for delivery was usually dependent upon quantity delivered and therefore premises receiving deliveries that fluctuate greatly in size also experience variability in time taken for these deliveries).

In the interviews conducted with managers/owners of premises about goods vehicle trips to and from their premises the interviewees were generally more informed and knowledgeable about the range and patterns of “core” goods and “ancillary” goods vehicle trips to and from their premises than some other types of goods vehicle trips to and from their premises such as waste collections, postal collections and deliveries and home deliveries made from the premises.

In the case of waste collection their lack of knowledge was usually due to the fact that these collections take place either before the premises opens or after it has shut, so the manager/owner of the premises does not see the collections taking place and is therefore unsure about matters such as the time of collection and the type of vehicle used.

Gaps in knowledge regarding deliveries and collections of post by the Royal Mail were usually related to the following: (i) in larger premises managers/owners did not receive the post directly/see the postman/woman making the delivery so were unaware about the timing of deliveries and, in some cases, whether they received one or two deliveries per day and that, (ii) at the majority of premises surveyed, even if the manager/owner did personally receive the post from the postman/woman, the vehicle was usually parked some way from the premises and not visible to them.

Gaps in information provided by owners/managers of premises about home deliveries to their customers tended to relate to the number of trips made per day and the times at which these trips took place. This was usually due to either: (i) having extremely variable demand from customers for home deliveries and therefore operating patterns fluctuated widely, or (ii) someone other than the owner/manager was responsible for these organising the home delivery operations.

#### **2.4.2 Service and other trips for commercial purposes - interview feedback**

One part of the interviews with managers/owners of premises was about service trips and other vehicle trips for commercial purposes made to their premises. Respondents tended to find it far more difficult to give us accurate information about these trips to their premises than about goods vehicle trips. They were generally able to tell us about the range of purposes for that they received these service and other vehicle trips for commercial purposes, but were not usually able to provide accurate information about:

- the frequency with which each of these trips took place (for regular servicing as well as for unforeseen servicing);
- the time of day the vehicle arrived at the premises;
- the type of vehicle used;
- where the vehicle was parked during the visit;
- the typical duration of the visit;
- the quantity of equipment/goods brought onto the premises by the service personnel/visitor.

In order to obtain all of the above information it would be necessary to do one or more of the following:

1. Spend more time interviewing the manager/owner of the premises or leave them a self-completion questionnaire, asking them to check any records that they have about the frequency of these trips.
2. Interview more staff at the premises, as often no single person has detailed knowledge of all the service and other commercial vehicle trips made to the premises.
3. Obtain details from the manager/owner of the premises of the companies/people performing the service and other commercial vehicle trips to the premises and then contact these companies directly either interviewing them or asking them to complete a questionnaire, and/or travel diaries etc.
4. Observe service and other vehicle trips for commercial purposes either from the street or from the premises, interviewing the person when they arrive at the premises.

*Option 1* has the advantage of only involving one person at the premises in the interview but, in our experience, unless the premises is small, the knowledge held by any one person about the range and pattern of service and other commercial vehicle trips is limited.

By using *Option 2*, far more detail about the full range and frequency of these trips can usually be obtained especially at larger premises, premises where specific individuals are responsible for organising different aspects of the business and premises where operations are not centralised (i.e. premises which are organised into several departments, each of which has responsibility for arranging its own day to day needs).

However thoroughly *Options 1 and 2* are conducted it is still unlikely that full, accurate details of issues such as where the vehicle was parked during the visit, the difficulty experienced in finding somewhere to park, the type of vehicle used and the quantity of equipment/goods brought onto the premises will be obtained. In order to achieve this level of detail and understanding it is necessary to employ *Option 3*.

*Option 4* was not used in the study. Although a potentially valuable approach, it has several of problems: (i) many larger premises have several entrances so that more than one researcher may be required, (ii) given that these vehicles are often not parked at or directly outside the premises it is difficult to establish who is providing a service or making a commercial trip to the premises and who simply works there or is a customer, and (iii) service personnel and other people making commercial trips to premises are often working to tight time schedules and can find it difficult to make time to answer questions while in the course of their work.

Obtaining information about service and other vehicle trips for commercial purposes can be a time consuming and involved process. It is therefore necessary (at the outset of any such research) to establish from the premises being studied some idea of the range and extent of such trips in order to be able to determine the amount of effort that should be expended on this task for that premises.

Another technique used successfully in the study was organising and hosting a discussion group for service companies where representatives from several different, non-competing, service companies were brought together to discuss the transportation aspects of their operations and the problems that they encounter (see Section 2.3.5).

### **2.4.3 Summary of success of Framework**

The Framework developed in this research project, which was applied in Norwich and parts of London, proved very effective in researching logistics decision-making and supply chain issues that have not been previously studied in any detailed relation to urban freight transport, as well as in researching vehicle activity, loading/unloading activities and other operational issues and problems.

The research technique used in developing the Framework that provided the most insight was the discussion group. This qualitative technique was very helpful in trying to more fully understand the decision-making process in supply chains, individual companies and by employees of those companies.

The Framework devised in the project has facilitated the participation in the research of all the supply chain participants involved in the flow of goods and services to premises in the urban area - namely manufacturers and wholesalers, freight transport companies, service companies, waste collection companies, and a diverse range of urban premises receiving and despatching goods and receiving services. The research results reflect the advantages of including all supply chain participants in the research, both in terms of understanding the rationale for the current vehicle operations and also for considering the likely impacts of potential policies and how companies or supply chain parties could implement initiatives that lead to greater sustainability, and the barriers to doing so.

The Framework has also been developed to gather the thoughts and comments of the entire range of personnel in the supply chain, not just managers. For instance, in the case of freight transport companies this has included drivers, operational managers/planners and strategic managers. For service companies, both service engineers and operational managers have been included and in the case of receiving premises operational staff responsible for receipt and despatch, managers of the premises, and distribution/logistics directors (where such a role exists within the company) have participated. This has proved extremely useful as the research has shown that often personnel with different responsibilities within the same company have completely different perspectives and knowledge about supply chain operations and different insight into the efficiency of freight and service operations. For example, operational and strategic managers from freight and service companies tended to be far less aware than drivers or engineers about day-to-day vehicle operating problems in urban areas. However, as would be expected, these managers were far more knowledgeable about planning and organisational issues, and about how inter-company decisions are reached. Therefore, to fully understand urban freight and service operations and problems experienced, it is necessary to include a wide range of different personnel from each company.

## Approach taken to the project

The Framework developed and used in the project proved successful in identifying the decision-making processes and range of issues that influence vehicle activity. It has helped to simplify understanding and bring some order to a subject that is very complex due to the variety of participants and diversity of activities involved. It has also proved useful in terms of its potential to help resolve how, by working together, supply chains parties could implement company initiatives that would reduce the environmental impacts of freight transport operations.

The Framework could be applied in other towns and cities in the UK to better understand current goods and service vehicle activities and patterns in these locations and to consider how these might be altered in order to make these activities more environmentally and socially sustainable, without reducing the economic viability and vitality of the urban area concerned.

### 3. Defining urban freight transport

#### 3.1 Traditional definitions of urban freight transport

Ogden (1989, p12) gives the following wide-ranging definition of urban freight transport which is contained in a publication of the US Department of Government:

*“The transportation of, and terminal activities associated with, the movement of things as opposed to people in urban areas. It includes movement of things into and out of the area, through the area, as well as within the area by all modes, including transmission of electricity to the extent that it relates to the transportation of fuels, pipeline movement of petroleum, water and waste, and collection and movement of trash and mail, service truck movements not identified with person movements, and even some person trips which involve substantial goods movements such as shopping trips. Activities involving urban streets, waterways, railroads, terminals, loading docks, and internal distribution systems including elevators and related facilities must all be considered in fostering greater efficiency in the movement of urban goods”.*

However the term “freight transport” is often defined to mean something far less wide-ranging than that used in the US Department of Government publication, usually referring only to the movement of goods by goods vehicles. In most freight transport research and data collection, it is usually defined as incorporating a range of traditional goods traffic which can include:

- manufacturing industry transport;
- extractive industry transport;
- supply of wholesale/retail goods to commercial premises;
- courier, express and parcel services;
- construction site traffic;
- removal traffic;
- home deliveries made by goods vehicles.

Although the definitions of freight transport (including urban freight) that are typically used help to limit what is meant by freight transport and hence place workable parameters on what has to be studied, it is important to recognise that these definitions ignore a wide range of goods- and service-related transport activity. These definitions are usually deficient in two ways:

1. The type of mode/vehicles included in the definition.
2. The type of activities included in the definition.

##### 3.1.1 The type of mode/vehicles included in the definition

For the purposes of many freight studies, freight transport is usually defined as any commodity or product that requires transportation and that is carried in a goods (i.e. a non-passenger) vehicle (Meyburg and Stopher, 1974). These goods can be transported by a variety of different modes including:

- road;
- air;
- water (inland waterway or maritime shipping);
- rail;
- pipeline;
- transmission line.

Much urban freight research and data collection limits the definition of “freight transport” to goods transported by road, as road is by far the dominant mode for urban freight transport. This is due to the



fact that the only form of transport infrastructure present at many urban premises is road and therefore any goods being delivered to, or collected from that premises have to be moved by road. In most cases, movements wholly within a city are likely to be made by road, because the trip distance will be relatively short and for reasons of connectivity. For shipments into and out of the city there is more scope for use of other modes. Nevertheless, the dominant position of road transport is certainly clear in the case of London where in 1994, of the 128 million tonnes of freight lifted, road carried 96 per cent and rail 4 per cent (Department of Transport, 1996).

Goods moved by road can be carried in the following ways:

- by conventional goods vehicle over 3.5 tonnes gross vehicle weight;
- by conventional goods vehicle less than 3.5 tonnes gross vehicle weight;
- by car;
- by motorbike;
- by bicycle;
- by bus or tram;
- by foot .

Much of the road freight traffic data collected in the UK by national and local government and other research organisations concerns itself only with conventional road goods vehicles, and only those with a gross weight of more than 3.5 tonnes. This therefore excludes consideration of the 2.26 million light goods vehicles currently registered in the UK (DETR, 1998), as well as goods moved by road by any other means. However many goods moved by road in urban areas are transported by means other than moved goods vehicles with a gross weight of more than 3.5 tonnes. The list below provides examples of this:

- goods transported in light vans rather than a goods vehicle with gross vehicle weight (gvw) over 3.5 tonnes;
- goods transported by final consumers in a passenger vehicle (e.g. shopping transported from the shop to home by car) ;
- goods transported by retailers in/on passenger vehicles rather than a goods vehicle (e.g. home deliveries by car, motorcycle or cycle courier, pizza deliveries by moped etc.);
- equipment transported in a passenger vehicle or light van by service personnel (e.g. spare parts for a photocopier or computer, plumbers, electricians, decorators, other professional traffic such as doctors, lawyers, engineers, salesmen etc. - this equipment is not being shipped and received but is transported as part of a service operation);
- goods carried by foot (e.g. from shop to home by the consumer, or between commercial premises by staff).

Goods moved in passenger vehicles (including private cars) are not usually included in definitions of freight transport. They are usually counted as person movements in traffic data collection as the driver's/passenger's presence at the shop is crucial to the transport movement and if they choose to buy nothing then they will return with an empty vehicle. Counting such movements as freight trips would result in double counting in government transport statistics. In the case of equipment movements by service personnel in private cars, these also tend to be included in passenger movements in traffic data collection. The goods in these service operations are different from other freight trips since they are not consignments that are shipped and received but are part of a service activity.

### **3.1.2 The type of activities included in the definition**

Most urban freight research tends to only consider consignments of goods that are shipped and received in a traditional manner. However, there are a number of other goods movements that tend to be ignored in studies such as small quantities of goods that are transferred between premises (e.g. one

branch of a shop sending a small number of items to another branch in the same chain as the latter has run out of stock), money collection and delivery services to premises, and the range of waste collection services offered in urban areas.

In addition, there two other categories of activity that tend not to be considered in traditional definitions of urban freight transport, but which also usually involve the transportation of goods (albeit in small quantities) and which play an important role in the functioning of urban premises:

- i. service activities that involve an engineer or service provider performing a vehicle trip to an urban premises in order to carry out some form of servicing. Examples of vehicle trips for servicing purposes include engineers servicing office equipment such as photocopiers, computers, air conditioning and other commercial equipment, tradesmen such as plumbers, electricians, and carpenters, and other service providers such as window-cleaners, laundry and dry cleaning services, drain and sewer cleaners, industrial cleaning companies, and plant care (the green-fingered variety) companies. Many of these service trips involve the carriage of goods (such as tools of the trade, equipment, spare parts etc.);
- ii. other vehicle trips to urban premises made for commercial purposes. This can include, for example, trips made to the premises by salespeople from suppliers and wholesalers demonstrating and selling goods, and employees of the company based elsewhere who need to visit to discuss work or deliver or collect paperwork (such as Area and Regional Managers). Many of these trips are undertaken in private or company cars or vans.

These additional forms of “freight transport” are intrinsically linked to the economic needs of the premises located in the urban area and are essential to the successful functioning of the premises and the urban area as a whole.

By excluding: (i) some types of mode/vehicles, and (ii) some types of activities from the definition of “urban freight transport” some goods and service movements, which are of fundamental importance to the functioning of the urban area, fail to be researched and understood. This is problematic for several reasons:

- i. it results in a lack of understanding by policy makers of some key goods and service flows necessary to ensure economic vitality, and how these flows take place. Without this understanding it is difficult for policy makers to devise suitable measures that allow these flows to take place efficiently and thereby encourage urban vitality;
- ii. not identifying the trip purpose of van and car movements results in all these movements being treated the same in policy terms. For example, any restrictions imposed on car movements in the urban area affect all cars equally unless certain car trip purposes are identified as being more important than others and this is reflected in the policy. Failure to recognise some of these trips as providing goods and services to premises in the urban area and reflecting this in transport policies can cause inefficiencies in, and disruptions to, the vehicle trips providing these flows and prevent the goods and services from being provided as and when needed;
- iii. it results in a failure to understand the full environmental and social impacts of “urban freight transport” movements.

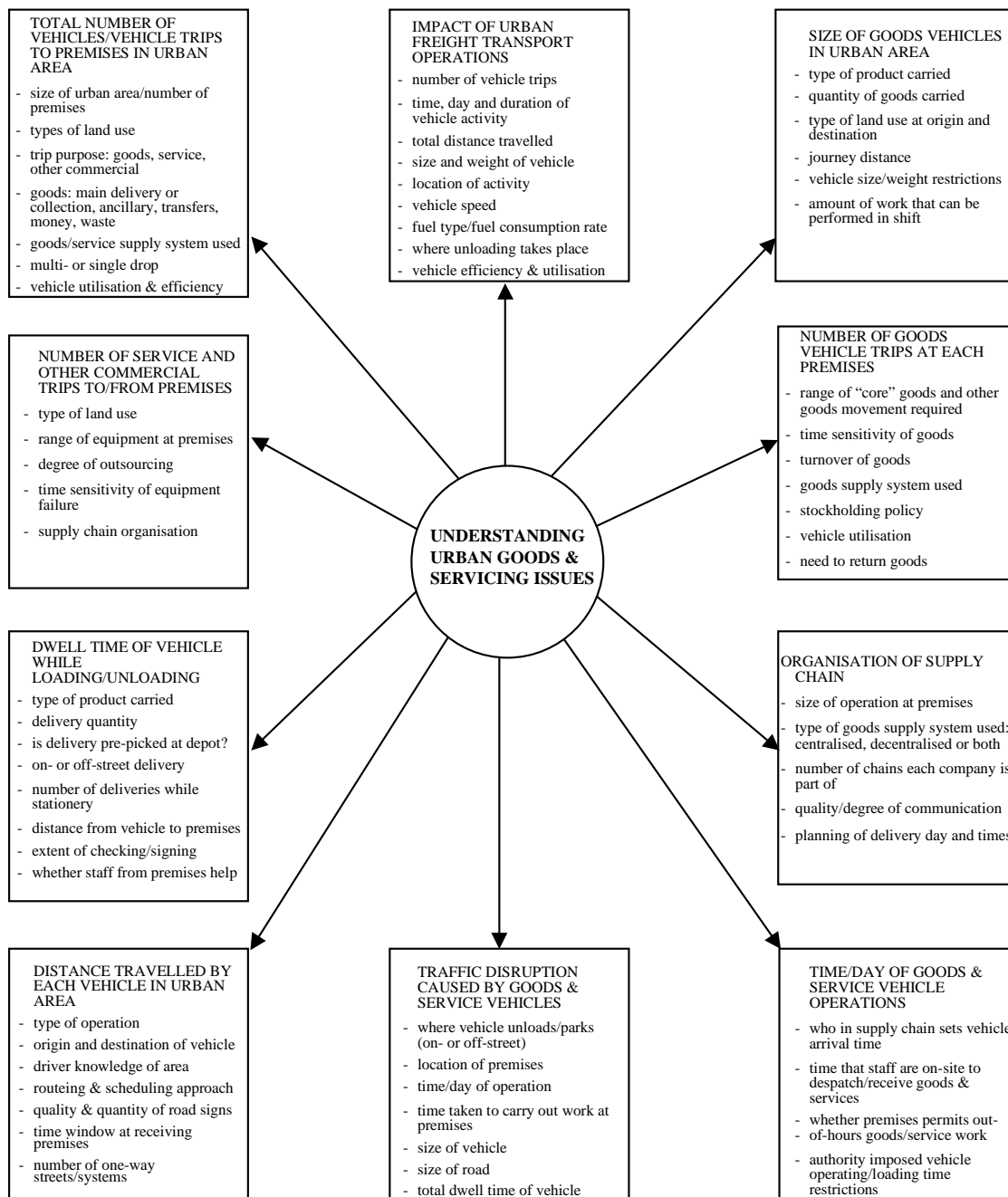
### **3.2 Understanding urban freight transport**

In order to better understand urban freight transport (i.e. the total goods vehicle activity, service vehicle activity and vehicle activity for other commercial purposes and the flows of goods and services that this activity facilitates) it is necessary to research a wide range of factors concerned with the goods and service requirements of premises located in urban areas in addition to simply considering the vehicle operations that support these requirements. Only in this way is it possible to understand *why* the pattern and number of urban freight transport vehicle operations are as they are. Understanding *why* is essential if, in changing the number and pattern of urban freight transport vehicle operations in order to reduce their impact, we want to ensure that urban businesses and other

premises (such as schools, hospitals etc.), and the urban economy as a whole does not become less efficient and less competitive as a result.

Figure 8 shows the range of issues concerned with the goods and service requirements of premises located in urban areas that need to be studied in order to bring about change that is sustainable (in the sense that urban vitality, economic and social/environmental concerns are taken into account).

**Figure 8: Understanding urban freight transport**



It is important to note that as well as causing problems, urban freight transport vehicle operations also experience problems caused by other vehicles, transport regulations and policy measures and non-transport policy measures, which affect the level of efficiency with which it is possible to carry out these operations. These problems experienced by urban freight transport vehicle operations also require attention if the efficiency of urban freight transport and hence the urban economy is to be

increased. This subject is addressed in detail in *Working Report 2 - Current goods and service operations in urban areas*.

### **3.3 Urban freight transport definition used in the research project**

The intention of the project was to consider all goods and service transport that takes place at premises in the urban area and to understand how logistics and other business decision-making at premises affects the intensity and pattern of this transport activity. As a result of carrying out the research it has been possible to divide the entire range of goods and service transport that takes place at urban premises into three categories:

1. Goods trips to and from the premises.
2. Service trips made to the premises.
3. Other trips for commercial purposes made to the premises.

Although the vast majority of the trips studied during the project take place by goods vehicle, van or car, some of the trips do take place by other means including by motorcycle, by bicycle, by taxi, by public transport and by foot (usually either small deliveries, transfers between premises, some service trips and trips for other commercial purposes that do not require the carriage of large or heavy goods, tools and equipment).

#### **3.3.1 Goods trips to and from the premises**

Through conducting interviews with different premises, and at transport and service companies we identified a wide range of goods transport movements to premises. In addition to the goods vehicle trips delivering and collecting the core goods associated with the premises, there are a number of other goods vehicle trips that can take place at a premises. It therefore became apparent early in the work that when talking to premises it was necessary to further sub-divide goods vehicle trips to and from the premises into the following categories:

- core goods deliveries to premises;
- core goods collections from premises;
- core goods transfers between premises;
- ancillary goods deliveries to premises;
- money collection and delivery;
- waste collections from premises;
- postal collection and delivery by Royal Mail;
- other goods collected from premises (in addition to core goods, waste and royal mail post);
- home deliveries (goods despatched from premises to their customers).

The definitions that we used for each of these types of goods vehicle movements are discussed in more detail below. Only goods trips carried out by commercial organisations were included in the project. Therefore goods trips performed by customers to and from shops were not included.

##### *Core goods deliveries to premises*

This refers to the delivery of the “core” goods required by the premises on a regular basis. These “core” goods are the goods sold in the case of a shop, the goods delivered by suppliers which are to be supplied from the warehouse to other premises or branches in the case of a warehouse or goods used in the production process in the case of a factory.

These goods can be deliveries to the premises from three different locations, depending upon the supply system used by the premises:

- goods supplied from own distribution centre (i.e. internal centralised goods supply system);

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- goods supplied from wholesaler's distribution centre or freight transport company's consolidation/sortation centre (i.e. external centralised goods supply system);
- goods supplied direct from supplier (i.e. decentralised goods supply system).

There are several different organisations that can be responsible for delivering the goods to the premises:

- i. goods supplied from own distribution centre (internal centralised goods supply system):
  - own-account/in-house transport;
  - dedicated third party transport company;
  - general/shared user/express transport company.
- ii. goods supplied from wholesaler's distribution centre or transport company's consolidation/sortation centre (external centralised goods supply system):
  - wholesaler's transport vehicles;
  - dedicated third party transport company;
  - general/shared user/express transport company;
  - owner of premises collects goods in own vehicle (e.g. cash and carry);
- iii. goods supplied direct from supplier (decentralised goods supply system):
  - supplier's transport vehicles;
  - dedicated third party transport company;
  - general/shared user/express transport company;
  - owner of premises collects goods in own vehicle.

It should be noted that the premises can collect their core goods requirements from wholesalers and suppliers themselves in their own vehicles. However we only found this to be happening at a small number of independent retail premises, where the owner supplemented goods deliveries to their premises in lorries with trips to a wholesaler's "cash and carry" facility in their own vehicles. None of the premises surveyed obtained all of their core goods requirements by making their own trips to wholesalers.

### Core goods collections from premises

This refers to the "core" goods referred to above that are despatched from the premises. In the case of a factory, the goods collected will be finished goods ready for supply to customers. For a retail premises these movements take place in order to return goods to suppliers or distribution centres, either because they are faulty or because the goods are seasonal or withdrawn for some other reason.

Core goods collections from premises can take place in one of two ways:

- either as part of a core goods delivery operation to the premises (i.e. the vehicle makes a goods delivery and then at the same time removes goods from the premises);
- or as a totally separate vehicle movement (i.e. the vehicle only collects the core goods from the premises and does not deliver anything).

Obviously, if goods are returned on the same vehicle that makes a core goods delivery to the premises this helps to reduce the total number of goods vehicles having to visit the premises. This has both commercial (it can reduce the cost of returning goods and can sometimes also be quicker and more convenient for staff at the premises than receiving two separate vehicles arrivals) and environmental benefits.

An independent hardware shop interviewed in the study made use of three different distribution systems for returning goods to suppliers:

- i. hold goods at shop until supplier visits shop to make another delivery, then vehicle can remove goods at this time;

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- ii. send goods by express/parcels company if the goods are large and it is important to return the goods quickly or the supplier only makes deliveries to the shop on an infrequent basis;
- iii. send goods by post if goods are small and if the supplier only makes deliveries to the shop on an infrequent basis.

Virtually all of the premises surveyed do return goods to suppliers or distribution centres. The key difference between premises is the frequency with which returns are made. For some premises goods are returned on a regular basis (e.g. a book shop interviewed returned goods on a daily basis) while for others returning goods is the exception (such as a furniture shop or restaurant).

#### Core goods transfers between premises

This refers to the situation where a company owns more than one premises with the same or similar function to the premises surveyed (e.g. it has two or more shops selling the same range of products in the same or different towns) and transfers core goods (and also ancillary goods in some cases) between these premises when necessary.

#### Ancillary goods deliveries to premises

These trips refer to the deliveries of ancillary goods required by the premises in order to function on a day-to-day basis, but which are not the core goods connected with the premises (i.e. not goods to be sold to customers in the case of a retail premises or goods to be used in the production process in the case of a factory). Examples of ancillary goods include till rolls, stationery, plastic and paper bags, printer cartridges, display material, light bulbs, cleaning materials, in-house and customer magazines, publicity material, product information, and paperwork and administration sent from head office.

In the interviews we conducted, some premises receive separate deliveries of ancillary products (with one or more ancillary product delivered by each vehicle) while other premises (especially those with internally centralised goods supply systems) receive core goods and ancillary goods in the same delivery.

#### Money collection and delivery

This refers to trips made to the premises by specialist money collection and delivery vehicles in order to safely remove the financial takings from the premises and, in some cases, to provide the premises with a float.

#### Waste collections from premises

This refers to the vehicle trips made to the premises to collect waste generated in the course of work at the premises. This includes general refuse collection, specialist waste collection and recycling collection services.

#### Postal collection and delivery by Royal Mail

This refers to trips to and from the premises by Royal Mail employees either on foot or in vehicles to deliver and collect post.

#### Other goods despatched from premises (in addition to core goods, waste and Royal Mail post)

This refers to paperwork and any other items despatched from the premises in addition to core goods, waste and post and packages collected by the Royal Mail.

#### Home deliveries (goods despatched from premises to their customers)

This refers to goods purchased by final customers from retail or other premises that are delivered from the premises to the customer's premises. The delivery address for a home delivery can be either a residential or commercial premises - companies offering home delivery services tend to make deliveries to both).

### **3.3.2 Service trips to the premises**

Service trips are distinguished from good trips by the following: service trips are those trips in which the main purpose of the trip is to carry out a servicing activity at the premises rather than solely deliver or collect goods. Examples of service trips to urban premises include computer equipment servicing, photocopier servicing, cash register servicing, security and fire alarms servicing, plant care services, lift and escalator servicing, air conditioning servicing, towel and dry cleaning services, and general cleaning services.

Many service providers have to take equipment and tools to the premises where the service is to be provided. These service trips can, of course, also involve the person who is providing the service taking goods to or from the premises where the service is performed (such as parts for machinery that is being repaired, or clean and dirty staff uniforms, or new or dead plants in the case of a plant care service company).

### **3.3.3 Other trips for commercial purposes to the premises**

Two types of other trip for commercial purposes were identified during the course of the research these were:

- trips made to premises by sales representatives;
- trips made to premises by employees of the companies who are not normally based at the premises - such as regional/area managers (we did not study the journey to work pattern of staff who regularly work at the premises in the project).

## **3.4 Goods and service transport terminology**

### **3.4.1 Use of the term “freight transport” in the report**

As mentioned the approach taken in the project was to consider the entire range of commercial *trips* (goods trips, service trips and any other trips for commercial purposes) taking place at the urban premises surveyed. At all the premises studied these trips were carried out by road, either by motorised road vehicles, non-motorised road vehicles or by foot. Rail-, air- or water-based movements were not used to provide goods or services to the premises surveyed (this is not to say that these modes are not used at some point during the transport of goods along the supply chain which are ultimately received at the premises studied). “Goods” transmitted by pipe or transmission line were not included in the project. Trips made by consumers to and from shops were also excluded.

In the report “freight transport” is intended to mean all the goods and service and “other” commercial transport as defined above. It is therefore all the commercial trips to and from a premises that are necessary for the successful functioning of that premises.

### **3.4.2 Other problems with existing terminology for goods transport**

Terminology used to describe goods flows to and from premises and the transport activity that supports these flows can be extremely confusing. If the focus of attention is on the vehicle moving goods between premises, then it is relatively easy to think about the work performed by these vehicles for the premises as either:

- goods collections (i.e. when the vehicle picks up goods from a premises which need to be moved to another premises. The goods are loaded onto the vehicle and the vehicle then drives to the premises the goods are destined for);

or:

- goods deliveries (i.e. when the vehicle drops off goods at a premises. The vehicle has transported these goods from the premises where they were collected to this premises where they are unloaded from the vehicle and delivered).

However if the focus of attention is the premises which the goods flow into and out, the terms “goods collections” and “good deliveries” are not necessarily understood to mean the same as defined above.

When thinking about it from the perspective of the vehicle, “goods deliveries” refer to the delivering of goods to a premises, however at the premises this term could just as easily be interpreted to mean goods which need to be delivered from the premises to the premises’ customers. Similarly, rather than meaning the picking up of goods from a premises, at the premises itself “goods collections” can be understood to mean goods that need to be collected from customers or suppliers by the premises. The likelihood of staff at the premises taking the terms to mean the opposite of what was intended is increased when the premises operates its own transport vehicles to carry out goods collection and delivery work.

The terminology used can therefore be seen to be potentially confusing. Unless carefully chosen and defined, it can result in misunderstanding by participants in any research conducted and also by readers of anything written on the subject.

Other terms that can be used to refer to goods flows to and from premises that could potentially overcome this potential misunderstanding include:

- “goods in” and “goods out” - readily understood at the premises through which goods are flowing, but there is a possibility of misunderstanding from the goods vehicle operator perspective where “goods in” could be taken to mean goods loaded onto the vehicle, rather than goods unloaded from the vehicle and vice versa;
- “goods receipt” and “goods despatch” - again readily understood at the premises through which goods are flowing, but there is a possibility of misunderstanding from the goods vehicle operator perspective where “goods despatch” could be taken to mean goods being transported by the vehicle from the point at which they were picked up and loaded onto the vehicle to the premises in question, rather than goods despatched from the premises in question and vice versa.

Terms typically used for goods movement when thinking about the vehicle:

- collection;
- delivery.

Terms typically used for goods movement when thinking about the premises:

- Goods in/Receipt.
- Goods Out/Despatch.

**Table 3: Meaning of terminology used in the report**

<b>Activity</b>	<b>Term used when referring to goods vehicle</b>	<b>Term used when referring to the premises</b>
<b>Goods flowing into a premises, transported to that premises by a goods vehicle</b>	Goods deliveries	Goods in/received
<b>Goods flowing out of a premises, transported from that premises by a goods vehicle</b>	Goods collections	Goods out/despached



## Approach taken to the project

It is also important to recognise that goods flows and goods vehicle activity are two different things: a single consignment of goods can be associated with several different vehicle trips, many consignments can be moved in one vehicle, and a goods vehicle can operate without any goods on board (i.e. it can run empty).

Terminology for service transport is far less problematic as services tend only to be supplied to premises rather than from premises (except in the case when the premises being referred to is occupied by a service company).

It is also important to note that the premises which freight transport companies deliver goods to are not necessarily their customers. The customer of the freight transport company is often the company that sends the goods, rather than the company that receives the goods. Therefore premises that receive goods deliveries, but which are not the customer of the freight transport company are referred to as “receivers” rather than “customers” in the reports. This situation can obviously cause problems when thinking about how urban distribution could be altered in order to improve its sustainability. If the receiver of the goods has no contractual relationship with the freight transport company, the receiver tends to have little, if any, incentive to help make the delivery any easier to perform, especially if making the delivery easier results in additional costs or operational problems for the receiver. This important issue is returned to later in the work.

Within the working reports, companies that transport goods are referred to as freight transport companies.

## 4. Gaps in understanding and data collection

### 4.1 Limitations of previous urban freight research

Previous research into urban freight transport in the UK has had several limitations and shortcomings, some of which the present project aimed to overcome. Some of these limitations are listed below.

1. Urban road goods *vehicles* are usually narrowly defined (usually defined as heavy goods vehicles. Work carried out by light goods vehicles/vans, cars, motorcycles, bicycles and on foot usually ignored) (see Chapter 3 for further details).
2. Urban road freight *activities* are usually narrowly defined (usually defined just as core goods deliveries and collections to premises, other types of goods movement, service operations and other vehicle trips for commercial purposes not included) (see Chapter 3 for further details).
3. Some research has only consisted of traffic counts of goods vehicles and not considered the goods being carried and type of work being performed by these vehicles. Study of both goods flows and goods vehicle activity is necessary in order to better understand current patterns of urban freight transport and how goods flow, and hence vehicle activity, may change in the future.
4. Traffic counts often tend to only distinguish one category of goods vehicles: namely those above 3.5 tonnes gross vehicle weight or which have more than two axles. They do not include light goods vehicles and vans as separate categories in the traffic data collection.
5. As traffic counts do not record trip purpose they are not able to distinguish between cars used for commercial purposes (moving goods, providing services, or other commercial tasks) and those used for private purposes (such as shopping trips, leisure trips, visits to friends and relatives, and trips to/from the place of work). Little survey work has been carried out to better understand how, and the extent to which, cars are used for commercial purposes and their activity patterns.
6. The types of journeys carried out by goods vehicles in urban areas are not well understood (i.e. whether multi- or single drop operations, and if multi-drop the actual trip pattern on the journey, and the factors that determine this journey pattern - i.e. is it based on shortest route for locations served or on to shipper/receiver constraints). There have been few studies into trip length, trip purpose, time taken for journey, dwell time *versus* time spent travelling, where vehicle is parked when stationary etc. Also, there has been little research into the vehicle utilisation and empty running for urban goods collection and delivery operations.
7. The supply system/distribution channels for goods supplied to urban premises has received little attention (in terms of attempts to distinguish between different supply system structures, the number of suppliers used by a premises, the locations from which goods are supplied to urban premises, and how supply systems affect transport arrangements and activity).
8. Lack of supply chain approach to understanding urban goods flows and transport - several studies focus entirely on goods vehicles activity and not on goods flow and how this is determined and organised. Some existing research can give the impression that all freight transport, logistics operations and supply chain systems are similar when in fact they are not.
9. Little research has taken place into the relationship between: (i) company decision-making (purchasing, ordering, storage, layout of the premises, goods supply system, provision of services, outsourcing of goods supply and servicing functions etc.), and (ii) the vehicle activity that transport goods to and from premises. Such research would help to better understand why goods vehicle collection and delivery operations takes place in the way that they do (i.e. the key factors that result in a particular vehicle operated by a particular carrier delivering at a particular time with a particular quantity of goods, and the particular operating pattern of that vehicle over the course of that day).
10. The full range of all goods trips to/from urban premises has not been researched in any detail. Most research has simply focused on the core goods collections and deliveries, however there a

variety of other goods collections and deliveries taking place at urban premises (e.g. delivery of ancillary goods, waste collections, money collections and deliveries, goods transfers between related premises, home deliveries etc.).

11. Research has not addressed the service vehicle trips and other vehicle trips for commercial purposes to and from different types of urban premises, and their importance in terms of trip generation. Neither has the organisation of service operations and the trip patterns of service personnel been researched in any depth.
12. Inadequate identification of the nature and severity of the problems (both real and perceived) caused by urban road freight transport operations - without clear identification of the problems it is not possible to produce a clear or appropriate approach to dealing with the problems.
13. Inadequate identification of the nature and severity of the problems (both real and perceived) experienced by urban road freight transport (including goods, service and other commercial vehicle trips).
14. Some research projects have limited their policy recommendations to lorry movement and vehicle activity not the organisation of the goods flow, or the logistics decision-making process within the supply chain.
15. Little research has attempted to identify the extent to which current goods and service flows to premises in the urban area would be affected by the introduction of new urban freight policy measures and other "sustainability" policy measures, and the impact that this would have upon different premises.
16. Few studies have considered how companies either individually, or with their supply chain partners could improve their urban freight operations to make them more efficient while at the same time reducing their impact.
17. Few studies have attempted to bring partners working in the same supply chain together to discuss how they could make their current goods flow and goods vehicle operations more efficient and how they would potentially respond to new urban freight policy measures.

The current exploratory project was intended to address some of these limitations of previous urban freight transport research.

## **4.2 Existing UK government freight data collection**

The UK Government carries out several surveys that collect freight transport data that include freight transport activity performed in urban areas in the UK. These surveys are carried out by the Department of the Environment, Transport and the Regions (DETR) and the Office for National Statistics on behalf of the Government and are summarised below.

### *1. Continuing Survey of Road Goods Transport (CSRGT)*

This is the major survey collecting information about goods transport by road in the UK, it has been carried out continuously since early 1970s, with an annual database since 1976. The survey samples goods vehicles above 3.5 tonnes gross vehicle weight that are licensed in the UK and collects data about one week's activity from each vehicle in the sample. Approximately 15,000 self-completion questionnaires are returned by respondents each year (DETR, 1998a).

The survey includes the following details about the vehicles studied and their activity during the study week:

- Gross vehicle weight.
- Vehicle carrying capacity.
- Number of axles (tractive unit and trailer).
- Body type of vehicle.
- Mileage of vehicle in last 12 months.
- Whether vehicle is used to carry abnormal loads.

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- Whether vehicle is used mainly for hire or reward or own account during 7 days of survey.
- Whether vehicle was used on public roads during 7 days of survey.
- Gallons of fuel purchased/taken from own supplies during survey period.

Information required by the survey about journeys made by the vehicle during the survey week involving four or fewer stops for collection and/or delivery (information required for each trip/stop) includes:

- Origin (nearest town).
- Destination (nearest town).
- If journey to or from docks or rail terminal indicate this and how goods were transferred.
- Type of goods (commodity classification).
- Distance travelled loaded.
- Distance travelled empty.
- Weight of goods carried.
- Mode of appearance (how carried).
- Number of trailer axles, if trailer not as stated earlier.

Information required by the survey about journeys made by the vehicle during the survey week involving five or more stops for collection and/or delivery (information required for entire journey - i.e. initial origin and ultimate destination) includes:

- Initial Origin (nearest town).
- Final destination (nearest town).
- If journey to or from docks or rail terminal indicate this and how goods were transferred.
- Type of goods (commodity classification).
- Distance travelled loaded.
- Distance travelled empty.
- Total weight of goods delivered.
- Number of stops for delivery.
- Total weight of goods collected.
- Number of stops for collection.
- Mode of appearance (how carried).
- Number of trailer axles, if trailer not as stated earlier.

## 2. *Continuous (previously occasional) small van survey*

This survey was carried out in 1987, 1992/3, and 1998/9 onwards on a continuous basis. Approximately 400 self-completion questionnaires are currently being sent out per week which will be scaled down to 150 questionnaires per week in 1999/2000. The survey collects information about trips performed by the vans studied on a single day. The vans studied fall into two categories: (i) PLG HGV vans: private light goods vehicles with body types considered appropriate for HGVs, some of these vehicles have gross vehicle weights over 3.5 tonnes, (ii) PLG light vans: vehicles in same class as (i) but with van-type bodies (DETR, 1998b).

The survey includes the following questions about the vehicles studied and their activity during the study day:

- Was vehicle in your possession on survey day?
- Was vehicle on contract hire to someone else on survey day?
- Type of vehicle (several options provided)
- What is vehicle mainly used for: business or private use?
- If business use, does the business employ fewer than 10 people?
- Was vehicle used on survey day?

Information required by the survey about trips made during the survey day (if more than 20 trips are carried out on the survey day respondents are asked to provide full details of first five trips and summary details of all others) includes:

- Mileage reading at start of survey day.
- Mileage reading at end of survey day.
- Describe contents of vehicle at start of survey day (e.g. empty, machines, goods etc.).
- How many trips did you complete on the survey day.
- Start time of trip.
- Reasons for trip.
- Trip origin: Postcode or full address.
- Type of origin.
- Number of people in vehicle.
- End time of trip.
- Trip destination: Postcode or full address.
- Type of destination.
- Describe any goods and/or equipment loaded or unloaded.
- Distance travelled.

Reasons for trip (options available in the survey) :

- Travelling to work.
- Travelling from work.
- Shopping.
- Social.
- Other personal use (describe).
- Delivery of goods.
- Collection of goods.
- Carrying of equipment.
- Carrying of persons.
- Empty mileage of goods carrying vehicles.
- Other business use (describe).

Type of origin/destination (options available):

- Retail (shops).
- Factory or industrial unit.
- Warehouse.
- Office building.
- Private residential.
- Social (leisure centre, cinema, pub, theatre, etc.).
- Other (give more details).

Trip purpose, type of land use visited, and start/end time of trip are included in the new continuous van survey but were not included in the original occasional survey.

### *3. National Travel Survey*

The National Travel Survey (NTS) collects details of personal travel by British residents on a regular basis. The first occasional survey was carried out in 1965/66, and in 1988 the NTS became a continuous survey. The NTS uses face-to-face interviews and seven day travel diary keeping, and is based on a random sample of private households (5040 addresses were sampled in 1997) (Office for National Statistics, 1999).

Personal travel is defined in the NTS as: “travel for private purposes or for work or education, provided the main reason for the journey is for the traveller himself or herself to reach the

destination". The "cars" category in the NTS includes light vans, Land Rovers and privately owned lorries but only for "personal travel".

Journeys in the course of work (business journeys category) are defined in the NTS as - "Journeys made in the course of work are included provided they fulfil this requirement, that the purpose of the journey is for the traveller to reach a destination. Travel to deliver goods, or to convey a vehicle or passengers (e.g. as a bus or taxi driver) is not covered". Also excluded is: travel as drivers or crew of public transport vehicles such as fire engines or ambulances, travel in industrial or agricultural equipment (cranes, bulldozers, tractors etc.), travel in specially equipped vehicles used in the course of a person's work (police patrol cars, AA/RAC repair vehicles, Post Office vans), and journeys in course of work by people paid to walk or cycle such as policemen on the beat, traffic wardens, leaflet distributors, messengers, postmen or roundsmen".

A "personal business" category is also included in the NTS. This is defined as "visits to services e.g. hairdressers, laundrettes, dry cleaners, betting shops, solicitors, banks, estate agents, libraries, churches or for medical consultations or treatment or for eating and drinking, unless the main purpose was entertainment or social" (Office for National Statistics, 1997).

Therefore the trips made by people who uses a vehicle to provide a service in the course of their work are often included in the NTS sample. However, as can be seen from the definitions provided above not all service trips are collected by NTS. This leaves several grey areas with respect to which service trips are included in the NTS, and which are omitted on the grounds that the primary trip purpose is to deliver goods . For instance:

- a manager travelling to a premises to see staff that also involves the carriage and delivery of paperwork to the premises;
- a doctor travelling to an address to examine a patient and deliver prescription drugs;
- a care assistant travelling to an address to deliver groceries;
- engineer travelling to an address to deliver and fit a television aerial;
- pest controller travelling to an address to deliver/lay vermin traps;
- photocopier engineer travelling to an address to deliver/fit new parts in a machine;
- plant care specialist travelling to an address to deliver and tend new potted plants.

Using the three categories of freight transport used in this project it is possible to consider which elements of freight transport are captured by the NTS:

- i. *Goods trips*: Not recorded in the NTS.
- ii. *Service trips*: Included in the NTS unless: (i) to convey a vehicle or passengers, (ii) travel as drivers or crew of public transport vehicles, (iii) travel in industrial or agricultural equipment, (iv) travel in specially equipped vehicles used in the course of a person's work, (including AA/RAC repair vehicles, and Post Office vans), and (v) journeys in course of work by people paid to walk or cycle (such as policemen on the beat, traffic wardens, leaflet distributors, messengers, postmen or roundsmen).
- iii. *Other commercial trips*: Trips by salesmen and staff visiting premises within their company (such as Area or Regional managers) are included in the NTS. If the trip is included in the NTS, it is recorded regardless of mode and means of transport. The following details are required from respondents when completing travel diaries in the NTS:
  - Journey purpose.
  - Start and end time of journey.
  - Origin and destination of journey (village/town).
  - Method of travel.
  - Distance travelled.
  - Number in party.
  - Travel time.

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- Cost of journey.
- Number of boardings on journey.
- iv. *Other freight data collected about freight transport by UK Government:* The Government collects a range of other freight transport data (including maritime statistics, UK seaborne trade, merchant fleet statistics, port traffic, coastwise and inland waterways freight statistics, aviation and airport statistics, international freight traffic, and railway statistics). However, this data collection is not explicitly about urban freight transport and indeed much of the freight transported activity included in this data is certainly not taking place in urban areas in the UK.
- v. *Traffic data collected by UK Government:* The UK Government also carries out traffic data collection in urban areas of the UK (for example the following publications contain traffic data for London: Transport Statistics for London and the London Area Transport Survey). Heavy goods vehicles and vans are counted as part of this traffic data collection work.

### **4.3 Gaps in freight information and data currently collected by UK government**

#### **4.3.1 Issues that the freight data currently collected by UK Government does not cover**

Below is a list of the urban freight transport information that is not currently collected by existing UK Government transport survey work, which would be useful to have available when considering urban freight transport policy. This information could, in some cases, be collected through the existing surveys and in, other cases, would require new survey instruments such as new self-completion questionnaires, face-to-face interviews and discussion groups. This is not to suggest that the UK Government should be responsible for collecting all of this additional information and data, but that if more urban freight transport research and survey work could be carried out by a variety of means and funding this would put policy makers in a better position to make informed decisions about transport policy and its effects on freight transport.

*Information about individual goods flows and goods trips that would be useful:*

- Transport mode.
- Land use information and actual street address for destination of goods.
- Origin address for goods (i.e. location of where goods were supplied from).
- Time taken for loading/unloading (including checking/signing for goods).
- Where vehicle is parked when loading/unloading (i.e. on-street or off-street).
- Distance over which goods are moved from vehicle to premises.
- Time taken for journey.
- Details of each trip on multi-drop/collection rounds (providing details of intermediate locations).
- Details of when combined collection and delivery takes place.
- Vehicle load factor at start/end of journey.
- Whether delivery/collection was successfully carried out and completed.

*Information about individual service flows and service trips that would be useful (which could be captured by a dedicated service vehicle trip survey rather than as part of the NTS):*

- Reason for trip (e.g. emergency, planned, quotation etc.).
- Mode/type of vehicle used.
- Trip patterns.
- Time of day/day of week.
- Number of people in vehicle.
- Land uses/addresses served.
- Parking details (on-street/off-street).
- Journey time/distance.
- Time taken to find parking space.
- Whether vehicle was legally parked.

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- Distance from parking space to premises, time taken to walk.
- Equipment, tools and parts carried.
- Time spent at premises.
- Whether vehicle received parking fine, clamp or was towed away.
- Whether time spent at premises exceeded expected duration of servicing task.
- Whether return visit will be necessary to complete servicing task.

*Information about “other” commercial trips (which could be captured by a dedicated “other” commercial trip survey rather than as part of the NTS):*

- Reason for trip (e.g. sales trip, trip by manager to branch etc.)
- Mode/type of vehicle used
- Trip pattern/s.
- Time of day/day of week.
- Number of people in vehicle.
- Land uses/addresses visited.
- Parking details (on-street/off-street).
- Journey time/distance.
- Time taken to find parking space.
- Whether vehicle was legally parked.
- Distance from parking space to premises, time taken to walk.
- Goods and equipment carried.
- Time spent at premises.
- Whether vehicle received parking fine, clamp or was towed away.
- Whether time spent at premises exceeded expected duration of visit.

In addition it would be helpful to use survey work and traffic counts to establish the total number of goods, service and other commercial trips (by road vehicles and other modes) taking place in urban areas (by time of day, day of week and trip purpose).

Staff at a range of different premises in the urban area studied could also be surveyed in order to determine the full range of goods, service and other commercial trips that place to and from the premises.

#### **4.3.2 Other urban freight transport information not collected by UK Government**

There is a range of other, often more qualitative information, that is not currently collected by the UK Government survey work discussed above, which if it were available, would be helpful to researchers and policy makers when considering potential urban freight transport policy measures. This includes information such as:

- details of the supply chain system serving premises in the urban area, and how decisions about goods delivery takes place between parties within that supply chain (in terms of frequency and size of delivery, time of delivery, day of delivery);
- the day-to-day transport problems experienced by goods and service companies in urban areas;
- research into how companies would potentially react to new freight transport and general transport policy measures; and which potential transport policy measures companies believe would prove most successful ;
- research into the extent to which goods and service flows could take place in alternative, more environmentally sustainable ways, and the barriers to achieving this.



## 5. References

- Bartlett, R, and Christie, A, 1978, "The Hull Freight Study", in *Traffic Engineering and Control*, November 1978, pp.498-502.
- Department of Transport and London Research Centre (1994) *Travel in London: London Area Transport Survey 1991*, HMSO, London.
- Department of Transport, 1996, *Transport Statistics for London 1996*, HMSO, London.
- DETR, 1998, *Transport Statistics Great Britain 1997*, The Stationery Office, London.
- DETR, 1998a, *Transport of goods by road in Great Britain, 1997*, DETR: London.
- DETR, 1998b, *Delivering the goods: van survey*, DETR press release, 5 October 1998.
- Freight Transport Association, 1996, *Lorries in Urban Areas - delivering the goods and serving the Community*, Freight Matters 5/96, Freight Transport Association.
- Greater London Council, 1982, *Greater London Travel Survey 1981: Transport Data for London*, Greater London Council.
- Hassell, M, Foulkes, M, and Robertson, J, 1978, "Freight Planning in London: the existing system and its problems", in *Traffic Engineering and Control*, February 1978, pp.60-63.
- Hitchcock, A, Christie A, and Cundill, M, 1978, *Urban freight: preliminary results from the Swindon Study*, Transport and Road Research Laboratory Supplementary Report 126UC, Department of the Environment.
- Meyburg, A, and Stopher, P, 1974, "A Framework for the analysis of demand for urban goods movement", *Transportation Research Record* 496, pp.68-79.
- Plowden, S, and Buchan, K, 1995, *A New Framework for Freight Transport*, Civic Trust, London.
- Office for National Statistics, 1997, *National Travel Survey 1993/95*, ONS: London.
- Office for National Statistics, 1999, *National Travel Survey: Technical Report 1997*, ONS: London.
- Ogden, K, 1992, *Urban Goods Movement: A Guide to Policy and Planning*, Ashgate, Aldershot.
- Royal Commission Report on Environmental Pollution, 1994, *Transport and the Environment*, Eighteenth Report, HMSO.
- SAFE, 1994, *Driven to Shop: Transport Intensity and the Environment*, SAFE.
- UK Round Table on Sustainable Development, 1996, *Defining a Sustainable Transport Sector*, Department of the Environment.
- World Wildlife Fund, 1995, *Freight Transport, Logistics and Sustainable Development*, World Wildlife Fund.

Approach taken to the project

## Appendix A: Data collection forms

### MULTI-DROP DISTRIBUTION

Vehicle size: .....tonnes (gross vehicle weight)      Fuel consumption:..... miles per gallon      Fuel type: (diesel/petrol).....

Date of delivery round.....      Time vehicle left depot:.....      Time vehicle returned to depot:.....      Total distance driven on round.....(km or miles).

Trip number	Delivery (D), Collection (C) or Both (B)	Start time of trip	Name & address of destination	Time of arrival at destination	Distance travelled in vehicle (please state miles, km or metres)	Type of goods	Quantity of goods (please state units e.g. kgs, packages, pallets etc)	Where was vehicle parked during delivery/collection: ON STREET or IN LOADING BAY?	Time taken to load/unload (minutes)	Any problems during trip?
1										
2										
3										
4										
5										
6										
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Approach taken to the project

**SINGLE-DROP DISTRIBUTION - ONE WEEK VEHICLE SURVEY**

Vehicle size: .....tonnes (gross vehicle weight)      Fuel consumption:..... miles per gallon

Fuel type: (diesel/petrol).....      Start date of survey.....

Time when vehicle left depot:.....      Time when vehicle returned to depot:.....      Total distance driven on round.....(please indicate miles or km)

Day of week	Delivery (D), Collection (C) or Both (B)	Start time of trip	Starting address	Time of arrival at destination	Destination address	Distance travelled (please state miles or km)	Type of goods	Quantity of goods (please state units e.g. tonnes, kgs, pallets etc)	Where was vehicle parked during delivery/collection: ON STREET or IN LOADING BAY?	Time taken to load/unload (minutes)	Any problems on trip?

Approach taken to the project

**SERVICE TRIPS PERFORMED BY SERVICE COMPANY**

Vehicle size: .....tonnes (gross vehicle weight)      Fuel consumption:..... miles per gallon      Fuel type: (diesel/petrol).....

Date of service round.....      Starting point of vehicle:.....      Time when service left depot/starting point:.....

Time when vehicle returned to depot/starting point at end of day:.....      Total distance driven during the day.....(please indicate miles or km)

Trip no.	Start time of trip	Reason for trip	Name & address of premises visited	Time of arrival at premises	Distance travelled (please indicate miles or km)	Where was vehicle parked: ON STREET, IN PUBLIC CAR PARK or IN LOADING BAY?	Describe any goods and/or equipment loaded or unloaded at site	Time spent at premises (minutes)	Any problems on trip?
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

Approach taken to the project

**GOODS IN & GOODS OUT AT PREMISES**

<b>Goods In, Goods Out or Both</b>	<b>Date</b>	<b>Time of goods in/ goods out</b>	<b>Type of goods</b>	<b>Quantity of goods (please state units e.g. tonnes, kgs, pallets etc)</b>	<b>Type of vehicle (please circle)</b>	<b>Where was vehicle parked: ON STREET or IN LOADING BAY?</b>	<b>Time taken for delivery/collection (minutes)</b>
1					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
2					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
3					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
4					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
5					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
6					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
7					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
8					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
9					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
10					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
11					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
12					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
13					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		
14					Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot		

**SERVICE TRIPS AT PREMISES**

Approach taken to the project

<b>Service trip number</b>	<b>Date of service person/ vehicle arrival</b>	<b>Time of service person/ vehicle arrival</b>	<b>Type of service provided</b>	<b>Type of vehicle used (please circle)</b>	<b>Where was vehicle parked: ON STREET, IN ON-SITE CAR PARK or PUBLIC CAR PARK?</b>	<b>Describe any goods and/or equipment loaded or unloaded at site</b>	<b>Time spent on site by service staff (minutes)</b>
1				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
2				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
3				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
4				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
5				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
6				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
7				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
8				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
9				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
10				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
11				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
12				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
13				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			
14				Large lorry    Medium lorry    Small lorry Van    Car    Motorbike    Bicycle    On foot			

Approach taken to the project

## Appendix B: Face-to-face interviews with premises

### Goods trips to/from premises

Trip description	Transport mode	Typical trip frequency	Time of delivery	Day/s of week
Goods in from company warehouse				
Goods out to company warehouse				
Goods in from other suppliers				
Goods out to other suppliers				
Goods out to other branches				
Goods in from other branches				
Goods sent out to customers/other companies				
Goods returned from customers/other companies				
Any other goods/packages/post sent out from site				
Any other goods/packages/post delivered in to site				
Equipment and ancillary supplies delivered				
Waste collection				
Recycling collection				
Royal Mail postal delivery				
Royal Mail postal collection				
Money taken from/delivered to bank				
Employee trips to/from site				
Other commercial visitor trips to/from site				

## **Topic guide for face-to-face interviews with freight transport companies**

### **1. Current operations**

- type of goods they are transporting
- average delivery size/weight
- vehicle size/weight
- number of vehicles in fleet
- trip patterns (multi or dedicated)
- time of day during which operations take place
- origins and destinations involved (how much in Norwich)
- scheduled delivery/arrival times for customers (time windows)
- loading/unloading & parking operations - where, how long, moving goods from vehicle to premises,
- checking and signing for deliveries,
- how & when are goods delivered to depot (what happens upstream)
- how do customers place orders for transport
- to what extent can customers specify delivery days, times etc.
- vehicle efficiency: load factor and empty running, consolidation by company,

### **2. The problems experienced**

#### *a. Road conditions*

- Congestion
- parking
- signing
- information about traffic problems and works

#### *b. Traffic regulations*

- time bans
- size bans
- parking regulations
- bus lanes
- pedestrianisation
- traffic calming

#### *c. Customer constraints*

- time windows/requirements of customers (what level of delivery reliability do they achieve)
- parking, loading/unloading facilities
- access to shop with goods
- whether staff from site help load/unload
- checking/signing for goods procedures
- penalties and costs of failing to meet customers time requirements

#### *d. Impact of other road users*

- do you perceive other road users and their driving behaviour as causing any problems in Norwich

### **3. Sustainable policy measures and approaches**

#### *a. How would the following potential new policy measures affect your operations*

*Policies to assist road goods/service transport*



## Approach taken to the project

- use of bus lanes
- traffic light priority
- more designated public loading bays
- designing off-street/good access facilities in all new developments
- better signing
- reduce car traffic
- better information about traffic problems and road works
- reduction in car traffic/improve public transport, park and ride etc

### Road pricing to manage capacity

Giving potential to:

- fund improvements in public transport
- offer green incentives

### *Policies that may hinder road goods/services transport*

- truck routes
- pedestrianisation
- time bans
- size/weight bans
- parking regulations
- emission standards

### *b. What else they could freight companies do themselves to reduce impacts*

Quality Partnerships for Urban Distribution

Shared distribution - city logistics

Transshipment

consolidate within the company/RDC

consolidation in major retail chains

less frequency but larger deliveries

time of day consolidation

consolidate for one delivery point (all goods needed by that premises delivered in one vehicle)

consolidate for one street (only one supplier for a particular product on that street)

night-time/out of hours deliveries

use of IT (routeing and scheduling, communications)

driver incentives for reducing mileage, fuel efficiency or time taken for round

### *c. What their customers could do to help reduce impacts*

Less strict delivery windows/allow out of hours deliveries

More on-site storage

Less need/better system for checking/signing

Standardisation in package sizes/greater unitisation

## **Topic guide for face-to-face interviews with service companies**

### **1. Current operations**

- type of service work they are doing & equipment carried
- vehicle size/weight
- number of vehicles in fleet
- trip patterns (multi or dedicated)
- time of day during which operations take place
- origins and destinations involved (how much in Norwich)
- scheduled delivery/arrival times for customers (time windows)
- are jobs regular or occasional, how do customers place jobs, how are jobs planned, or routed and scheduled, - to what extent can customers specify day and time of service
- loading/unloading & parking operations - where, how long, moving goods from vehicle to premises,
- do you have many emergency jobs, and do emergency jobs cause special transport/parking problems
- finding the right person at the customer's premises
- how & when are goods/equipment delivered to depot (what happens upstream)
- vehicle efficiency

### **2. The problems experienced**

#### *a. Road conditions*

- Congestion
- parking
- signing
- information about traffic problems and works

#### *b. Traffic regulations*

- time bans
- size bans
- parking regulations
- bus lanes
- pedestrianisation
- traffic calming

#### *c. Customer constraints*

- time windows/requirements of customers (what level of delivery reliability do they achieve)
- parking, loading/unloading facilities
- access to shop with goods
- whether staff from site help load/unload
- checking/signing for goods procedures
- penalties and costs of failing to meet customers time requirements

#### *d. Impact of other road users*

- do you perceive other road users as causing any problems in Norwich
- Issue of service trips not being viewed in same light as goods trips by authorities and consequently penalised (cars v goods vehicles, parking v loading).

### **3. Sustainable policy measures and approaches**

#### *a. How would the following potential new policy measures affect your operations*

## Approach taken to the project

### *Policies to assist service vehicles*

- use of bus lanes
- traffic light priority
- designated public parking bays for service vehicles
- designing off-street/good access facilities in all new developments
- better signing
- reduce car traffic
- better information about traffic problems and road works
- reduction in car traffic/improve public transport, park and ride etc

### Road pricing to manage capacity

#### Giving potential to:

- fund improvements in public transport
- offer green incentives

### *Policies that may hinder service vehicles*

- truck routes
- pedestrianisation
- time bans
- size/weight bans
- parking regulations
- emission standards

### *b. What else they could service companies do themselves to reduce impacts*

Quality Partnerships for Urban Distribution - (allow different operating times, use of bus lanes etc is company comply with conditions)

time of day consolidation

consolidate for one street (only one service company on that street)

night-time/out of hours servicing

use of IT (routeing and scheduling, communications)

driver incentives for reducing mileage, fuel efficiency or time taken for round

### *c. What their customers could do to help reduce impacts*

Less strict delivery windows/allow out of hours deliveries

More on-site storage (of equipment, parts etc)

Easier to identify who placed the call/knows about the servicing requirements

## **Appendix C: Consultation meeting**

### **Topic outline for consultation meeting with policy makers**

#### **The role of urban goods and service transport and its impact**

Role of goods and service transport in urban areas  
Policy objectives relating to goods/service transport in urban areas  
Social and environmental impacts of goods and service transport in urban areas

#### **Current policy approaches**

Current use of policy measures relating to freight transport  
Change in freight policies and measures over time  
The impact of non-freight transport measures on the freight industry  
Freight and passenger transport policy measures  
Alignment of policies concerning freight transport at different levels of government  
Prioritisation of road space

#### **The role of industry**

Understanding the needs of the freight/service industries and their customers  
Role for industry to take action

#### **Policy approaches in the future**

Future policy measures targeted at sustainable distribution  
Other policies with knock-on effects for goods and service transport

## Appendix D: Discussion Groups

### Topic Guide for book supply chain discussion group

1. Introduction
  - welcome
  - project overview
  - taping session
2. Discussion of:
  - the book supply chain used by the participants - ask them to draw their own supply chain
  - distribution and delivery/collection operations
3. Discussion of:
  - distribution and delivery/collection problems
  - perceptions of Government policy on distribution
4. The scope for greater co-operation between manufacturers, retailers, wholesalers and freight transport companies and the distribution efficiency improvements that this could result in.
5. Policy measures that would potentially make distribution more difficult in a city centre - such as enlarging pedestrianised areas, increasing the vehicle time restrictions in pedestrianised areas, the introduction of lower speed limits in certain areas, traffic calming measures including speed humps etc.
6. Policy measures that would potentially make distribution easier in a city centre - such as allowing freight/commercial vehicles to use bus lanes, allowing freight/commercial vehicles to enter previously restricted areas (usually time restricted) for access only etc.
7. Quality Partnerships for Urban Distribution - consideration of the compromises that companies would be prepared to make in order to receive operating exemptions, which could include guaranteed time slots to make collections and deliveries in the city, preferential operating time allowances etc.
8. Ask participants how they could/would deal with the following policy measures as a supply chain:
  - if policy measures forced companies to change behaviour - e.g. access restrictions (time/space)
  - if policy measures encouraged companies to change - e.g. relaxed access time restrictions for companies complying with certain operating standards (vehicles powered by renewable energies)
  - if road pricing was introduced
9. Closing remarks

## Topic guide for goods and service vehicle drivers discussion

### 1. Their current operations - this could include:

- do they work for transport company or own account operation,
- type of goods they are transporting / service work they are doing & equipment carried
- average delivery size/weight
- vehicle size/weight
- trip patterns (multi v dedicated)
- time of day
- origins and destinations involved (how much in Norwich)
- scheduled delivery times for customers (time windows)
- planning or routeing and scheduling
- loading/unloading & parking operations - where, how long, moving goods from vehicle to premises,
- checking and signing for deliveries,
- vehicle efficiency: load factor and empty running, consolidation by company,

### 2. The problems experienced - this could include:

- Road conditions
- Traffic regulations
- Customer constraints
- Impacts of freight vehicles in Norwich

### 3. Goods and service traffic differences - this could include:

- different treatment by gov't/authorities
- conflict between freight and service traffic

### 4. Sustainable policy measures and approaches - this could include:

#### a. How they would respond to new policy measures

Measures assisting road goods/services (use of bus lanes, traffic light priority, Quality Freight Partnerships, better signing, better information about traffic problems and road works)

Policies that hinder road goods/services (truck routes, pedestrianisation, time bans, size/weight bans)

Other policies (Road pricing to manage capacity, offer green incentives to freight)

#### b. What could they do themselves to reduce impacts

- Quality Partnerships
- Shared distribution/city logistics
- Consolidation/Transshipment
- Less frequent but larger deliveries
- Deliver of different time of day (night time, collect and deliver in one go)
- use of IT (routeing and scheduling, communications)

#### c. What their customers could do to help reduce impacts (Less strict delivery windows/allow out of hours deliveries, More on-site storage, Less need/better system for checking/signing)

## Topic guide for premises discussion group

### 1. Their current operations - this could include:

- how many suppliers do you have
- how many product lines
- number of deliveries to your premises, time of deliveries & delivery time restrictions
- who makes deliveries/collections (who operates transport)
- do you have prearranged delivery times
- do you decide on when deliveries take place
- what are the critical factors that determine the number of deliveries
- how has number of deliveries changed over time
- do you have on-site storage and how has this changed over time
- off-street loading bays v on-street
- checking and signing for deliveries
- would fewer deliveries help or hinder your business

### 2. The goods transport problems they currently experience - this could include:

- how important is delivery reliability
- how often are deliveries unreliable
- what happens when delivery is disrupted
- does queuing of vehicles waiting to deliver happen
- conflict between customer transport and freight transport
- what scope is there to change delivery time, frequency etc
- do you perceive freight vehicles as causing any problems in Norwich

### 3. Services and other trips to the premises - this could include:

- type of services performed at site involve trips
- frequency of these service trips
- did these activities use to be carried out by employees (is total service trips increasing)
- do you have parking facilities
- how important are these services are their rapid despatch to your business

### 4. Sustainable policy measures and approaches - this could include:

#### a. *How they would respond to new measures*

- time bans
- size/weight bans
- parking regulations
- designing off-street/good access facilities in all new developments

#### b. *What else they could do themselves to reduce impacts*

- Less strict delivery windows/allow out of hours deliveries
- More on-site storage
- Use of fewer suppliers
- Less need/better system for checking/signing
- Shared distribution/city logistics
- Consolidation/Transshipment
- less frequent but larger deliveries
- time of day consolidation (joint collection and delivery)

#### c. *Joint initiatives*

- Quality Partnerships (allow different operating times, use of bus lanes etc. is company comply with conditions)