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TRANSPORT AND INNER CITY FIRMS: RESULTS OF THE LEEDS SURVEYS

by

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Patterson and May

ABSTRACT

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Twelve firms from the Holbeck Hunslet Industrial Area of inner Leeds were surveyed early in 1980 to determine the type, extent and severity of their transport problems. In order to compare and contrast these problems with those of firms located in an outer urban area twelve firms in the Stanningley area of Leeds were also surveyed.

The samples have been treated as a series of case studies and the results for individual firms are available from the authors. This paper presents the survey results aggregated for each of the study areas.

The predominant inner area problems revealed during the surveys, and amenable to solution by local authorities or the firms themselves, included: congestion and delays on the journey to work, on business trips and on commercial vehicle trips; inadequate parking at the firm; public transport difficulties for the journey to work; personal trips during the day; manoeuvring difficulties into and within premises for commercial vehicles; and delays during loading and unloading.

Taken together, the results of the five surveys which were conducted at each firm suggested that in terms of the number of firms affected, and the degree of severity, transport problems did not seriously disrupt firms' operations. Nevertheless they resulted in considerable lost time and in many cases a direct cost. There was a general inability of management to place a money cost against the problems which they mentioned and consequently there is the possibility that the impact of problems may be understated by local authorities.

With the exception of parking at the firm, and to some extent manoeuvring difficulties, firms in Stanningley suffered similar problems to those in Holbeck Hunslet. In the case of Leeds it could not be concluded that inner area firms experienced different types of problems, and to a greater degree of severity, than firms located elsewhere in the urban area. Solutions applicable to the inner area are therefore, likely to be appropriate elsewhere.

This paper is the first in a series reporting the results of surveys of samples of firms in Leeds and London.

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TRANSPORT AND INNER CITY FIRMS: RESULTS OF THE LEEDS SURVEYS

1. INTRODUCTION

1.1 Scope of the report

The report summarises the results of surveys of a sample of 12 inner Leeds firms in order to determine the type and severity of transport problems affecting inner city manufacturing and service firms and their employees, and the degree to which those problems affect firms' operations. In order to compare and contrast the problems of inner city firms with those of firms located elsewhere in the urban area, a further 12 firms taken from an outer area of Leeds have been surveyed.

The background and objectives of the project and the method which has been adopted to identify and analyse the problems is briefly outlined (Chapter 1). The Leeds study areas and the samples of firms selected for analysis are described (Chapter 2), and the response to the study as a whole and to the individual surveys is summarised (Chapter 3). Subsequent chapters deal sequentially with the results of the various surveys conducted at each firm. These are then drawn together to determine a shortlist of the more serious problems and to compare the inner and outer study areas.

Generally, the results are presented as aggregates of all firms in each study area. Separate case study reports have been prepared for each of the participating firms and an example is included as Appendix I. Case studies for the remaining firms are available from the authors.

1.2 Background

Economic regeneration is a key component of initiatives directed towards the inner areas. This is to be achieved largely by:

i) preserving existing inner city firms,

ii) encouraging indigenous growth, and

iii) attracting new firms.

Transport improvements have been seen by central government as contributing to these objectives, and all local authorities have been requested to give their transport programmes an 'inner area dimension'

either through existing TPP/TSG's or where applicable through the expanded Urban Programme. The initial submissions by partnership and programme authorities under their Inner Area Programmes indicate that local authorities regard transport as an important element in their overall inner area policies.

Examination of these IAP's suggests, however, that there is less of a consensus as to what might be the most appropriate type and level of transport investment(1).The proportion of additional funds available under the Urban Programme and allocated to transport varies, as does the type of improvement projects which are appearing in the current programmes. These range from small localised schemes to major investment in new transport infrastructure. Projects are frequently justified on the basis of helping to improve firms' operations and to increase the number and range of job opportunities either for existing or new firms, yet what evidence there is that these objectives are being met tends to be inconclusive. Local authorities concerned with industrial improvement appear to have widely differing views as to the most effective type of public sector investment, while recognising that current evaluation techniques do not provide adequate guidance.(2)

Before making an assessment of the most appropriate types of transport improvements and their likely benefits, it is necessary to determine what are the problems faced by inner city firms which are the result of transport factors and whether, in fact, these problems are unique to the inner city. A reliable indication of the range, severity and effect of these problems would allow transport's role in the economic well-being of inner areas to be placed on a much surer footing than at present.

Following the White Paper "Policy for the Inner Cities" (3), the Department of the Environment commenced the Inner Area Research Programme with a view to furthering the research effort which had resulted, inter alia, in the Inner Area Studies of Lambeth, Liverpool and Birmingham. The aim was to:-

> "..... develop a programme which will provide a deeper understanding, and basis of theory, on the forces at work within and upon the inner areas, and on the nature of the interactions with the rest of the conurbation and the region" (4).

At the same time a second strand of research was developed in consultation with the partnership areas. This focused on providing specific research support for the development of inner area programmes and on monitoring the effectiveness of these programmes and the resources made available under the expanded Urban Programme.

A call to submit research proposals in June 1977 resulted in 22 projects under the main programme (5). The proposal for this project was submitted at that time, but was seen as more appropriately falling within the responsibility of the Department of Transport. It is among a number of projects having an inner area dimension and administered by various policy directorates of the Department of the Environment and other Government departments, but closely connected with the projects of the main Research Programme. Details of all projects may be found in ref. 5.

1.3 Objectives of the project

The objectives of the project are to identify:

i) the extent to which transport problems affect the operation of inner city firms,

ii) whether these problems are more severe in the inner city than elsewhere, and

iii) transport measures which could ease these problems.

The study is designed, firstly, to look in detail at the transport problems which inner city firms face by endeavouring to quantify and, ideally, cost their impact on the firm. Such quantification should help to place in context employers' statements of their perceived problems, and also the extent to which it is worth the local authority, and the firm, spending money to alleviate these problems. Secondly, it is designed to draw comparisons between firms in inner and outer city locations to determine whether there are differences in the type and severity of their transport problems and whether any solutions identified are likely to be applicable in other parts of the urban area. Thirdly, it is designed to aid policy and programme formulation by identifying and evaluating possible solutions in consultation with local authorities and firms' management.

Although concentrating on the movement of goods and services and person trips (journey to work, business trips etc.) the study is sufficiently flexible so that other issues which are transport related can be identified and included if they appear to be significant.

1.4 Study methodology

1.4.1 Guidelines for the project A review of the literature (6) sought guidance from a number of recent surveys on the most suitable firms to study; the most common types of problems; and the most useful methodology to adopt. The following broad conclusions provided a starting point from which to develop the study:

i) there are grounds for concentrating on firms in manufacturing and associated service sectors,

ii) transport problems are of considerable concern to inner city firms and transport based solutions may therefore be appropriate as a means of improving conditions for local firms staying in the area,

iii) transport factors do not appear to be particularly dominant among problems causing firms to relocate, nor are they dominant determinants of location for firms moving into an area,

iv) site specific problems seem to be at least as important as, and probably more than, problems of longer distance movement,

v) there is at present a lack of quantitative information as to the cost to the firm of its transport problems, and hence how much it is worth spending to remove or reduce them,

vi) there is little guidance in the literature as to the appropriate methodology for the study, in particular, the quantification of the scale and effect of many of the likely problems.

The review does, however, leave a number of doubts on these issues, and is of little help regarding two of the objectives of the study, namely in determining whether the transport problems identified are peculiar to the inner city, and the value of solutions designed to reduce or remove these problems.

1.4.2 Basis of the methodology Because so little quantified information exists, it was decided to start from first principles by identifying the problems which might exist, checking these against employers' statements of their perceived problems, and designing more detailed surveys of the movements of employees, visitors and inbound/outbound goods and services to quantify the extent of these problems. That is, the approach starts at the individual firm and asks:

i) is there a problem?

ii) how large is the problem?

iii) what is its effect?

iv) what costs does it give rise to?

From the answers to these questions it determines the type and value of possible solutions. An assessment of the likely problems indicates which costs (or proxies) are to be estimated. This then largely determines the data collection requirements in terms of surveys and questionnaires which, because of the availability and form of this data, tend to fix the method of analysis. The starting point is hence the identification of likely problems.

The review of the literature provided an initial listing of possible problems to the firm, while saying little about their effect and relative severity. (Table 1). The list was regarded as tentative, one of the objectives of the study being to expand, clarify and evaluate these problems, but it provided a useful basis from which to design the surveys. It suggested that it was useful to visualize the operation of an individual firm as shown in Figure 1, that is, involving personal and business travel by employees, visits to the firm, and inward and outward movement of goods and services. All three links are potential sources of problems, indicating that data should be obtained from the firm itself, its employees, and visitors and goods vehicles arriving at the firm.

Table 1. Transport problems of inner city firms

Nature of problem	Likely effect
<u>For employees</u>	
- insufficient or expensive car parking both on and off street	- lost time
- congestion on local streets, affecting both car drivers and public transport users	- additional cost
- inadequate public transport, in particular inadequate services to some areas, low level of service, unreliability, transfers and cost	- frustration and absenteeism
	- adverse effect on recruitment and retention of suitable staff
<u>For deliveries and visits to and from the firm</u>	
- congestion, caused by both parked and moving vehicles	- lost time by delays and queueing on local streets and at delivery points
- lack of parking space, both on and off streets, for goods vehicles	- lost time because of extra travel distances
- difficult access to premises along narrow, twisting and badly maintained streets, often not adequately signposted	- additional delivery costs
	- restrictions on size of vehicle
- indirect routeing	- delays in vital deliveries
- inadequate on-street loading zones	- additional stockpiling costs
- inadequate loading/unloading facilities and buildings	- missed appointments
	- lost sales and goodwill
- inadequate manoeuvring space on local streets and within premises	
- restrictions by local authorities or clients on delivery times, loading zones etc. and lack of concern for firms by local authorities when designing traffic management schemes	

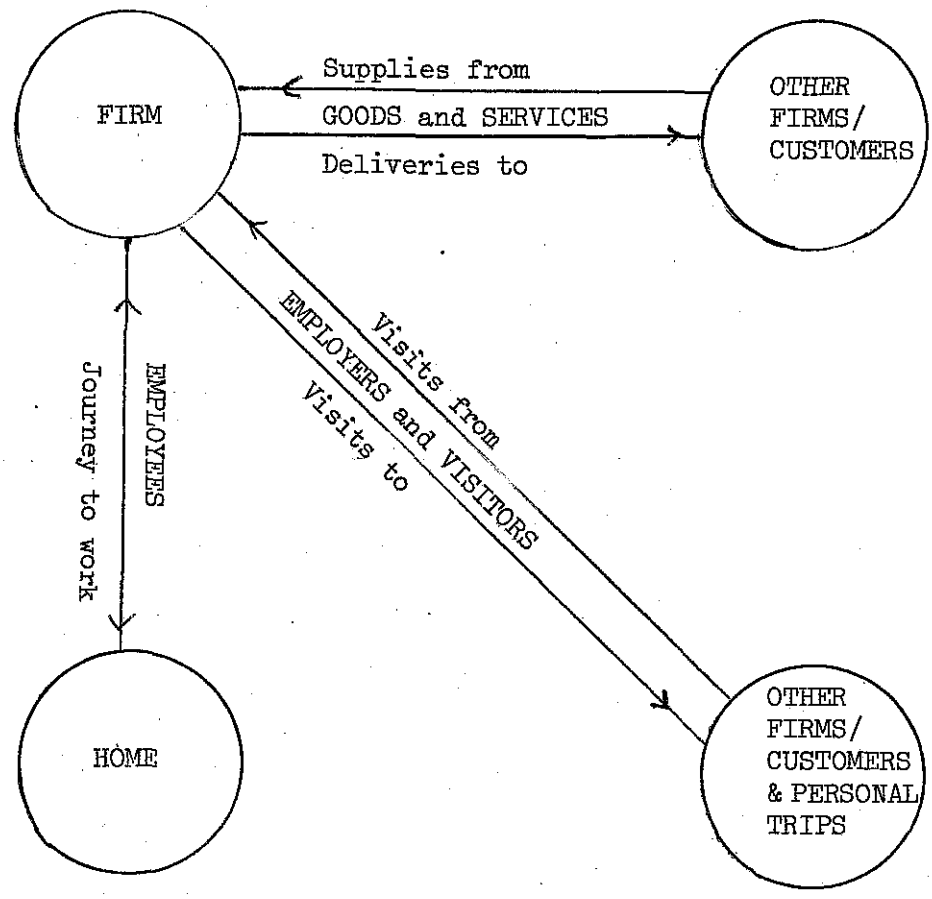

Figure 1. Transport activities of the firm

1.4.3 Sampling and study areas One of the most difficult problems in surveys of industry is the wide range of levels and types of activity (even within a particular industrial grouping), and the size of the sample which is required as a result if statistically reliable results are to be obtained. It was decided early in the study's development that since quantification would require new and unproven techniques it would be inappropriate to attempt the large sample required for statistical purposes - at least until the techniques had been tested. Instead it was decided to take small groups of firms and treat them as a series of case studies which will be of benefit in identifying improvements for particular firms, demonstrating and evaluating the range of improvements open to local authorities and firms in a particular area, and enabling the lessons learnt to be transferable to other cities.

Two study areas have been selected within districts identified as priority areas under the Inner Urban Areas Act, 1978: the Holbeck Hunslet Industrial Area (HHIA) in Leeds (a programme authority) and the Shoreditch area in LB Hackney in London (a partnership authority)

representing inner area conditions in cities of greatly different size. In addition, two outer urban areas, Stanningley, located between Leeds and Bradford and the Brimsdown area of L.B. Enfield, have been chosen as outer area controls against which the problems of the inner area firms can be compared, and to determine whether solutions considered for the inner areas could have wider application. The criteria for selection of control areas is discussed in ref. 7. As far as possible the control area should reflect the industrial structure and the type of workforce of the inner area. * It should contain a mix of age and density of development, transport infrastructure and traffic and parking conditions. A further useful criterion is that it should be a potential relocation area for inner firms who may be considering moving.

It has been assumed that the output from a first study of this kind will be used to identify the range of possible measures that could be adopted for those firms most vulnerable to transport problems, rather than to compare the availability of measures for different types of firms. Samples of 12 firms in each of the Leeds areas and 20 in each of the London areas have been chosen although it will inevitably not permit a full breakdown of results by, for example, size and activity. Smaller samples were adopted for Leeds since it appeared from the pilot study that problems were significantly less severe than in London.

The criteria for sample selection are discussed in ref. 8. Proportional sampling on the basis of standard industrial classification (SIC), ensures that the firms selected are representative of the type of activity, the type of workforce, and the size distribution of all firms in each study area. The sample for each SIC is initially carried out for SIC's 3-19 (manufacturing), 20 (construction) 22 (road haulage) and 23 (distribution), using first numbers employed and secondly numbers of firms in each SIC and where there are significant differences in the samples required based on these two approaches, the former is given greater weighting in deciding the final sample. Two

... ...

* This is likely to be extremely difficult to achieve in practice because of the historical development of industry within an urban area.

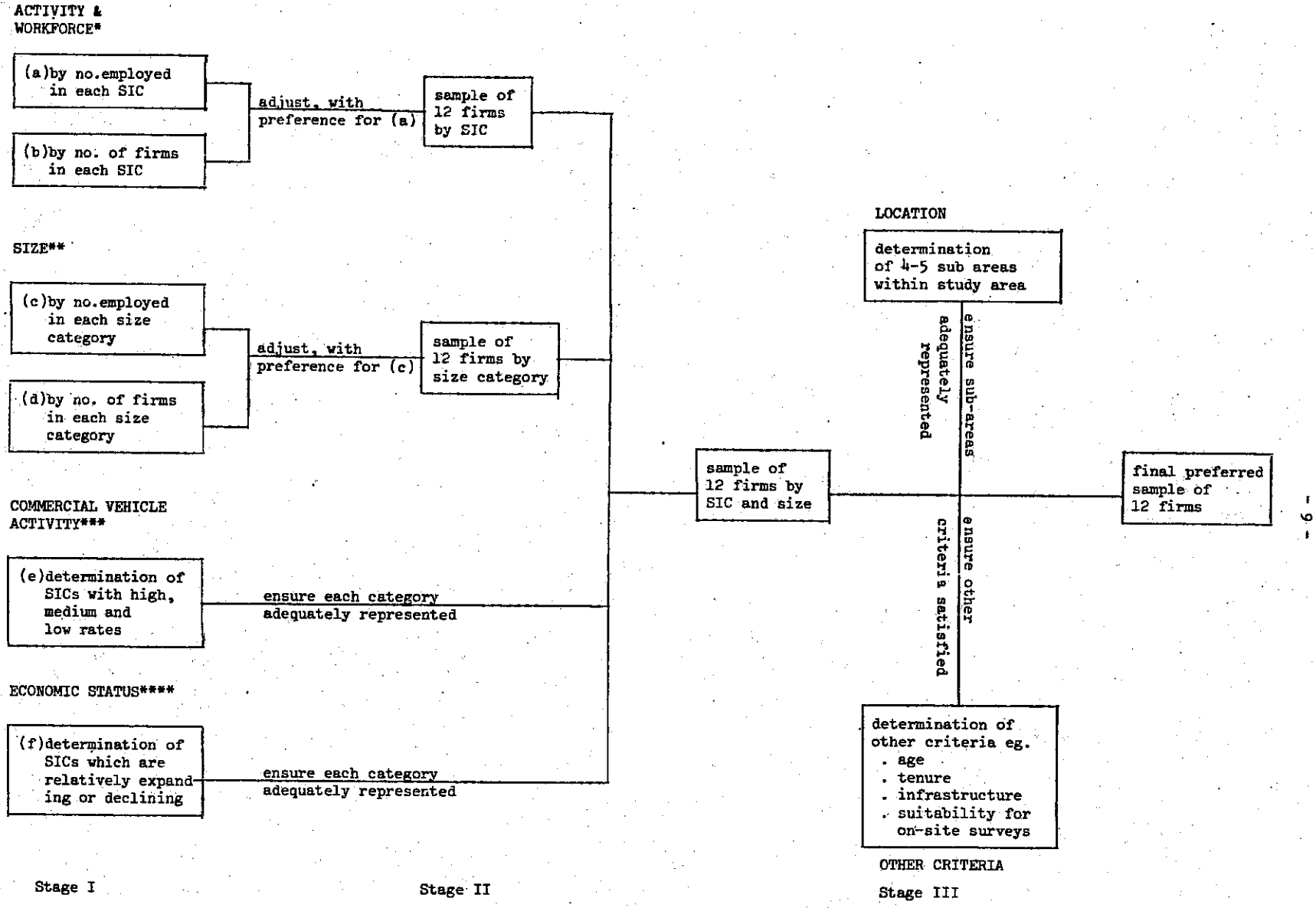

Figure 2 : Criteria for sample selection
(for each study area)

* SICs 3-19, 20, 22, 23

** Small 5-99; large 100+ employees

*** high, medium and low com.veh. generation rates.

**** SICs expanding or declining in their share of total urban area employment.

further criteria are applied to ensure that the proportional samples are obtained for firms from (a) SICs which over recent years have been expanding and others which have been declining in terms of their share of the total employment within the urban area concerned*, and (b) SICs which are typically characterised by high, medium and low rates of commercial vehicle activity.**

A number of other criteria, including length of tenure and the necessity to sample from different locations within each study area, are applied to determine a final preferred sample. The procedure is outlined in Figure 2.

1.4.4 Survey design Five surveys were conducted at each firm. Interviews and self completion questionnaires were used to obtain information from management, employees, visitors and commercial vehicle drivers and cover the possible sources of transport activity of the firm (Fig. 1). These were supplemented by on-site data collection to record actual operating conditions. Further details of survey design are contained in refs. 9 and 10. The surveys were tested in a pilot study (Section 1.4.6) and a number of minor modifications made to design and administration. The surveys adopted for the main sample of firms are shown in Table 2, and the interview schedules, questionnaires and survey forms are reproduced in full in ref. 10. Firms are re-visited after the analysis to discuss the results and the value of solutions.

1.4.5 Analysis method There are three stages in the analysis:

a) An overall assessment of the type, severity and effect of transport problems; identification of a shortlist of the more serious problems; comparison between inner and outer

... ...

* Clearly there is always the possibility that within a declining industry there will be cases of individual firms which are expanding, and vice versa.

** Because of the wide range of activity within each SIC, such a categorisation, based on previous surveys (6), while being indicative of the industry as a whole, may not be accurate for individual firms.

Table 2. Surveys for the main sample

Source *	Type of survey	Administration
1. Employer (MQ and MI)	a) Written questionnaire relating to background data on the firm	Distributed during initial personal contact with each firm and collected and checked by ITS interviewer at the time of the management interview.
	b) Management interview based on structured questionnaire - transport operations of the firm; type and effect of transport problems	ITS interview staff
2. Employees (EQ)	Written questionnaire applicable to all employees containing 3 sections: i) journey to work ii) personal trips, and iii) business trips during the working day each section relating to background data and identification of problems.	Distributed to all (or where necessary an agreed sample of) employees at place of work: distribution and collection arranged by the firm.
3. Commercial Vehicle Drivers (DI)	Driver interview (of all c.v. drivers), based on structured questionnaire - background data and identification of problems.	ITS staff before vehicle departs premises; each firm surveyed for one full working day.
4. Visitors to the firm (VQ)	Written questionnaire relating to the trip to the firm - background data and identification of problems.	Distributed by firm's staff for completion during the visit; questionnaires distributed to visitors over a period of one week at each firm.
5. On-site survey (OSS)	a) parking at the site and on surrounding streets b) manoeuvring for commercial vehicles c) waiting and delays d) loading/unloading conditions	ITS survey staff; each firm surveyed for one full working day, at the same time as the driver interview (3, above).

* Abbreviations are used subsequently in the text.

study areas (using the individual and aggregated results of the surveys described in Section 1.4.4).

b) Further more detailed analysis of the serious problems using survey results and other background data obtained from such sources as local authorities.

c) Analysis of the range and value of possible solutions.

This paper deals with (a) and is the first in a series of working papers reporting the results of surveys in Leeds and London. It is intended to report separately the results of (b) and (c).

The analysis starts by considering the individual firms as a series of case studies. The management interview provides an initial description of problems and their effect, and ideally an estimate of the cost to the firm. These are then checked against the results from the other surveys in order to confirm their extent and to allow other issues not mentioned by management to be raised. A typical case study for an individual firm is presented in Appendix I. Results are then aggregated to indicate the number of firms or individuals experiencing a particular problem and the degree of severity of that problem, in each study area. The detailed analysis of serious problems and possible solutions is discussed in ref. 11.

1.4.6 Pilot study A pilot study of eight firms (four in each of HHIA and Stanningley) was carried out in June 1979, in order to test the adequacy of the overall approach and the design of the individual surveys, as well as determining the usefulness of proceeding with a full sample of firms in the outer control.

An evaluation of the pilot and the results of the surveys are reported elsewhere (10, 11). A number of alternative survey formats were tested (principally prompted vs. unprompted), and from the experience of the pilot a number of modifications were made to the design and administration of the main surveys. With minor exceptions noted in the presentation of results *, it has been possible to utilise the pilot surveys and hence it was only necessary to sample a further 16 firms for the main survey. The results presented in this report include both pilot and main survey firms.

... ...

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1.5 Interpretation

Firms in two areas of Leeds have been selected for study. While it is intended that the results from this project will be of wider use and provide guidance in assessing the transport situation of inner city firms in general, it is unavoidable that a number of specific aspects of the analysis will depend on characteristics of the study areas. In the case of longer distance movement, the position of Leeds in relation to the motorway system is likely to be significant. For urban trips the local transport infrastructure, parking and loading conditions, and the public transport system will be important determinants of operating conditions. The study areas have been selected in an attempt to minimise any locational factors which would significantly influence the results.

Relatively small samples of firms have been drawn from each of the study areas. While the firms selected are representative of different types of industry in these areas, each firm has its own characteristics - location within the study area, premises and buildings, internal policy related to transport, etc. - and will also not necessarily represent the large variations in activity and nature of operations which may be found within any SIC.

By adopting a case study approach, these characteristics can be treated explicitly on a firm by firm basis. Inevitably, results which are aggregated for each study area will reflect these characteristics, particularly relating to on-site issues and matters of company policy which affect transport operations. Subject to these comments, the summary of transport issues and problems facing two sets of Leeds firms should be useful in assessing the likely range and severity of problems facing firms elsewhere.

2. STUDY AREAS AND SAMPLE SELECTION

2.1 Holbeck Hunslet Industrial Area (HHIA)

The HHIA is an area of approx. 1.1 sq. miles immediately south of Leeds city centre bounded by the River Aire to the north and east, Wellington Road and the A58 to the west, and the extensions of the M1 and M621 to the south. (Figures 3 and 4). The area is almost entirely industrial and there is negligible residential population, although there are extensive residential developments to the east, west and south which serve as labour catchments. It is the major industrial concentration in the Leeds M.D., with a total employment of 25,000 (7.6% of Leeds M.D. total), of which 57% are engaged in manufacturing.

There is a diverse industrial base consisting of three principal elements:

a) The traditional industries of the Leeds area - engineering, clothing/textiles and printing, have historically located within HHIA. They tend to be large, well-established firms.

b) Smaller specialist firms, providing inputs to, or associated with the production processes of, the major industries.

c) A recent growth in the relative importance of the warehousing /distribution sector, partly associated with the more well-established industries, partly to take advantage of the proximity to both the central area and the motorway system. This is in spite of a general trend for the relocation of major distribution services into areas further to the south of Leeds.

While these groups are represented throughout the study area, there is a concentration of manufacturing in the east, the central sector contains a mix of manufacturing and warehousing/distribution, and the latter dominates in the west. Firms employing less than 100 persons account for 87% of all firms and 29% of total employment. (The corresponding figures for firms employing less than 25 persons are 63% and 10% respectively). Approximately 2% of firms employ more than 500 persons, but account for 36% of total employment. Further details of the industrial structure are given in Section 2.3

In spite of substantial new development, particularly in warehousing, the bulk of the industrial building stock consists of 19th and early 20th century premises and the area's infrastructure exhibits

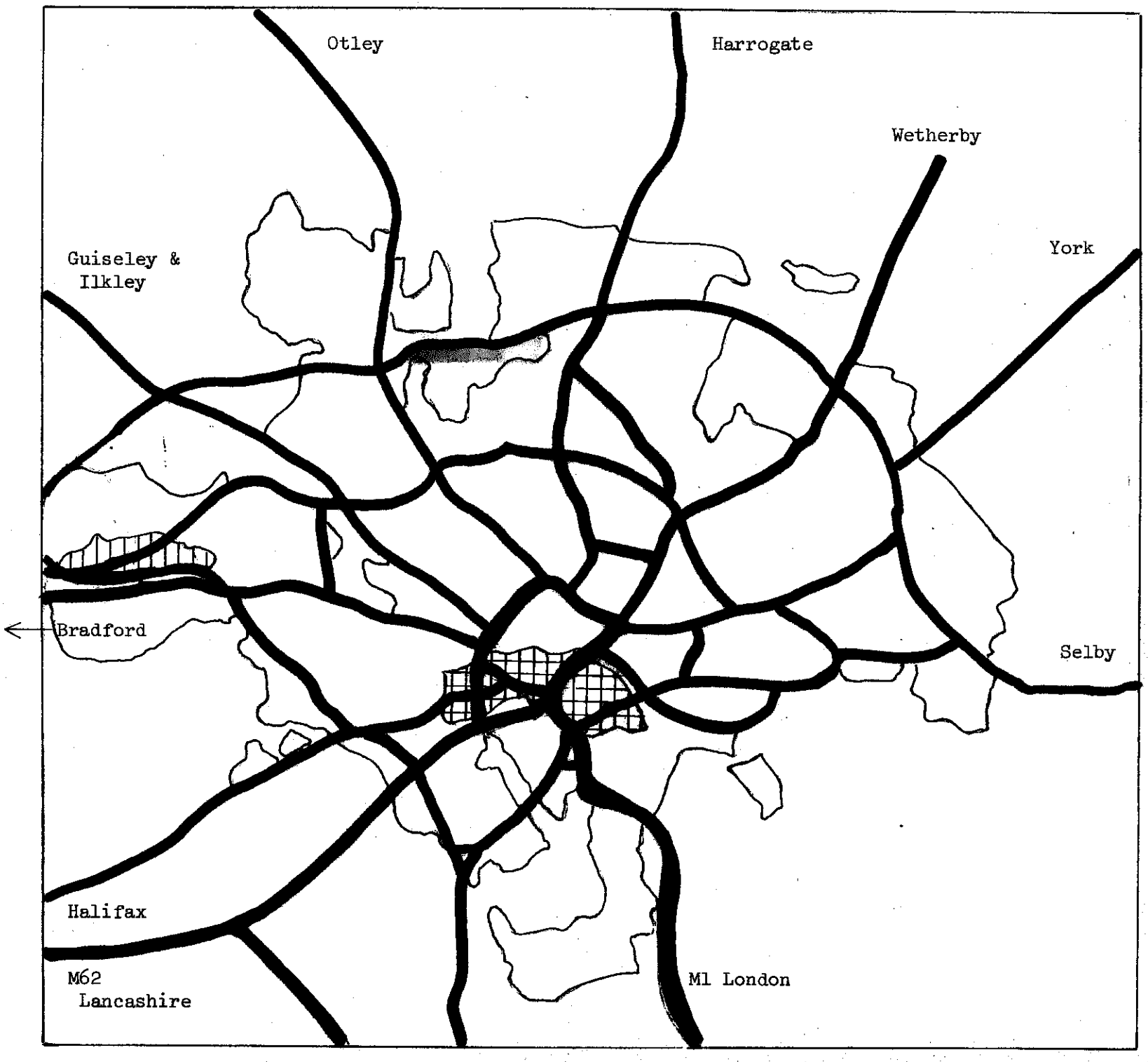


Figure 3

Leeds Study Areas

Extent of Urban Area

Holbeck/Hunslet Industrial Area

Stanningley Industrial Area

Major Roads

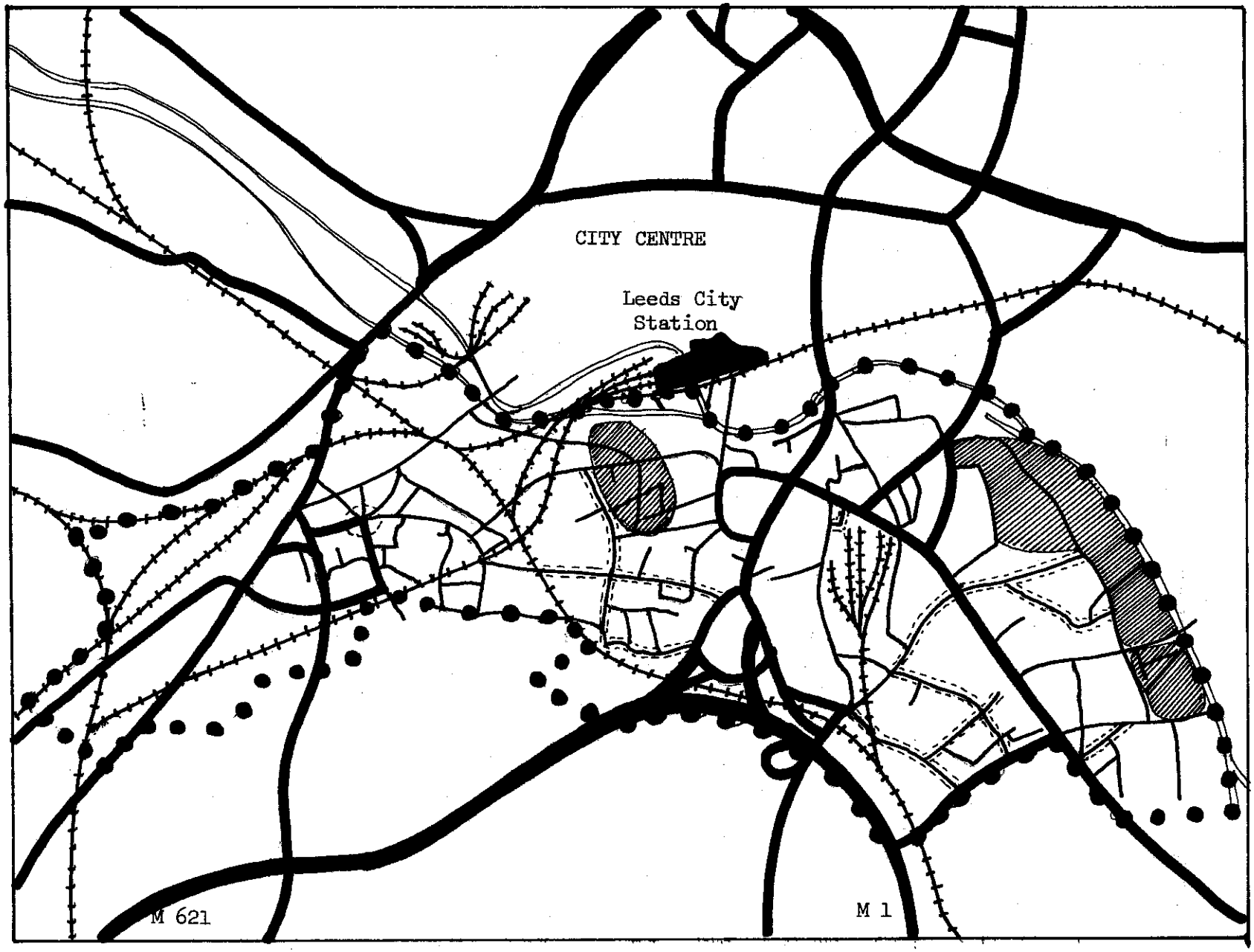


Figure 4

HHIA Study Area

Boundary of Study Area

Waterway

Railway

Motorway

Other Major Road

Minor Road within Study Area

Road Scheduled for Improvement

Areas identified as possible Industrial Improvement Areas.

many of the characteristics typical of inner areas. The main problems of the area have been identified as: (12)

> "Obsolete Victorian buildings which provide poor working conditions and are often ill-suited to modern processes.
>
> "Inadequate access to firms' premises because of narrow and ill maintained streets, lack of parking space and poor internal layout. Also a poor road distribution system - reducing the advantages of proximity to the motorway system.
>
> "Lack of space discouraging firms from expanding or re-organising and, therefore, from creating new jobs.
>
> "Fragmented arrangement and holdings of land for development; many vacant sites on their own are small and difficult to develop, particularly for the private sector and no large sites are available to meet a stated demand. The current total of vacant development sites (37 hectares) is made up of 71 sites."

The area is well served in terms of the national transport network. Major north-south and east-west motorways (M1 and M62) intersect at the southern extremity of the Leeds urban area and are directly connected to the study area via the M621 and M1 urban extension, meeting at the South Leeds interchange and forming a major intersection at the southern boundary of the study area. Connections to the east, west and north are made, in part, via recently constructed distributors while a one-way system using the existing road network, provides access to the study area itself and to the city centre. The local roads used for access to firms and movement within the area are based on the traditional road system predating motor transport. Many of these local streets are narrow with poor alignment. (Figure 4).

Immediately to the south of the study area at Stourton there is a major freightliner terminal which is currently being expanded and which serves as a regional depot. The area is penetrated by rail and there are goods yards at Whitehall Road and Hunslet, the latter currently being proposed as a possible site for industrial redevelopment. Water transport is available via the Aire and Calder navigation which forms the eastern study area boundaries. The Leeds and Liverpool Canal, which forms the northern boundary of the area is no longer a significant commercial waterway. There is a B.W.B. depot at the head of the Aire and Calder navigation.

Local and regional bus services concentrated on the city centre cross the study area from the south-west, south and south-east and there is one local bus service through the western part of the study area connecting it with the city centre and the adjacent residential area to the south. Regional rail commuter services terminate at Leeds city station. There are no stations within the study area.

Leeds is a programme authority under the Inner Urban Areas Act, 1978. Partly as a result of HHIA being within the area defined as inner city for the purposes of the urban programme and partly as a result of earlier initiatives, there are a number of improvement policies and proposals (as well as specific projects) aimed at ensuring the continued economic viability of the area. Among the more important of these are:

a) A local plan reviewing planning policy, designed to encourage and promote regeneration and maximise land and building resources.

b) A subsequent development and investment programme outlining public sector activity to encourage and support private sector investment.

c) Inclusion as part of the second priority area to be declared under the Leeds Urban Programme.

d) The identification of three potential Industrial Improvement Areas (Riverside, Goodman Street and Water Lane - see Figure 4).

There are a number of improvements to the road network currently under way or programmed (Figure 4). These are primarily junction improvements, realignment/reconstruction, and maintenance. Longer term projects being reviewed include the South Leeds interchange and connections to the city centre, extension (in some form) of the M1 beyond Leeds, and the uncompleted sections of the inner ring road. There has been little recent change to bus services; however, a reduced fare "multi-ride" experiment currently under way involves selected services passing through HHIA. Parking policy is currently under review.

2.2 Stanningley outer control area

A shortlist of six possible outer control areas within the Leeds area was considered and, on the basis of the criteria outlined in ref. 7, the Stanningley area was selected. Stanningley is located between Leeds

and Bradford on the western periphery of, but contiguous with, the Leeds urban area. (Figure 3). The study area is approximately one square mile, bounded on the south and west by the Leeds outer ring road (Stanningley by-pass), and extending along both sides of the old Leeds-Bradford Road and Stanningley Road. The northern and eastern boundaries are somewhat loosely defined and merge with the residential areas of Bradley Hill and Bramley. (Figure 5). There are 5000 people employed in the study area, 70% in manufacturing.

There is a concentration of industry in the engineering groups, accounting for 51% of total employment. The other large group is textiles with 14%. The importance of warehousing and the distributive trades is considerably less than in HHIA but, as discussed in Section 2.3.1, the industrial structures of the two areas show an overall similarity. Firms employing less than 100 persons account for 91% of all firms and 50% of total employment. (The corresponding figures for firms employing less than 25 persons are 71% and 22% respectively). There are no firms employing more than 500.

As with HHIA, much of the industry is traditionally based well-established firms, however the large post war Grangefield Industrial Estate accounts for 30% of total employment, and there are several potential relocation sites for firms considering moving into the area. With the exception of these more recent developments, much of the building stock and infrastructure is old and large sections exhibit typical inner city characteristics such as narrow streets and cramped premises which provide a useful comparison with the conditions in HHIA. Although outside the inner city, as defined for the Urban Programme, Stanningly has been identified as satisfying the criteria for possible IIA declaration.

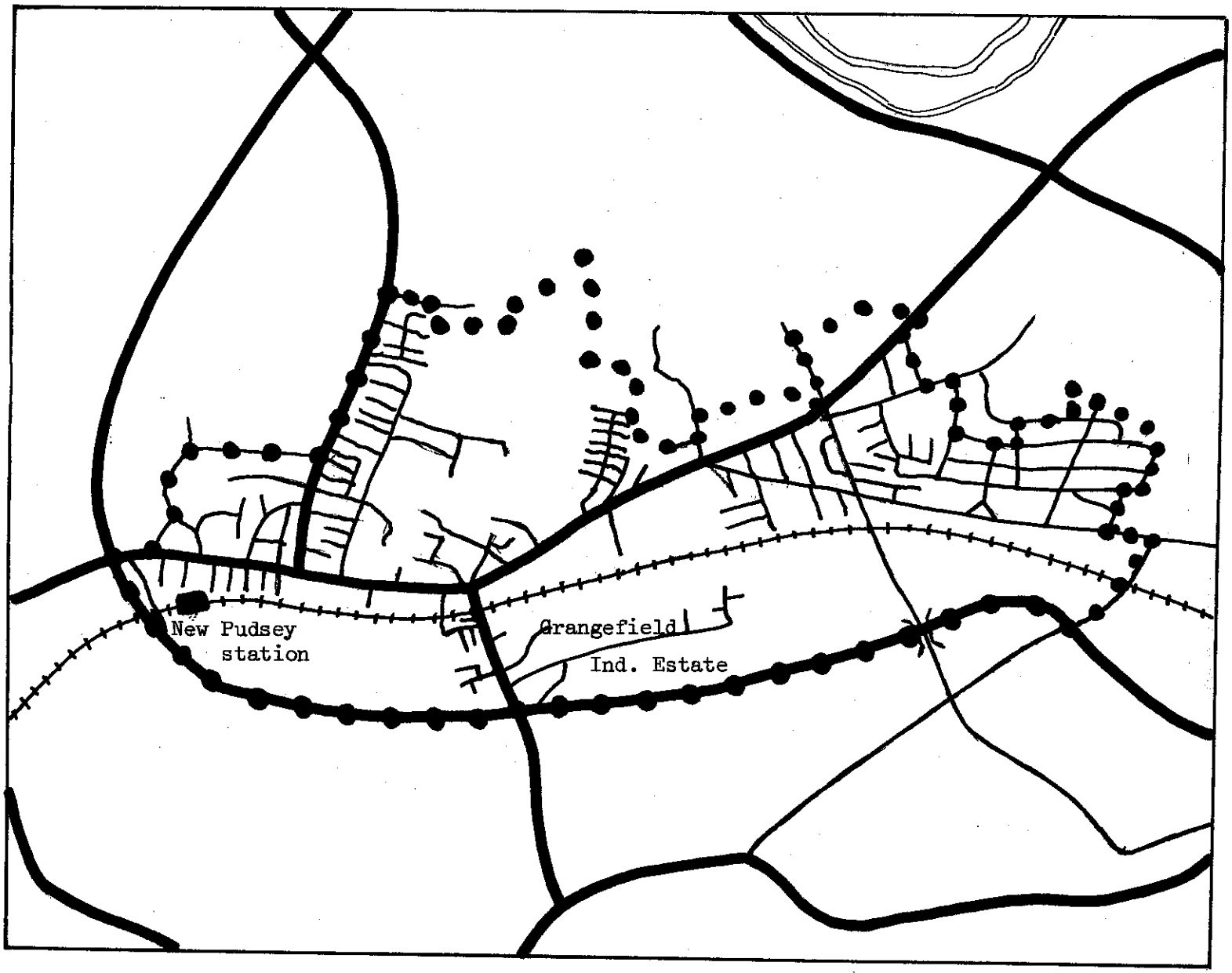


Figure 5
Stanningley Study Area

Boundary of Study Area
Waterway
Railway
Major Road
Minor Road within Study Area

The outer ring road (Stanningley by-pass) provides connection with the motorways to the south of Leeds, while the main east-west movement within the study area, and to Leeds and Bradford, is via the old Leeds-Bradford Road and Stanningley Road (Fig.5). With the exception of a street closure and associated one-way section there has been little recent change to the local street network. The Leeds-Bradford rail line crosses through the study area and there is a passenger station, New Pudsey, at the western extremity. There are no goods facilities. Bus services through the area link adjacent residential areas with central Leeds and with Bradford.

2.3 Comparison: HHIA and Stanningley

Comparison of the two areas is based on the following factors (using data on firms employing five or more persons supplied by West Yorkshire County Council and based on the 1976 Census of Employment):

(i) overall industrial structure
(ii) current economic activity
(iii) distribution of manufacturing industry
(iv) distribution of service industry
(v) infrastructure and traffic generation.

2.3.1 Overall industrial structure

Tables 3 and 4 show the overall industrial structure by activity and size of firms. Table 3 indicates the essentially manufacturing nature of both areas with Stanningley having a somewhat higher proportion of the workforce employed in manufacturing. Table 4 indicates that small firms account for a significantly larger proportion of total employment in Stanningley than HHIA, although the proportion of small firms is not greatly different. Table 5 lists the important SIC groups in terms of employment and demonstrates the broad industrial base of HHIA, whereas industry in Stanningley is much more concentrated in the engineering and textile groups. Distributive trades are not as important in Stanningley but are represented enough to enable adequate coverage in the sample of firms.

Table 3: EMPLOYMENT STRUCTURE AND NUMBERS OF FIRMS
(numbers and percentage)

	no. of persons employed		no. of firms	
	HHIA	Stanningley	HHIA	Stanningley
manufacturing	14126 (56.9%)	3639 (69.7%)	153 (39.3%)	68 (45.3%)
construction	1117 (4.5%)	447 (8.6%)	34 (8.8%)	11 (7.4%)
services	9585 (38.6%)	1131 (21.7%)	202 (51.9%)	71 (47.3%)
total	24828 (100%)	5217 (100%)	389 (100%)	150 (100%)

Table 4: SIZE DISTRIBUTION: EMPLOYMENT AND NUMBERS OF FIRMS
(SIC 3-27; percentage of total employment and percentage of total no. of firms within each size category)

	proportion of total employment		proportion of total no. of firms	
size category*	HHIA	Stanningley	HHIA	Stanningley
<11	3.7	6.8	37.5	38.6
11-24	6.6	14.6	25.5	32.0
25-99	18.7	27.9	23.9	20.0
100-199	13.8	26.9	6.4	6.7
200-499	21.0	23.8	4.4	2.7
500-999	18.1	-	1.5	-
1000+	18.1	-	0.8	-
total small	29.0	49.3	86.9	90.6
total large	71.0	50.7	13.1	9.4
total	100.0	100.0	100.0	100.0

*small 5-99; large 100+

Table 5 : EMPLOYMENT - TOP 10 SIC GROUPS
(percentage of total employment in each area)

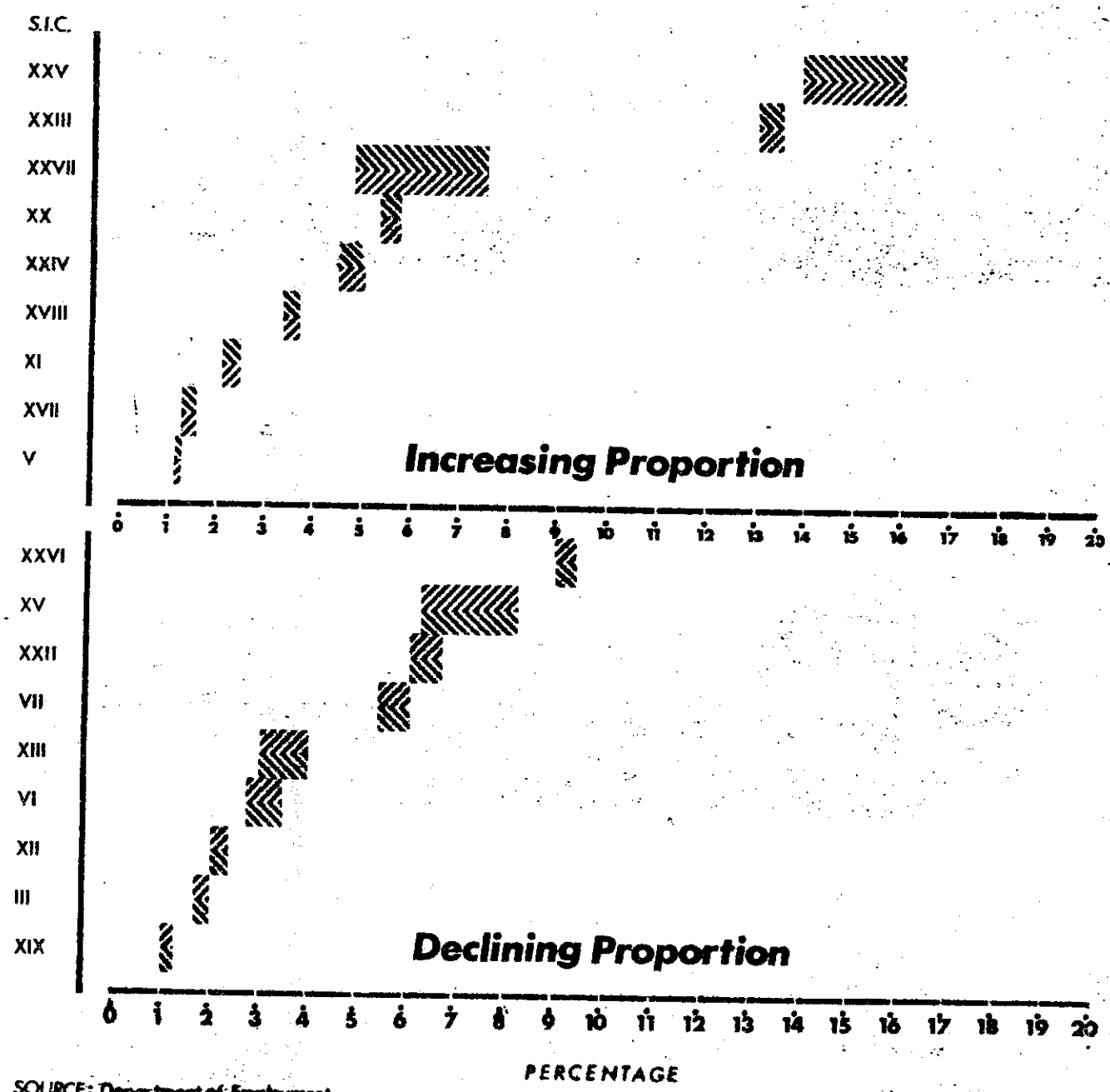
HHIA			Stanningley		
SIC		% of total employment	SIC		% of total employment
23	Distrib. trades	16.0	7	Mech. eng.	19.9
11	Vehicles	10.1	12	Metal goods n.e.s.	14.0
26	Miscell. services	8.9	9	Elect. eng.	13.9
6	Metal manufact.	8.7	13	Textiles	13.6
18	Paper, printing etc.	8.1	20	Construction	8.6
7	Mech. eng.	7.9	23	Distrib. trades	7.7
15	Clothing etc.	7.5	26	Miscell. services	5.2
3	Food, drink etc.	6.0	25	Professional services	4.3
27	Public admin.	5.6	6	Metal manufact.	2.5
20	Construction	4.5	24	Insurance, banking	2.0
	total	83.3%		total	91.7%

2.3.2 Current economic activity

Considering the top ten SIC groups of each area and comparing these with changes in the proportion of total employment in Leeds MD for the period 1971-75 (Table 6)will give some indication of expanding and contracting industries. It will not necessarily indicate the economic situation in each of the study areas, nor the position of individual firms - since particular firms may be expanding in spite of contraction in the industry as a whole, and vice versa. Furthermore decreases in employment may not necessarily be associated with contraction or decline of the particular sector but may also result from changed production techniques. From Table 7, both areas exhibit a reasonable mix of expanding and declining industries.

Table 6

The Proportion (%) of Total Employment for the Major Industries of Leeds M.D. 1971-75.



SOURCE: Department of Employment.

S.I.C. NAME	1971-75 TOTAL EMPLOYMENT CHANGE
Professional and Scientific	8400
Distributive Trades	2500
Public Admin and Defence	9400
Construction	900
Insurance, Banking	2400
Paper, Printing, Publishing	1000
Vehicles	1100
Timber, Furniture	800
Chemicals and Allied	500
Miscellaneous Services	-800
Clothing and Footwear	-5600
Transport and Communications	-700
Mechanical Engineering	-1600
Textiles	-2800
Metal Manufacture	-2000
Other Metal Goods	-500
Food, Drink, Tobacco	-900
Other Manufacture	-600
TOTAL CHANGE FOR MAJOR INDUSTRY	+11500
TOTAL CHANGE FOR ALL LEEDS INDUSTRY	+10400

Table 7 : EXPANDING AND DECLINING SICs IN THE TWO STUDY AREAS.

HHIA: Top 10 SICs

Expanding		Declining	
23	Distrib. trades	26	Miscell. services
11	Vehicles	6	Metal manufact.
18	Paper, printing etc.	7	Mech. eng.
27	Public admin.	15	Clothing etc.
20	Construction	3	Food, drink etc.

Stanningley: Top 10 SICs

Expanding		Declining	
9	Electrical engineering	7	Mech. eng.
20	Construction	12	Metal goods n.e.s.
23	Distrib. trades	13	Textiles
25	Professional services	26	Miscell. services
24	Insurance, banking	6	Metal manufact.

Expanding = SICs which increased their share of total Leeds MD employment 1971-75 (Table 6).

Declining = SICs which decreased their share of total Leeds MD employment 1971-75 (Table 6).

2.3.3 Distribution of manufacturing industry

Table 8 indicates the distribution of manufcturing industry by employment and number of firms.

There are significant differences in terms of employment with SICs 3, 6, 7, 9, 11, 12, 13, 15 and 18. If it is accepted that in terms of nature of activity, workforce skills and goods traffic generation SICs 6,7 and 12 are likely to be reasonably similar, the following differences remain:

In HHIA but not Stanningley	In Stanningley but not HHIA
3 Food, drink etc.	9 Electrical engineering
11 Vehicles	13 Textiles
15 Clothing etc.	
18 Paper, printing etc.	

Table 8: DISTRIBUTION OF MANUFACTURING INDUSTRY (percentages)

SIC group	Proportion of total manufact. employment (%)		Proportion of total no. of manufact. firms (%)	
	HHIA	Stanningley	HHIA	Stanningley
3 Food, drink etc.	10.6	0.1	5.2	1.5
4 Coal and petrol etc.	0.9	-	2.6	-
5 Chemicals etc.	2.5	0.4	5.2	1.5
6 Metal manufact.	15.2	3.6	6.5	5.9
7 Mech. eng.	14.0	28.5	17.7	22.0
8 Instrument eng.	0.1	1.0	0.7	1.5
9 Elect. eng.	1.5	20.0	4.6	8.8
11 Vehicles	17.8	0.3	5.9	1.5
12 Metal goods n.e.s.	3.6	20.0	6.5	16.2
13 Textiles	0.4	19.5	3.9	20.6
14 Leather etc.	0.1	-	0.7	-
15 Clothing etc.	13.2	1.0	13.7	2.9
16 Bricks, pottery etc.	1.3	0.9	2.0	1.5
17 Timber, furniture	4.1	2.1	7.8	4.4
18 Paper, printing etc.	14.2	1.7	13.1	8.8
19 Other manufact.	0.5	0.9	3.9	2.9
	100.0	100.0	100.0	100.0

SICs 13 and 15 are important in the overall industrial structure of Leeds, and it is perhaps an advantage that while they are not both well represented in each study area, they will at least be adequately covered by the combined sample. In terms of employment, the most serious discrepancies between areas are likely to be in SICs 3 and 18.

To some extent the differences are less severe when considered in relation to the number of firms. This is probably a result of the smaller average size of firms in Stanningley and the dominance (in terms of employment) of a few very large firms in HHIA. In HHIA 6 firms out of a total of 153 employ more than 500 and account for 39% of all manufacturing employment. These firms are:

no. of firms	SIC	MLH	description
1	3	231	brewing and malting
2	6	313	iron castings
1	11	383	aerospace equipment manufacture and repair
1	11	384	locomotives and railway track equipment
1	18	483	manufactured stationery

A number of these firms are "one off", not occurring elsewhere in the urban area, and hence could not be represented in any control area.

Table 9 shows the distribution of employment and number of firms by size category of firm. There is better agreement with the number of firms, rather than employment, mainly because of the absence of firms with greater than 500 employees in Stanningley, and the relative importance of firms of this size in terms of HHIA employment.

Table 9: SIZE DISTRIBUTION : MANUFACTURING
(percentage in each size category)

size category	proportion of total employment (%)		proportion of total no. of firms (%)	
	HHIA	Stanningley	HHIA	Stanningley
<11	2.0	3.6	27.5	33.8
11-24	4.0	7.3	22.9	23.5
25-99	17.0	24.6	29.4	25.0
100-199	11.8	30.4	8.5	11.8
200-499	26.1	34.1	7.8	5.9
500-999	18.3	-	2.6	-
1000+	20.8	-	1.3	-
total small	23.0	35.5	79.8	82.3
total large	77.0	64.5	20.2	17.7
total	100.0	100.0	100.0	100.0

2.3.4 Distribution of service industry

Table 3 indicates that, compared with HHIA, service industries in Stanningley are somewhat less important than manufacturing in terms of employment, although the proportion of number of firms is roughly equivalent. The distribution within the service sector is shown in Table 10.

Table 10: DISTRIBUTION OF SERVICE INDUSTRY
(percentages)

SIC group	proportion of total service employment (%)		proportion of total no. of service firms (%)	
	HHIA	Stanningley	HHIA	Stanningley
21 Gas, electricity and water	4.5	-	1.0	-
22 Transport & communic.	5.2	6.7	6.9	7.0
23 Distributive trades	41.4	35.4	56.9	29.6
24 Insurance, banking etc.	10.3	9.3	6.9	8.5
25 Professional & scientific	1.0	19.6	3.5	18.3
26 Miscell.services	23.1	23.9	22.8	32.4
27 Public admin. & defence	14.5	5.1	2.0	4.2
Total	100.0	100.0	100.0	100.0

SICs 22 and 23, the most important as regards the current project, show good agreement in terms of employment. Compared with HHIA, Stanningley has relatively more professional services and less public administration, neither of which is particularly relevant to this study. The size distribution of service firms is shown in Table 11.

Table 11: SIZE DISTRIBUTION : SERVICE SECTOR
(percentage in each size category)

	proportion of total employment (%)		proportion of total no. of firms (%)	
size category	HHIA	Stanningley	HHIA	Stanningley
<11	6.2	18.5	46.5	46.5
11-24	9.0	39.6	26.2	39.4
25-99	17.4	32.9	18.3	12.7
100-199	15.4	9.0	5.0	1.4
200-499	15.9	-	2.5	-
500-999	20.0	-	1.0	-
1000+	16.1	-	0.5	-
total small	32.6	91.0	91.0	98.6
total large	67.4	9.0	9.0	1.4
total	100.0	100.0	100.0	100.0

As with manufacturing, a few large firms in HHIA make a very significant contribution to employment with 4% of firms accounting for 52% of all service employment. Service firms in Stanningley tend to be small, with an average size of 15.9 employees compared with 47.5 in HHIA. The firms employing more than 200 in HHIA are:

no. of firms	SIC	MLH	description
1	21	601	gas
1	23	821	other retail distribution
1	24	865	other business services
1	24	866	central offices not allocable elsewhere
1	26	886	public houses
1	26	899	other services (cleansing)
2	27	906	local government services

With the exception of the one firm in MLH 821, which is the second largest employer in HHIA, the other categories are not of central interest to the project and the comparison of service industry becomes much better. SIC 23 is well represented in HHIA and Stanningley although with the exception of one firm each in HHIA and Stanningley SIC 22/MLH's 703 and 704 (road haulage) are not well represented with most firms tending to be quite small. This is because most large road haulage companies are located to the south of the Leeds urban area.

2.3.5 Infrastructure and traffic generation

As noted previously the Stanningley area contains a mixture of public and private ownership; a mixture of infrastructure and buildings ranging from very old through immediate post-war to very new. A number of firms have recently commenced operations in the area and at least one well established firm is expanding on existing premises. Similarly there is a range of conditions for local streets and for access to individual premises. To this extent Stanningley can be accepted as representing in part the infrastructure of HHIA while at the same time providing a valuable range of conditions of buildings and premises not characteristic of many of the other possible control sites.

The review of the literature(6) noted that in general manufacturing was not associated with particularly high goods vehicle generation rates. The general similarity of activity mix in the two study areas will ensure that the sample of firms from both will adequately cover a range of generation rates. Both SICs 22 and 23 are represented in each area - these groups being associated with significantly higher generation ranges.

2.4 Sample selection

2.4.1 Holbeck Hunslet Industrial Area.

Using the procedure outlined in section 1.4.3 and ref. 8 a preferred sample of 12 firms by activity, size and location within HHIA was drawn up. Because of the requirement to satisfy simultaneously a number of sampling criteria,because of the fact that within some categories the number of firms available for possible inclusion was not large, and because inevitably there were some firms who refused, or were unable to participate (see Ch.3), there are some differences between the preferred and actual samples. These are shown in Tables 12, 13 and 14.

Table 12. HHIA: PREFERRED AND ACTUAL SAMPLE - BY ACTIVITY

Economic status	c.v. generation rate	SIC*	Proportional sample based on		Preferred	Actual
			employment	no. of firms		
declining	high	22	0.3	0.5	1	1
	medium	3,12,18	2.4	1.5	2	1
	low	6,7,15	3.6	2.2	3	4
expanding	high	20,23	3.0	5.7	4	5
	medium	5,11	1.8	0.7	1	-
	low	9,17	0.5	0.7	1	1
				Total	12	12

* SIC's 3-19, 20, 22 and 23 were considered for inclusion.

As suggested in Section 1.4.3, with only 12 firms it is not possible to obtain a statistically reliable sample. In the first place, declining and expanding is indicative of conditions within the urban area as a whole. The available data on commercial vehicle generation rates is limited and suggests wide ranges within SIC's or groups of industries. The high, medium and low categories adopted here are based on results of previous studies, but have not been rigorously defined in terms of generation rate per employee or unit area. To determine the preferred sample, a judgement must be made between the relative importance of numbers employed and numbers of firms. In the case of HHIA, the differences in samples based on each are not large.

Table 13. HHIA: PREFERRED AND ACTUAL SAMPLE - BY SIZE*

Size category	Proportional sample based on		Preferred	Actual
	employment	no. of firms		
small (5 - 99)	3.5 (2.8)	10.4 (9.6)	6	8
large (100+)	8.5 (9.2)	1.6 (2.4)	6	4
		Total	12	12

* Based on SIC's 3-27; numbers in brackets are size distribution for manufacturing only.

Determination of a preferred size distribution necessarily involved some compromise between the criteria of employment and numbers of firms. Based on employment alone, it was felt that small firms, recognised by all levels of government as being an important element in economic regeneration, would not be adequately represented. Consequently, the preferred sample was adjusted to increase the relative number of small firms. The preferred sample was allocated to the six activity categories of Table 10 on the basis of the size distribution of firms within individual SIC's. For example, if study area firms in SIC 7 are typically large, then clearly the firm selected for study from this SIC should be large.

Finally, the 12 firms must represent a range of locations with the study area. Five sub-areas were identified to represent varying infrastructure and building stock and to ensure that potential development areas or IIA's were included. The sub-areas are (Fig. 6):

A (west): Domestic Street/Ingram Distributor

B (west/central): David Street, Water Lane/West of the South Leeds Interchange

C (east/central): South Leeds Interchange to Hunslet Road

D (east): East of Hunslet Road

E (north): Meadow Lane/Great Wilson Street

The preferred and actual distribution of firms between these sub-areas is shown in Table 14.[1]

Table 14. HHIA: PREFERRED AND ACTUAL SAMPLE - BY SUB AREA

Sub-area	Preferred	Actual
A	2	2
B	4	4
C	3	3
D	2	2
E	1	1
Total	12	12

... ...

1 The preferred sample does not necessarily reflect the proportion of total employment or number of firms in each sub-area.

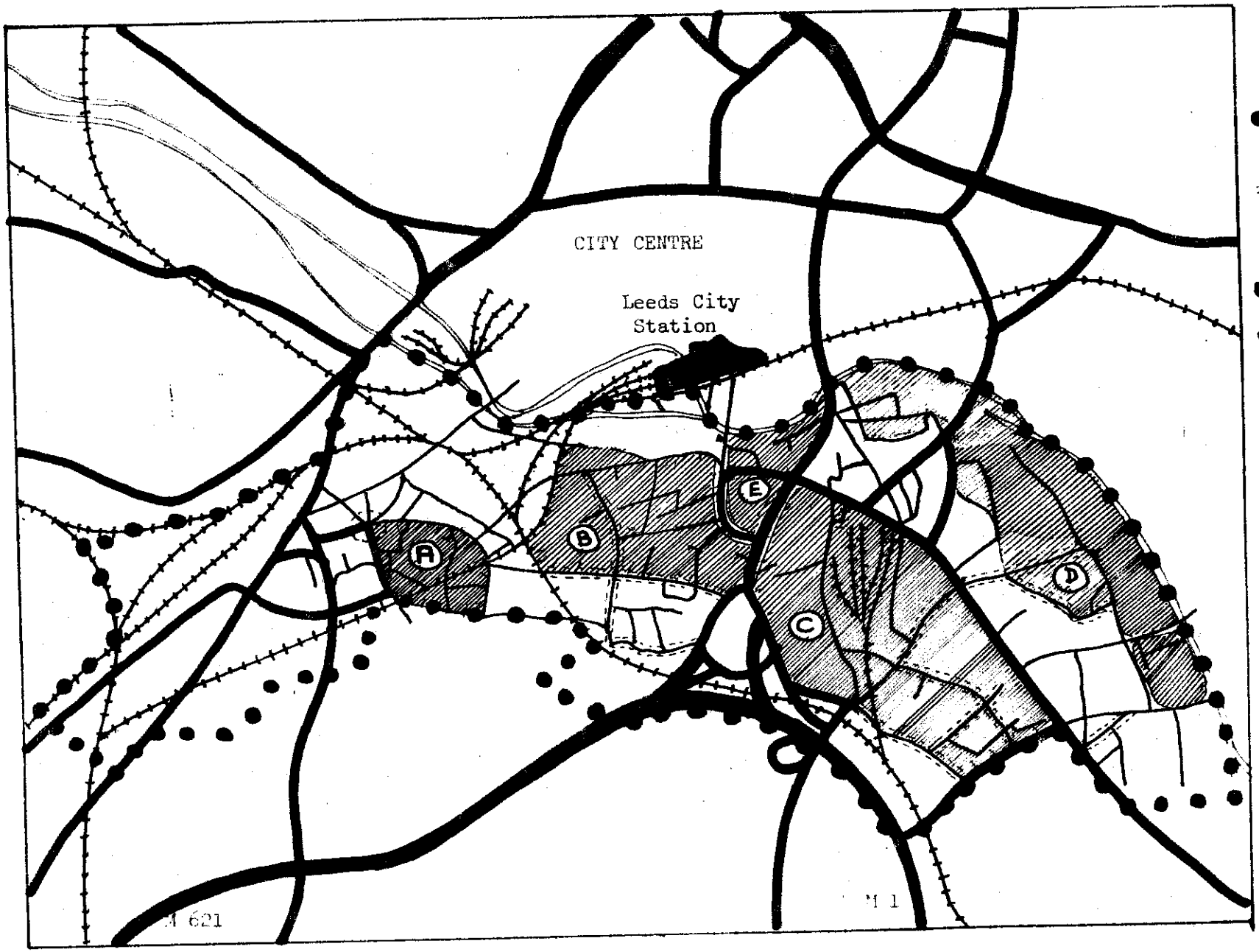


Figure 6

HHIA Sub-Areas

- Boundary of Study Area
- Waterway
- Railway
- Motorway
- Other Major Road
- Minor Road within Study Area
- Road Scheduled for Improvement
- Sub-areas used for sample selection

A Domestic street
B David Street/Water Lane
C West of Hunslet Road
D East of Hunslet Road
E Meadow Lane

2.4.2 Stanningley

Tables 15, 16 and 17 indicate the preferred and actual sample by activity, size and sub-area. Figure 7 shows the division of the study area into four sub-areas to reflect differences in infrastructure, building stock and accessibility.

Table 15. STANNINGLEY: PREFERRED AND ACTUAL SAMPLE - BY ACTIVITY

Economic status	c.v. generation rate	SIC *	Proportional sample based on		Preferred	Actual
			employment	no.of firms		
declining	high	22	0.2	0.6	1	1
	medium	12,13,18	3.9	3.6	3	3
	low	6,7,15,19	3.3	2.6	3	3
expanding	high	20,23	2.2	3.7	3	3
	medium	-	-	-	-	-
	low	9,17	2.1	1.0	2	2
				Total	12	12

* SIC's 3-19, 20, 22 and 23 were considered for inclusion

Table 16. STANNINGLEY: PREFERRED AND ACTUAL SAMPLE - BY SIZE*

Size category	Proportional sample based on		Preferred	Actual
	employment	no. of firms		
small (5-99)	5.9 (4.3)	10.9 (9.9)	5	4
large (100+)	6.1 (7.7)	1.1 (2.1)	7	8**
		Total	12	12

* based on SIC's 3-27; numbers in brackets are size distribution for manufacturing only

** 3 of which employed between 100 and 110 persons

Table 17. STANNINGLEY: PREFERRED AND ACTUAL SAMPLE - BY SUB AREA

Sub-area	Preferred	Actual
Leeds-Bradford Road (west of Richardshaw Lane)	2	2
Grangefield Industrial Estate	4	3
Leeds-Bradford Road (east of Richardshaw Lane)	3	2
Broad Lane/Swinnow Lane/Swinnow Road	3	5
Total	12	12

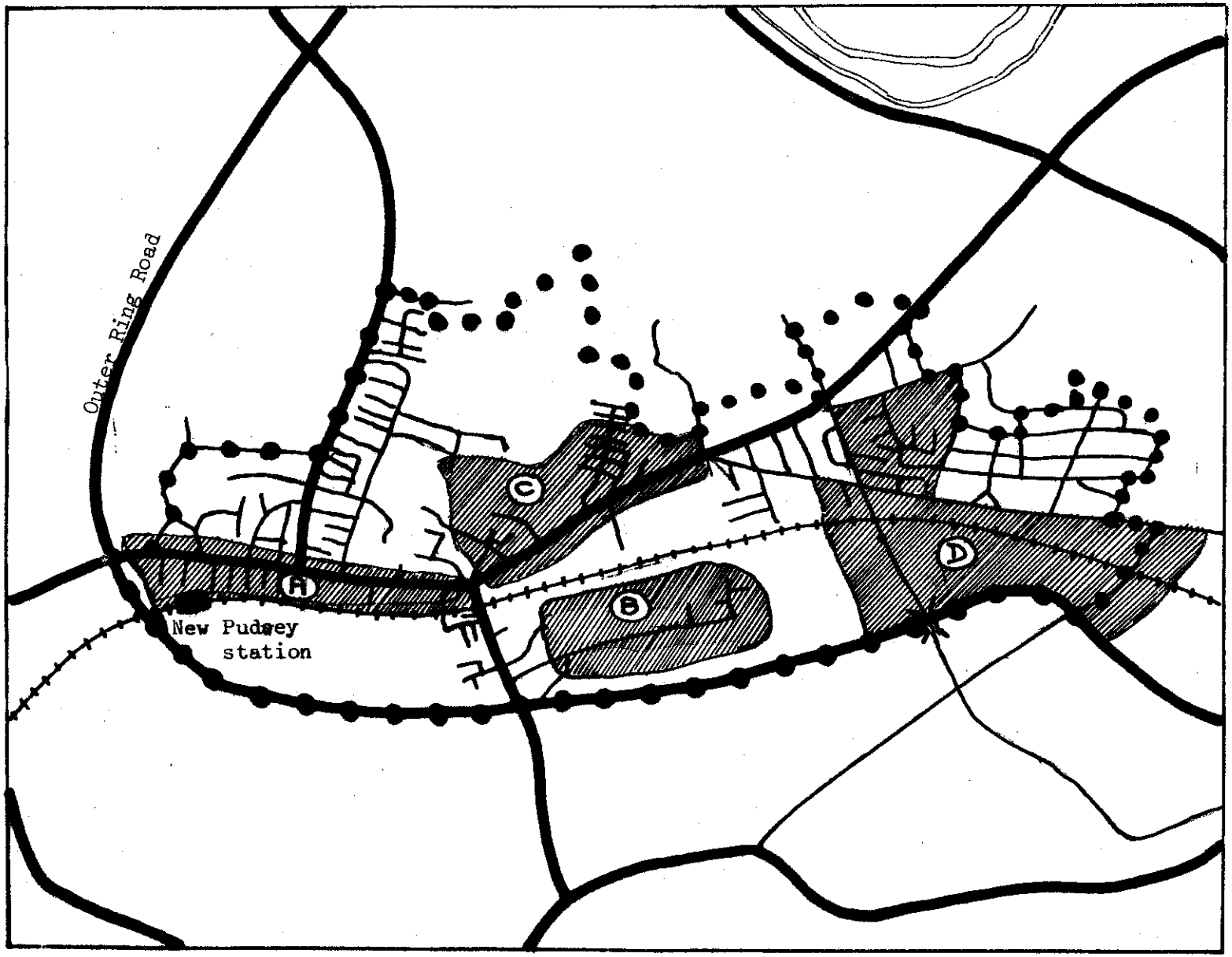


Figure 7

Stanningley Sub-Areas

Boundary of Study Area

Waterway

Railway

Major Road

Minor Road within Study Area

Sub-area used for sample selection

A Leeds-Bradford Road (West)

B Grangefield Industrial Estate

C Leeds-Bradford Road (East)

D Broad Lane/Swinnow Lane/Swinnow Road

2.4.3 Comparison of samples: HHIA and Stanningley

Table 18 shows the final sample of firms which were selected from each study area. It should be noted that there has been no effort to match firms on a one-to-one basis since this would result in a sample from at least one of the areas which was not representative of its industrial structure. The actual and preferred samples agree reasonably well, the main discrepancies being:

HHIA
a) Because of the small number of firms available for participation and a number of refusals, and the fact that a number of firms in the group are one-off and not representative, there are no expanding medium commercial vehicle generating firms in the sample. (In terms of type of workforce, however, this group is adequately covered by other engineering sectors included elsewhere.)

b) There are somewhat more small firms than desirable.

Stanningley
a) The Broad Lane/Swinnow Lane/Swinnow Road sub-area contains more firms than indicated by the preferred sample.

It is unlikely that these factors will affect the validity of the survey results or the general conclusions drawn for each study area.

Table 18: HHIA AND STANNINGLEY - ACTUAL SAMPLES

economic status	c.v. generation	SIC	actual sample*	
			HHIA	Stanningley
declining	high	22	1 small (8)	1 small (23)
	medium	3	-	-
		12	-	1 large (18)
		13	-	1 large (19)
		18	1 small (6)	1 large (20)
	low	6	1 large (1) 1 small (2)	1 large (13)
		7	1 large (3)	1 large (15) 1 small (14)
		15	1 small (4)	-
		19	-	-
expanding	high	20	1 large (12) 1 small (7)	2 small (21,22)
		23	1 large (10) 2 small (9,11)	1 large (24)
	medium	5	-	-
		11	-	-
	low	9	-	2 large (16,17)
		17	1 small (5)	-

* numbers in brackets are used to identify individual firms in the subsequent analysis.

3. RESPONSE RATES

3.1 Overall response rates

Firms satisfying the selection criteria were identified and their suitability confirmed by site inspections. Initial contact with these firms was by telephone and the majority of firms were able to indicate a general willingness to participate or definite refusal at this stage. (In a number of cases return telephone calls were required). Several firms requested written background information and were subsequently re-telephoned. Those firms expressing interest in the project were visited to further outline the work and to discuss participation. Of the 26 firms which were visited only two subsequently declined to participate. Details of the overall response of firms to the project are given in Table 19.

Table 19: RESPONSE RATE : OVERALL

	HHIA	Stanningley
no. of firms contacted	27	26
contacts not followed up/firm not suitable	3	4
not available for participation at time of surveys but option of future participation left open	4	3
refusal	8	7
final sample	12	12
response rate on all firms contacted	44.4%	46.2%
response rate on contacts followed up	50.0%	54.5%

Contacts were not followed up where a more suitable firm in the same category indicated a willingness to participate, where the firm proved to be too small (less than five persons employed), or where because of the nature of their operations it became clear that they were not appropriate for a study of this kind. Seven firms were unable to participate at the time the surveys were conducted, mainly because

they were undergoing internal re-organization or were in the process of major staff redundancies. Although they indicated the possibility of future involvement this was not followed up because of timetabling constraints. The 24 firms in the final sample all agreed to all aspects of the survey work (Table 2), with the exception of one firm (number 22) which, in the course of the surveys, refused to distribute the employee questionnaires.

Of the 15 firms which refused to participate, eight were from SIC 23 (distrib. trades), four from SIC 7 (mech.eng.), and one each from SICs 5, 11 and 18. The relatively high rate of refusal from firms in the distributive trades (eight refusals for a final sample of 4) is unusual in view of the fact that this SIC is typically associated with high levels of commercial vehicle activity and transport is an important element in firms' operations. Refusal did not appear to depend on size of firm (seven large and eight small in a final sample of 12 of each), and there was no evidence that the reasons given for refusal were associated with any particular industrial groups or sizes of firms. The stated reasons for refusal are given in Table 20 and the distribution of firms between study areas in Table 21.

Table 20: RESPONSE: STATED REASONS FOR REFUSAL

reason for refusal	no. of firms stating reason	
	HHIA	Stanningley*
time commitment too great	2	1
no staff available	1	2
firm does not consider they have any transport problems	1	3
firm could see no benefit in the project	1	-
refused to allow distribution of questionnaires to employees	-	1
company policy not to become involved	1	1
no reasons given	2	1

* two firms gave more than one reason for refusal.

Table 21 RESPONSE: REFUSAL BY SIC AND STUDY AREA

SIC	no. of firms refusing	
	HHIA	Stanningley
5 chemicals	1	-
7 mech.eng.	1	3
11 vehicles	1	-
18 printing	-	1
23 distrib. trades	5*	3

* four of which came from a sub-area identified by the District Council as a potential IIA.

With such small numbers involved it is difficult to draw conclusions which would add to the interpretation of the survey results or provide guidance for other work involving the sampling of manufacturing and service firms. Given the commitment to the project required of participating firms the overall response rate is encouraging and may suggest that firms view transport issues seriously enough to be prepared to assist in the identification and solution of problems. Comparison of the response rates between the two study areas does not support suggestions made early in the project that whereas inner city firms are concerned and actively aware of their transport problems this would not be the case in the outer control. It also suggests that any bias affecting the applicability of the results of the management interview to the study areas as a whole - it had been argued that participating firms would be more concerned with transport issues than firms in general - will be equally evident in both areas.[1]

3.2 Employee questionnaire

It was decided to attempt 100% samples of employees in each of the participating firms[2], and this was acceptable to all except one of the

... ...

1. One intention of the other surveys conducted at each firm was to substantiate and quantify problems mentioned in the management interview.
2. Allowance was made to consider less than 100% samples in the case of large firms (employing more than 500 persons). No firms fell into this category.

firms (SIC 20, employment 36). Partly for cost-effectiveness reasons, and partly at the request of the firms themselves, internal distribution and collection was arranged by the firm.[1] The day of completion of the questionnaire - the day for which journey to work data was asked - was also flexible. There are two implications of this method of administration of the questionnaires:

(i) Responses cover different days of the week, during a period in June 1979 (eight pilot firms) and January-February 1980 (16 main survey firms).

(ii) Although the importance of ensuring that all employees received a questionnaire was stressed to management, it has not been possible to determine accurately the distribution of questionnaires amongst the different categories of staff in each firm.

The first of these is not seen as a serious issue and the fact that all days of the week are adequately represented may be an advantage. Since both the pilot and the main survey were conducted outside the main holiday periods traffic conditions can be regarded as normal. With the exception of bus fare increases and the introduction of a reduced fare "multi-ride" experiment on selected services passing through HHIA there were no relevant changes to the transport system between the two surveys and no significant transport problems during either survey.[2]

Point (ii) above will not be serious provided that all categories of employees (e.g. by sex and job) are adequately represented in the respondents. This is because analysis is primarily on the basis of mode split for data grouped by study area. The implications of mode split for different employee categories, and the problems associated with different modes, can then be related back to the known breakdown of total employment (either for any particular firm or for the study areas as a whole). A rigorous assessment of the responses for bias by sex or job has not been conducted but Table 22 shows the differences in the characteristics of the total workforce of the 24 firms compared with the characteristics of the respondents.

... ...

1. The pilot indicated that most firms were not prepared to record distribution to different departments or sections separately, or to allow ITS staff to have direct contact with employees to distribute questionnaires.

2. These comments also apply to the visitor questionnaire, c.v. driver interviews and on-site surveys.

Table 22 CHARACTERISTICS OF WORKFORCE: ALL EMPLOYEES AND RESPONDENTS (percentages)

	by sex				by job type			
	all employees		respondents		all employees		respondents	
	male	female	male	female	office	works	office	works
HHIA	80.9	19.1	73.1	26.9	40.5[1]	59.5	43.5	56.6
Stanningley	79.7	20.3	75.8	24.2	27.9	72.1	47.4	52.6
Total	80.2	19.8	74.7	25.3	32.9	67.1	45.9	54.1

	by full time/part time[2]			
	all employees		respondents	
	full time	part time	full time	part time
HHIA	86.4	13.6	87.5	12.5
Stanningley	93.7	6.3	91.1	8.9
Total	91.7	8.3	89.7	10.3

1. Firm no.1 has head office functions and accounts for 47.2% of all office employees in HHIA. If firm no.1 is excluded the office/works split for HHIA becomes 34.6% and 65.4% respectively.

2. Excluding 3 HHIA and 2 Stanningley firms for which the full time/part time split of either employees or respondents was not established.

With the possible exception of disaggregation by job type for Stanningley, where works employees are somewhat under-represented in the sample, it would appear that all groups are adequately covered. This, and further comments below, should be considered when interpreting the results.

Table 23 RESPONSE RATE: EMPLOYEE QUESTIONNAIRE

firm no.	SIC	total employment	employees receiving a questionnaire %	response rate on those receiving a questionnaire %	overall response rate on total employment %
1	6	500	81.0	22.5	18.2
2	6	33	n.k.	n.k.	30.3
3	7	152	88.2	78.4	69.1
4	15	73	n.k.	46.9	52.1
5	17	65	80.0	21.2	16.9
6	18	31	64.5	95.0	61.3
7	20	86	n.k.	n.k.	53.5
8	22	28	n.k.	n.k.	21.4
9	23	32	100.0	84.8	87.5
10	23	119	80.7	36.5	29.4
11	23	72	65.3	89.4	58.3
12	20	118	82.2	33.0	27.1
total	HHIA	1309	81.1* (80.2)	41.6* (56.4)	35.4 (43.8)
13	6	498	88.0	38.6	33.9
14	7	36	97.2	42.9	41.7
15	7	213	84.0	55.9	47.0
16	9	220	n.k.	n.k.	22.7
17	9	100	81.0	51.9	42.0
18	12	102	95.1	54.6	52.0
19	13	250	n.k.	38.7	39.6
20	18	326	92.9	30.4	28.2
21	20	38	94.7	63.9	60.5
22	20	26	n.a.	n.a.	n.a.
23	22	36	n.k.	n.k.	52.8
24	23	113	85.0	39.6	33.6
total Stanningley		1958	88.7* (89.7)	41.5* (46.3)	35.8 (41.3)
overall total		3267	85.4** (85.0)	41.5** (51.3)	35.6 (42.6)

Numbers in brackets are unweighted mean response rates.
n.k. : not known
n.a. : not applicable (firm refused to distribute)
* 8 firms only **16 firms only.

Table 24 RESPONSE RATE: EMPLOYEES BY SEX AND JOB

firm no.	SIC	total employment	response rates (%)				
			overall	male	female	office	works
1	6	500	18.2	16.3	35.0	18.0	17.6
2	6	33	30.3	26.7	25.0	81.8	4.6
3	7	152	69.1	67.6	10.0	38.9	76.7
4	15	73	52.1	42.9	52.5	75.0	43.9
5	17	65	16.9	14.3	100.0	28.6	15.5
6	18	31	61.3	60.0	100.0	100.0	51.7
7	20	86	53.5	47.7	71.4	54.9	51.4
8	22	28	21.4	18.5	-	50.0	25.0
9	23	32	87.5	70.0	100.0	85.7	72.7
10	23	119	29.4	27.1	30.6	41.2	23.5
11	23	72	58.3	44.4	74.1	69.6	38.5
12	20	118	27.1	26.9	28.0	36.5	19.7
Total HHIA		1309	35.4 (43.8)	30.8 (38.5)	48.0 (52.2)	37.5 (56.7)	33.1 (36.7)
13	6	498	33.9	29.2	50.0	57.3	23.9
14	7	36	41.7	42.9	-	50.0	35.0
15	7	213	47.0	42.5	66.7	59.0	36.3
16	9	220	22.7	25.3	8.7	48.1	14.3
17	9	100	42.0	43.8	35.0	84.6	35.6
18	12	102	52.0	49.4	66.7	93.3	34.7
19	13	250	39.6	39.6	33.0	100.0	25.1
20	18	326	28.2	19.1	40.6	53.6	20.0
21	20	38	60.5	58.3	100.0	100.0	42.3
22	20	26	n.a.	n.a.	n.a.	n.a.	n.a.
23	22	36	52.8	51.6	60.0	55.6	51.9
24	23	113	33.6	22.0	69.2	38.1	26.0
Total Stanningley		1958	35.8 (41.3)	32.2 (38.5)	40.2 (48.2)	59.7 (67.2)	25.6 (31.5)
Overall total		3267	35.6 (42.6)	31.6 (38.5)	43.2 (50.3)	48.8 (61.7)	28.3 (34.2)

(Response rates are calculated on total employment in the relevant category. Numbers in brackets are unweighted mean response rates. Firm 22 did not distribute employee questionnaires.)

Overall response rates by firm and by study area are listed in Table 23, and Table 24 gives response rates by sex and job category. As noted, since the distribution of questionnaires to different employee categories within each firm is not known, the response rates quoted in Table 24 have been calculated on total employment in the relevant category (as provided by management). The relatively high proportion of all employees who actually received a questionnaire[1] (Table 23) is encouraging and suggests that the distribution to all categories was satisfactory.

For the firms for which data is available, a somewhat higher proportion of Stanningley employees received questionnaires. There is however, no difference in response rates on questionnaires received, or on overall response rates, between the two study areas although the range of response rates for individual firms appears to be less in Stanningley. Table 23 suggests that the proportion of employees receiving a questionnaire does not depend on the size or activity of the firm, but does depend on management's attitude to the project as a whole. Although there are exceptions, response rate may decrease slightly as size of firm increases. This is partly a reflection of the characteristics of the workforce (a high proportion of works employees in the larger firms) and partly because of the lack of personal contact between management and employees.

The overall similarity in response rates between HHIA and Stanningley conceals a large difference in response by job category of employee. A considerably larger office response rate in Stanningley than HHIA is sufficient to compensate for both the lower proportion of office employees in the Stanningley workforce (Table 22) and the lower response rate of Stanningley works' employees compared with those of HHIA. As a generalization, Table 24 indicates that response rates are typically higher for females than males, and for office compared with works employees.

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1. Given the usual absences for business, holidays, sickness etc.

3.3 Visitor questionnaire

The visitor questionnaire was left in the reception area of each firm and the firm's receptionist/telephonist asked visitors to complete a form before leaving. The duration of the survey was one day for the pilot and five consecutive days for the main survey. The number of completed questionnaires received from each firm is shown in Table 25.

Table 25 RESPONSE RATE: VISITOR QUESTIONNAIRE

firm no.	SIC	total employment	duration of survey (days)	number of completed questionnaires
1	6	500	5	1
2	6	33	5	-
3	7	152	1	3
4	15	73	5	7
5	17	65	5	10
6	18	31	1	-
7	20	86	5	15
8	22	28	1	1
9	23	32	5	28
10	23	119	5	24
11	23	72	1	2
12	20	118	5	5
			total HHIA	96
13	6	498	1	7
14	7	36	5	1
15	7	213	5	8
16	9	220	5	23
17	9	100	5	25
18	12	102	5	13
19	13	250	5	7
20	18	326	1	9
21	20	38	5	1
22	20	26	5	7
23	22	36	1	-
24	23	113	1	1
			total Stanningley	102
			overall total	198

The most obvious feature is the low number of completed returns. Although there is no record of the actual number of visitors calling at each firm, the overall response rate is thought to be in the region of 15-20%. Similarly it has not been possible to check for any bias in the sample of respondents.

The number of visitors at a firm depends very much on the nature of the firm's operations rather than total employment. While this explains some of the low returns there are a numer of firms where difficulties with the administration of the questionnaire have been responsible for the poor response. These difficulties include:

(i) lack of liaison/briefing between management and receptionist

(ii) poor physical environment in the reception areas of many firms

(iii) the attitude of receptionist to the project (in spite of monitoring during the survey by ITS staff)

(iv) other demands on receptionist's time

(v) regular visitors to the firm frequently by-pass the reception area.

The sample provides data on each study area as a whole but with a number of firms it is difficult to draw conclusions as to visitors' perceptions of site specific problems. Offset against this is the low cost of conducting the survey, and the benefits to be gained by attempting to enlarge the sample.

3.4 Commercial vehicle driver interview

Commercial vehicle driver interviews were conducted over an average working day at each firm and included the drivers of the firm's own vehicles and all other goods or service vehicles arriving at the premises. Drivers of vehicles making more than one trip to the firm during the survey day were only approached once for an interview. A summary of the response of drivers is shown in Table 26.

Table 26 RESPONSE RATE: COMMERCIAL VEHICLE DRIVER INTERVIEW

firm no	total no. of veh. movements recorded	no. of effective veh. movements suitable for interviews	no. of attempted interviews	no. of successful interviews	response rate as % of effective veh. movements
1	6	6	6	5	83.3
2	25	25	25	18	72.0
3	22	15	12	12	80.0
4	8	5	5	3	60.0
5	1	1	1	-	-
6	8	8	8	8	100.0
7	35	35	32	31	88.6
8	7	7	7	5	71.4
9	67	62	62	47	75.8
10	14	14	14	13	92.9
11	40	40	31	29	72.5
12	13	13	13	9	69.2
total HHIA	246	231	216	180	77.9 (72.1)
13	15	15	15	13	86.7
14	8	8	8	8	100.0
15	10	10	10	10	100.0
16	27	25	25	25	100.0
17	11	11	11	10	90.9
18	4	4	4	2	50.0
19	16	15	15	13	86.7
20	22	22	22	20	90.0
21	8	6	6	5	83.3
22	4	4	4	4	100.0
23	10	10	8	7	70.0
24	15	11	11	11	100.0
total Stanningley	150	141	139	128	90.8 (88.2)
overall total	396	372	355	308	82.8 (80.2)

(Numbers in brackets are unweighted mean response rates)

From a total of 396 vehicle movements, 372 were suitable for interviews (i.e. effective movements) and, of these, interviews were attempted with 355 drivers. Of the interviews attempted, 86.8% were successful, resulting in an overall response rate on effective movements of 82.8%.

The discrepancy of 17 between effective movements and attempted interviews is due mainly to vehicles being missed because of insufficient survey staff and/or the short length of time the vehicle was on-site. Cost effectiveness considerations, combined with difficult site layouts, meant that at a number of firms vehicles were occasionally missed. The majority of the 47 drivers refusing an interview stated that they did not have time[1] and/or considered they did not have any transport difficulties. Some interview were refused because of the policy of the vehicle owner, for example security vehicles.

4. MANAGEMENT INTERVIEW

4.1 Interpretation and background

4.1.1. Interpretation The intention of the management interview (and associated self-completion questionnaire) was threefold. Firstly it provides essential background information which is summarized in the separate case studies prepared for each firm - see Appendix I for an example. Although firms within a particular industrial classification are likely to show an overall similarity, there can be considerable variation in factors likely to influence the type and impact of transport problems between individual firms[2]. Some of these factors are related to the firm's background,and include on-site conditions and infrastructure, staffing arrangements, type and scale of operations, and production arrangements. In view of this and the relatively small sample size, the results have simply been grouped by study area and no attempt has been made at this stage to disaggregate on the basis of activity.

... ...

1. This probably accounts for the somewhat higher refusal rate of HHIA drivers (16.7% c.f. 7.9% for Stanningley) since two of the HHIA firms operated trade counters where there was a very fast turnaround of vehicles.
2. For example, reference has already been made to the large variation in c.v. generation rates within industrial groupings.

Secondly the interview was intended to allow firms themselves to raise what they perceived to be their transport problems. Since the position of the respondent within the firm may influence the reporting of problems, interviews were conducted with senior management who could comment on transport, production and personnel aspects of the firm's operations (Table 27).

Table 27: Management interview - position of respondents

HHIA			Stanningley		
firm	emp't	respondent(s)	firm	emp't	respondent(s)
1	500	transport manager	13	498	(i) ind.eng.manager
2	33	general manager			(ii) production controller
3	152	(i) managing director			(iii) central prod.controller
		(ii) transport manager	14	36	works manager
4	73	(i) production manager	15	213	(i) production engineer
		(ii) production manageress			(ii) shipping manager
5	65	financial director			(iii) personnel manager
6	31	managing director	16	220	manager
7	86	warehouse/distr. manager	17	100	works manager
8	28	transport manager	18	102	director
9	32	managing director	19	250	works manager
10	119	director	20	326	(i) transport manager
11	72	(i) transport manager			(ii) works manager
		(ii) dispatch manager	21	38	(i) director
12	118	(i) asst.co.secretary			(ii) director
		(ii) transport manager	22	26	managing director
		(iii) works director	23	36	director
			24	113	director/co.secretary

While this was achieved with most firms there were a number of cases where it was clear to the interviewer that the respondent lacked a full grasp of the type, and implications, of the firm's transport-related problems. This occurred with firms 1 and 22, and to a much lesser degree with firms 7, 17 and 24. To a large extent this is

unavoidable, particularly with the smaller firms where there may only be one possible respondent. Eight firms chose to have more than one respondent present at the interview to ensure that all aspects were adequately covered. In a number of cases specialist advice was sought for particular questions during the interview.

Thirdly, management was asked the effect of problems, and where appropriate to estimate the cost (or suitable proxy) imposed on the firm. Although firms were advised of the scope of the interview during the initial personal visit this last aspect proved most difficult. Many firms were unable to place a cost against particular problems and in the case of other firms the estimates which were provided must be regarded only as indicative of managements' assessment of a problem.

An unprompted followed by a prompted approach was adopted for the identification of problems. The project was presented to management as a study of the transport requirements of urban industry, and it was specifically explained that the type and extent of problems associated with (particularly) goods movement and person trips were under investigation, while at the same time allowing the study to be wide-ranging so as to include other issues which were considered significant.

4.1.2 Background. The importance of transport will depend only in part on a firm's principal activity, and there are likely to be large differences between firms. To provide a background against which the results of the management interview can be viewed, Table 28 indicates the firms' transport costs and managements' assessment of the importance of transport in terms of overall operations and specifically for business and visitor trips. Transport costs were estimated as a percentage of total non-capital costs, with management indicating whether this included vehicle depreciation/replacement or not.

Transport costs follow the expected pattern with typically low values for the manufacturing industries. The value for firm 16 appears high, and there is some variation in SICs 20 and 23 depending on the precise activity of the firm. There is no evidence that firms' transport costs are higher in one study area than the other.

Table 28: Management interview: importance of transport

firm no.	SIC	employment	transport costs (% of non-capital costs)	importance of transport[1]	seriousness of tpt. problems[1]	importance of business trips[1]	importance of visitor trips[1,7]
1	6	500	n.s.	2	4	2	3
2	6	33	2.0[5]	1	2	3	3
3	7	152	2.0[4]	1	4	3	n.a.
4	15	73	3.0[3]	1	4	1	3
5	17	65	5.0[4]	1	1	2	4
6	18	31	20.0[4]	1	1	2	n.a.
7	20	86	15.0[3]	1	2	1	1
8	22	28	100.0[5,6]	1	4	2	n.a.
9	23	32	n.s.	1	4	1	2
10	23	119	5.0[5]	1	1	2	1
11	23	72	d.k.	1	1	1	n.a.
12	20	118	12.0[4]	1	3	1	2
Mean score, HHIA[2]				97.9	60.4	81.3	65.6
13	6	498	1.5[3]	3	5	2	n.a.
14	7	36	n.s.	2	4	2	3
15	7	213	2.5[3]	1	4	1	2
16	9	220	9.4[4]	2	3	3	3
17	9	100	1.0[4]	1	5	4	4
18	12	102	4.0[3]	2	4	3	3
19	13	250	3.0[4]	1	2	4	3
20	18	326	d.k.	2	2	3	n.a.
21	20	38	4.0[4]	1	4	2	5
22	20	26	1.5[3]	2	2	3	3
23	22	36	85.0[4,6]	1	1	5	n.a.
24	23	113	14.0[3]	1	5	5	n.a.
Mean score, Stanningley[2]				85.4	39.6	47.9	43.8

1. 1 = extremely, 2 = very, 3 = fairly, 4 = not very, 5 = not at all.
2. 100 = extremely through to 0 = not at all (see Appendix II for explanation of mean scores)
3. estimate includes allowance for vehicle depreciation/replacement
4. estimate does not include allowance for vehicle depreciation/replacement
5. not stated if estimate includes allowance for vehicle depreciation/replacement
6. road haulage firms who considered all, or nearly all, of their costs were attributable to transport
7. this question was not asked in the pilot survey

The importance of transport was rated somewhat higher by HHIA firms and, more significantly in terms of comparison of study area results, the effects of transport problems were rated considerably higher by HHIA firms. This is partially explained by the fact that three out of the four HHIA firms with "extremely serious effects of transport problems" were engaged in distribution or required frequent face to face contact with clients. In spite of this it is interesting to note that in response to this prompted question five HHIA firms and seven Stanningley firms (41.7% and 58.3% respectively) stated that they were not, or not very seriously, affected by transport problems. As can be seen from Table 28 these firms represented a wide range of SICs.

Taken overall both business and visitor trips were more important to HHIA than Stanningley firms. Management in both study areas considered business trips by the firm's staff to be more important than visitor trips to the firm although the difference was not large in Stanningley. Study area mean scores conceal large differences in importance between individual firms. These differences result from the particular characteristics of the firm's activity and its operations and cannot therefore generally be associated with broad industrial groupings such as SIC.

4.2 Problem identification

4.2.1 Problem grouping. The remainder of this chapter summarizes the transport problems which were identified by management and then considers their severity and effect. For the reporting of problems it has been useful to group those associated with person and commercial vehicle trips into the following seven categories:

person trips (employees, business, visitors)	group A: problems on-route to site group B: parking problems group C: public transport problems
commercial vehicle trips (goods and services)	group D: problems on-route to site group E: problems at the site group F: loading/unloading problems
person or c.v. trips	other traffic problems: problems which cannot be assigned to groups A to F

and then to use two further categories to describe problems that are not directly related to actual trips. These are:

internal problems	problems relating to transport or transport operations resulting directly or indirectly from internal company policy or firms' operating procedures
other problems	any other problem related to transport, firms' transport operations, or to firms' location

4.2.2 Major problems identified by management. The extent to which problems within the groups outlined above were mentioned by management in response to an unprompted general question asking firms to specify their transport problems, and to be as wide ranging as possible, is shown in Table 29. Management were also asked a series of prompted questions relating to possible problems and Table 30 lists the numbers of firms in each study area indicating that they experienced the stated problem. The discussion of these problems is dealt with in subsequent sections of this chapter.

Table 29: Management interview - unprompted problems[1]
(number of firms mentioning each problem)

	problem	HHIA (12 firms)	Stanningley (12 firms)
person trips	gp A - on route to site	2	3
	gp B - parking	2	1
	gp C - public transport	6	8
c.v. trips	gp D - on route to site	3	0
	gp E - at the site	3	0
	gp F - loading/unloading	2	0
	other traffic problems	2	1
	internal problems	2	7
	other problems	5	3

1. refer to Appendix III for details of individual firms' responses

Table 30: Management interview - prompted problems
(numbers of firms)

group	prompted problem	HHTA	Stanningley
		no. affected	no. affected
	problems on route:[1,2]	(8 firms)	(8 firms)
A	congestion/delays - journey to work	2	3
A	congestion/delays - business trips	3	1
D	congestion/delays - c.v. trips	3	2
A,D	indirect route or one way streets	2	2
C	public transport for employees	7	7
A or D	poor road surface within 1 mile	3	4
	inadequate on-site parking for:	(12 firms)	(12 firms)
B	employees' cars	4	2
B	company cars	1	2
B	visitors' cars	5	2
E	goods vehicles	1	1
F	inadequate loading facilities	2	1
E/F	at least some loading on-street	4	3
	restrictions on delivery times:	(12 firms)	(12 firms)
D,F,other traffic	for goods-in, imposed by the firm	0	3
D,F,other traffic	for goods-in, imposed elsewhere	0	0
D,F,other traffic	for goods-out, imposed by the firm	0	0
D,F,other traffic	for goods-out, imposed elsewhere	3	5
	vehicle height or weight restrictions:		
E,F	at the site	4	1
D	elsewhere	0	0
	available space on site affects:[1]	(8 firms)	(8 firms)
other traffic	stockpile levels	5	3
other traffic	dispatch schedules/frequency	3	1
F	loading/unloading	4	2
E	c.v. manoeuvrability	5	3

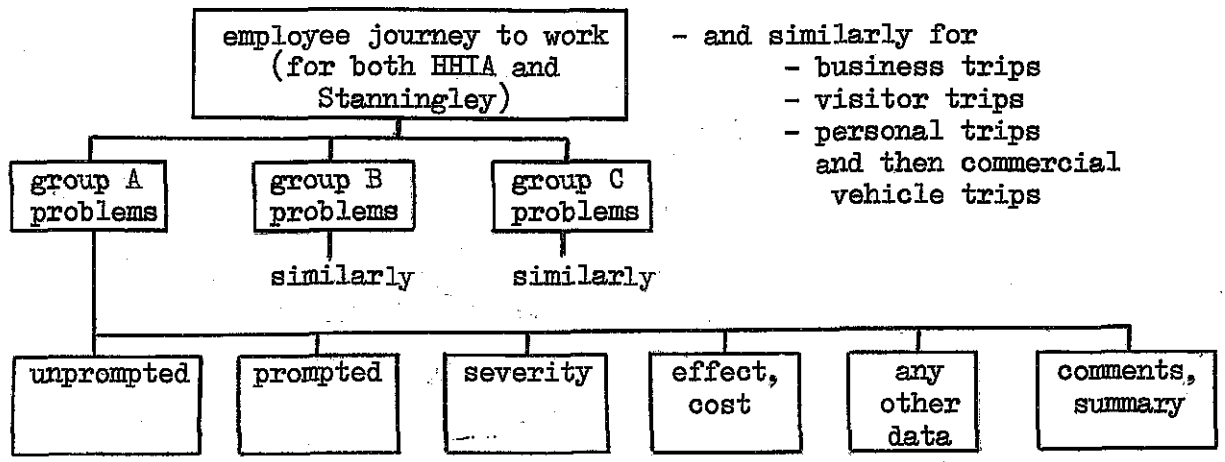
1. only asked in main survey i.e. 8 firms in each study area.

2. including those firms who mentioned the problem unprompted (see Table 29).

Unprompted, firms typically mentioned two problems each, and with the exception of public transport, internal and "other", the reporting rate was low. While problems did not appear to be associated with either particular types of firms or location within the respective study area, of the 18 times group A to F problems were mentioned by HHIA firms, 12 were associated with the six manufacturing firms whereas the six distributive trades/construction/haulage firms mentioned these problems only five times in spite of their (typically) greater involvement with transport during their day-to-day operations.

One firm in each study area stated that they had no traffic or transport related problems, and only one firm (in Stanningley) mentioned an internal or "other" problem without also mentioning a traffic or trip related problem.

4.2.3 Format for problem discussion. The main focus of this project is on problems within groups A to F, and particularly those which are amenable to improvement through public policies. Section 4.3 therefore summarily discusses those problems which were outside groups A to F, while Sections 4.4 and 4.5 discuss groups A to C and D to F respectively in some detail. The results are presented in note form as summaries for each study area and individual firms are not described except to illustrate a point. Appendix III contains the results of the major items asked in the management interview for each firm. The approach has been to treat different types of trips sequentially, to examine management's assessment of the different problems (groups A to F) on those trips, and then to assess the impact on the firms. The following format has been used where possible in Sections 4.4 and 4.5 for each type of trip (the diagram below uses employee journey to work as an example):



4.3 Problems outside groups A to F

4.3.1 Other traffic problems.

HHIA. Other traffic problems were mentioned by two distribution firms. They referred to restrictions, delays, and non-acceptance of goods at the delivery end of the trip and resulted in lost time, rescheduling of deliveries, and return visits, estimated by one firm to cost £100/month. Both firms distributed widely and delivery problems were not associated with any particular location. One firm used its own vehicles while the other relied mainly on outside haulage.

Stanningley. Excessive and inefficient trips caused by fragmented operations between two sites were the only reported "other traffic" problem in Stanningley.

4.3.2 Internal problems. Table 31 lists the types of internal problems reported in both study areas.

Table 31: Management interview: unprompted internal problems

	description	effect	cost
HHIA (2 firms)	lack of liaison between prodn. and tpt. depts.	affects delivery schedules	n.s.
	reliance on outside hauliers	difficulty planning deliveries and collections	contributes to site costs of £1000/month
Stanningley (7 firms)	reliance on outside haulage i.e. vehicle availability esp. for small loads (3 firms)	(i) delays in production, delays in deliveries	small
		(ii) higher unit cost for small loads	£650/month
		(iii) disruption to dispatch schedules	n.a.
	availability of suitable HGV drivers and mechanics	loss of business	n.s.
	availability of preferred vehicle for fleet replacement	n.s. - pilot firm	n.s.
	restrictions on drivers' hours (2 firms)	(i) n.s. - pilot firm	n.a.
		(ii) n.s. - " "	"
	gov't administrative requirements related to operating a fleet of HGVs	time of senior management	n.a.
	lack of gov't incentives for capital investment in the service sector	inability to invest in new, more efficient premises	n.a.

n.a. = pilot firm ; no cost estimates were asked

n.s. = not stated

4.3.3 Other problems. Table 32 lists the types of other problems reported in both of the study areas.

Table 32: Management interview: unprompted other problems

	description	effect	cost
HHIA (5 firms)	vehicle servicing and repairs	difficulty obtaining replacement vehicles	no cost
	occasional vehicle breakdowns	hire of alternative vehicle, recovery of vehicle and load	£400/month
	(i) vandalism, run-down area	n.s. - pilot firm	n.a.
	(ii) disorganised site layout	n.s. - " "	n.a.
	(i) vehicle reliability	(i) affects delivery schedule	n.s.
	(ii) loss of goods in transit[1]	(ii) no effect	n.s.
	(iii) high haulage rates	(iii) must be considered when planning delivery schedules	n.s.
	(i) loss in transit[1] (ii) lack of local facilities	(i) n.s. - pilot firm (ii) co. veh. used to collect lunch orders	n.a.
Stanningley (3 firms)	high haulage rates	n.s.	£500/month
	vehicle repair and service	n.s. - pilot firm	n.a.
	non-transport problems resulting from fragmented operations	inefficient double handling and reduced warehouse capacity	n.a.

n.a. = pilot firm - no cost estimates were asked

n.s. = not stated

1. due to pilfering esp. if outside haulage used.

4.3.4 Some conclusions. The interview was designed to allow management to raise any problems of this type and to comment on their effect and cost. The response of firms mentioning these problems is an indication that for a number of firms these are seen as being as important as, if not more than, problems within groups A to F, although clearly the scope for possible solutions rests much more with the individual firms. Since there was no subsequent prompting or probing on these issues in the interview, there is the possibility that as a group the reporting of these problems may be underrepresented. Almost without exception problems are independent of firms' activity or location. As the tables indicate, they are frequently associated with the organisation and administration required to keep a fleet of vehicles operating; or to difficulties obtaining reliable haulage, at the time when it is required, and at an acceptable cost.

4.4 Group A to C problems: person trips

4.4.1 Employees' journey to work

Group A (on route to site). Table 33 lists managements' response to possible group A problems.

Table 33: Management interview: employee journey to work, group A problems

(number of firms mentioning problem)

	HHIA	Stanningley
unprompted - pilot[1] (8 firms)	0	0
unprompted - main survey (16 firms)	0	2
prompted[2] - main survey (16 firms)	2	1
stated degree of seriousness of unprompted problems	n.a.	not very (2)
types of problems	congestion(2)	congestion(3)
costs incurred (16 firms) (£/month)	1 (£50)	1 (£5)
location of unprompted and prompted problems	Leeds/Bdfd(2)	study area (1) Leeds/Bdfd(2)

1. Group A problems were not asked as a prompted question in the pilot survey

2. The prompted question referred to congestion. Firms mentioning an unprompted group A problem were not asked the prompted question.

Effects and costs: (i) The overall effects of group A, B and C problems are discussed below.

(ii) Late arrival and consequent lost time were the most obvious effects although staff dissatisfaction was also mentioned.

(iii) Costs were estimated at £50 (HHIA) and £5 (Stanningley) per month. This is equivalent to £0.42 and £0.13 per employee per month respectively. Costs were due to late arrival resulting from the effect of congestion.

Comments: (i) For each study area the reported effect on firms is small but should be viewed in the context of effects (such as recruitment) discussed below.

(ii) Congestion was the only group A problem mentioned.

(iii) The results do not suggest that firms in HHIA suffer different types of problems, or to a greater extent, than those in Stanningley.

(iv) See also Chapter 6 for employees' journey to work details and perception and rating of group A problems.

Group B (parking) Table 34 lists managements' response to possible group B problems.

Table 34: Management interview: employee journey to work, Group B problems (number of firms mentioning problem)

	HHIA	Stanningley
unprompted - pilot (8 firms)	1	0
unprompted - main survey (16 firms)	0	0
prompted[1] - pilot & main survey (24 firms)	4	2
stated degree of seriousness of unprompted problems	fairly (1)	n.a.
types of unprompted problems	inadequate on-site employee pkg.	n.a.
costs incurred (24 firms)	0	0

1. The prompted question referred to shortfall of on-site employee parking.

Effects and costs:

(i) The overall effects of group A,B and C problems are discussed below.

(ii) One HHIA firm lost productive time due to inefficient parking and need to repark cars in on-site employee car park.

(iii) No firms reported that costs were incurred.

Comments:

(i) In the older street network of HHIA on-street employee parking caused by inadequate on-site provision can cause manoeuvring difficulties for commercial vehicles.

(ii) There is some indication that parking for employees may be more difficult in HHIA.

(iii) See also Chapter 5 for results of parking surveys, and Chapter 6 for employees stated parking location and walk distance and perception of parking problems.

Group C (public transport) Table 35 lists managements' response to possible group C problems.

Table 35: Management interview: employee journey to work, Group C problems (number of firms mentioning problem)

	HHIA	Stanningley
unprompted - pilot[1] (8 firms)	1	1
unprompted - main survey (16 firms)	5	7
prompted[2] - main survey (16 firms)	2	0
stated degree of seriousness of unprompted problems	very(1) fairly(2) not very(2) not at all(1)	fairly(6) not very(2)
types of problems	see Table 36	see Table 36
costs incurred (16 firms)	2	5
location of unprompted and prompted problems	study area(2) Leeds/Bdfd(6)	study area(2) Leeds/Bdfd(6)

1. Group C problems were not asked as a prompted question in the pilot survey.

2. The prompted question referred to bus travel in general (including congestion). Firms mentioning an unprompted group C problem were not asked the prompted question.

Effects and costs: (i) The overall effects of group A, B and C problems are discussed below.

(ii) Table 36 contains details of the type, effect and costs of problems mentioned by individual firms.

(iii) The main effect mentioned was time lost through late arrival. There were also implications for working hours and shift and overtime arrangements, and for retention and recruitment of suitable staff.

(iv) Cost estimates ranged from £30.3 to £0.97 per employee per month.

Comments: (i) The highest reporting rate of any problem group.

(ii) The type of problems mentioned covered the full range of possible problems. Reliability and service frequency were the most common.

(iii) Reliability was mentioned somewhat more in HHIA, otherwise there appears to be little difference between HHIA and Stanningley in the type, and extent, of problems mentioned.

(iv) With the exception of bus stop locations (mentioned by one HHIA and two Stanningley firms), the types of problems were independent of location.

(v) See also Chapter 6 for the results of the employee questionnaire.

Table 36: Management interview: public transport problems

	firm no.	problem	effect	cost
HHIA	01	(i) service coverage (ii) transfers (caused by location of firm south of city centre)	"very" serious; mainly extra time and cost to employees, plus effect on recruitment policy and labour catchment areas	n.s.
	02	service frequency	affects start time of a.m. shift	£1000/month
	03	walk distance to bus stop (caused by new road system)	"fairly" important; no specific effects mentioned	pilot firm
	04	reliability (and delays by other traffic)	not stated	-
	05	reliability (busses not arriving)	late arrival of staff, lost production time	£100/month
	07	(i) reliability (ii) service frequency	(i) late arrival (ii) difficult for staff to work overtime	d.k.
STANNINGLEY	13	(i) service frequency (ii) walk dist. to bus stop (no bus service into Grangefield 2nd Estate)	(i) employees need private transport to meet shift times	pilot firm
	14	(i) service frequency (ii) walk dist. to bus stop (no bus service into Grangefield 2nd Estate)	(i) need to provide co. tpt. for staff working weekends; lost time as staff leave early to catch bus	£35/month
	15	reliability (esp. Leeds to Pudsey services)	no direct effect on firm	-
	16	service frequency (and possibly reliability)	lost time through late arrival/ early departure; industrial relations	n.s.
	17	(i) reliability (ii) cost of bus travel	(i) lost time through late arrival	£180/month
	18	(i) service coverage and possibly reliability), travel time by bus (ii) cost of bus travel	(i) lost time through late arrival (i) & (ii) staff reluctant to work o/time if they can get a lift home	£100/month (total of late arrivals by car & bus)
	19	(i) service frequency (ii) need to use more than one stage (iii) cost of bus travel	(i) difficulty meeting a.m. times (ii) & (iii) recruitment difficulties for skilled labour	£450/month (total of i,ii & iii)
	21	(i) service coverage (ii) need to use more than one stage	(i) & (ii) refers to both j to w and business trips: lost time, difficulty scheduling labour (staff travel directly from home to dispersed job sites)	£450/month (doubtful accuracy

Effects of group A to C problems

The review of the literature (6) and the pilot surveys suggested that the transport problems of employees would affect the firm principally through lost time (and hence reduced productivity), staff dissatisfaction, and difficulties retaining and recruiting suitable staff. A series of prompted questions were designed to determine the extent and severity of these effects, and the results for each study area are tabulated in Table 37. (Appendix III contains responses from individual firms.) In interpreting the results of Table 37 it should be noted that there may be transport factors other than simply the journey to work which may affect managements' reporting of the effects. For example difficulties with personal trips during the day may influence absenteeism, turnover and recruitment (see Section 4.4.4) although the impression gained during the interviews was that journey to work was the principal transport factor.

Table 37: Management interview: effects of problems, employees

	late arrival of staff		absenteeism		staff turnover	
	HHIA	Stan.	HHIA	Stan.	HHIA	Stan.
no. of firms reporting problem	8	9	6	3	7	7
mean score; severity of problem, all firms (100 = extremely serious; 0 = not a problem)	27	23	25	10	23	19
mean score; severity of problem for those who reported problem (100 = extremely serious, 0 = not a problem)	41	31	50	42	39	32
mean score; importance of transport for those who reported the problem (100 = extremely; 0 = not at all)	66	36	25	25	14	14
no. of firms reporting that transport contributed to the problem	8	8	3	2	4	2

	recruitment	
	HHIA	Stanningley
no. of firms reporting recruitment difficulties	10	11
recruitment concentrated in particular areas for transport reasons (16 main survey firms only)	1[1]	4[1]
recruitment difficulties in particular areas for transport reasons	0	1

1. plus unprompted comments from one pilot firm in each study area.

Comments: (i) Taken over all firms in each area the degree of severity for late arrival, absenteeism and turnover was approximately equivalent to "not a serious problem", although of course the rating is considerably greater if only those firms which stated they were affected are considered. The exception was absenteeism in Stanningley, where there was no obvious explanation for the lower degree of severity.

(ii) Transport was an important factor in late arrival, particularly for HHIA firms. For HHIA firms which reported late arrival transport factors were estimated to be responsible for 75-80% of lost time, equivalent to 6.2 minutes/employee/week (or approx. 0.25% of productive time). The corresponding figures for Stanningley were 25-30% and 3.2 minutes. In view of the apparent importance of public transport difficulties, the mode split of 48% and 21%[1] by bus in HHIA and Stanningley respectively may explain a large part of this difference.

(iii) Transport factors were considered to play a relatively minor role in contributing to absenteeism and turnover, and there was no difference in managements' assessment of its importance between study areas.

(iv) Recruitment of suitable staff affected nearly all firms irrespective of activity or location, however only one of the eight HHIA specifically asked had a policy of recruiting locally for transport reasons. On the other hand half the Stanningley firms attempted to recruit locally and the extent to which this was successful may be seen from the high proportion of Stanningley employees who walk to work - 20% compared with 8% in HHIA[2]. Management considered there to be little difficulty in recruiting from particular areas because of transport reasons.

(v) Recruitment difficulties were experienced with the following categories of employees:

	no. of firms experiencing recruitment difficulties	
	HHIA	Stanningley
managerial/professional	2	5
office (clerical/technical)	3	5
skilled	6	8
semi-skilled	3	4
other	1	0
difficulty with at least one category	10 firms	11 firms

1. See Chapter 6, Table 5B.

2. See Chapter 6, Table 5B. It should be noted that close catchment areas are more extensive in Stanningley, partly the result of slum clearance in HHIA.

and there was no clear difference in ability to recruit particular categories between the study areas.

(vi) The effects discussed above depend to some extent on work hour arrangements and firms' policy towards travel assistance for employees[1]:

work hour arrangements (main survey firms only)	all work fixed hours except one HHIA firm which operates an unofficial flexitime system and one Stanningley firm where the lunch break may be varied unofficially
travel assistance for the journey to work (all firms; excluding use of co. vehs. by management and others)	van collects staff at home[2] - 2 HHIA firms. Staff working o/time or weekends reimbursed for cost of trips - 1 Stanningley firm.

The extent to which company policy was designed to alleviate journey to work problems, or encourage retention/recruitment of staff, was therefore somewhat limited in both study areas.

4.4.2 Business trips

Group A (on route to site)

Table 38 lists managements' response to possible group A problems.

Table 38: Management interview: business trips, group A problems

(number of firms mentioning problem)

	HHIA	Stanningley
unprompted - pilot[1] (8 firms)	1	0
unprompted - main survey (16 firms)	0	0
prompted[2] - main survey (16 firms)	3	1
stated degree of seriousness of unprompted problems	fairly (1)	n.a.
types of problems[2]	congestion (4) indirect route/ one-way streets (1)	congestion (1) indirect route/ one-way streets (2)
location of unprompted and prompted problems[2,3]	study area (3) central Leeds (1) external (2)	central Leeds (3)

1. Group A problems were not asked as a prompted question in the pilot survey.
2. The prompted question referred to congestion. One HHIA firm and two Stanningley firms also stated that business trips were affected by indirect route/one-way streets.
3. One HHIA firm specified more than one location.

... ...

1. See Appendix IV for details of arrangements at individual firms.
2. Not available to all staff of either firm.

Effects and costs: (i) The overall effects of group A, B and C problems are discussed below (Table 40).

(ii) The main effect was lost time and, for one HHIA firm, consequent loss of business.

(iii) Lost time as a result of congestion (and to some extent indirect routing and one-way streets) imposed costs on one firm in HHIA and three in Stanningley.

Comments: (i) Congestion was the most frequently mentioned problem and occurred within the HHIA study area as well as the central area generally. It was reported more frequently by HHIA firms.

(ii) Although four firms incurred costs, the unprompted responses suggest that group A problems are not of great concern to management.

(iii) Firms in both study areas experienced similar types of problems.

Group B (parking)

Table 39 lists managements' response to possible group B problems.

Table 39: Management interview: business trips, group B problems
(number of firms mentioning problem)

	HHIA	Stanningley
unprompted - pilot (8 firms)	1	0
unprompted - main survey (16 firms)	0	0
prompted[1] - pilot + main survey (24 firms)	1	2
stated degree of seriousness of unprompted problems	fairly (1)	n.a.
types of unprompted problems	parking in central Leeds (1)	n.a.
location of unprompted problems	central Leeds (1)	n.a.

1. The prompted question referred to shortfall of on-site parking for company cars.

Effects and costs: (i) The overall effects of group A, B and C problems are discussed below (Table 40).

(ii) Response indicatesthat effects and costs are minimal. One firm in each study area indicated that costs were incurred as a result of time lost searching for parking in central Leeds.

Comments: (i) There were two types of group B problems - on-site parking shortfall and inadequate parking elsewhere (viz. central Leeds).

(ii) There was no indication of differences in the type or severity of problems between study areas.

(iii) See also Chapter 5 for results of the parking surveys.

Group C (public transport)

No firms in either study area reported using public transport for business trips, except for infrequent long distance rail or air trips outside the region.

Effects and costs of group A and B problems: Table 40 lists the stated degree of importance of business trips, the extent to which they were inconvenienced, and the effects and costs incurred.

Table 40: Management interview: business trips, effect of problems

	HHIA (12 firms)	Stanningley (12 firms)
no. of firms for which business trips were important	12	10
mean score; degree of importance[1]	81	48
no. of firms for which business trips were inconvenienced by group A and B problems	6	6
mean score; degree of inconvenience[1]	25	30
operations affected	1	1
costs incurred[2] (£/month)	2 group A: £320 group B: £50	4 group A: £280,£40,£10 group B: £20
type of effect/reason for inconvenience[2]	gp A: lost time & business (1) gp B: lost time (1) n.s. (4)	gp A: lost time (3) gp B: lost time (2) n.s. (1)

1. See Appendix II for explanation of mean scores.

2. Management found it difficult to unambiguously assign costs and effects to either group A or group B.

Comments, groups A and B: (i) In spite of the stated importance of business trips for HHIA firms, and the number of firms which indicated that trips were inconvenienced by group A and B problems, the effect on firms' operations was not extensive.

(ii) The mean score suggests that on average trips were not seriously inconvenienced.

(iii) Congestion within HHIA and central Leeds was the most frequently mentioned problem.

(iv) All problems resulted in lost time and in one case consequent loss of business.

(v) Both study areas experienced similar types of problems. Twice as many Stanningley firms incurred costs.

4.4.3 Visitor trips.

Group A (on route to site)

Table 41 lists managements' response to possible group A problems.

Table 41: Management interview: visitor trips, group A problems
(number of firms mentioning problem)

	HHIA	Stanningley
unprompted - pilot[1] (8 firms)	1	0
unprompted - main survey (16 firms)	0	1
prompted[2] - main survey (16 firms)	2	3
stated degree of seriousness of unprompted problems	not very (1)	n.s.
types of problems	difficulty finding site for first time visitors[3](1) congestion (1) n.s. (1)	confusion caused by adjacent traffic management[4](1) difficulty finding(2) congestion[5] (1)
locations	study area (3)	study area (4)

1. A prompted question was not asked in the pilot.
2. The prompted question referred to difficulties with visitor trips in general.
3. Caused by one-way street system.
4. Street closure, signalization and parking restrictions.
5. Caused by parked and loading vehicles in frontage street.

Effects and costs: (i) The overall effects of group A, B and C problems are discussed below (Table 43).

(ii) Effects were minimal.

Comments: (i) Difficulty finding firms presumably only affects first time or infrequent visitors.

(ii) The response did not indicate significant differences between study areas.

(iii) Refer to Chapter 7 for results of visitor questionnaire.

Group B (parking)

Table 42 lists managements' response to possible group B problems.

Table 42: Management interview: visitor trips, group B problems
(number of firms mentioning problem)

	HHIA	Stanningley
unprompted - pilot (8 firms)	1	0
unprompted - main survey (16 firms)	0	1
prompted[1] - pilot + main survey (24 firms)	5	2
stated degree of seriousness of unprompted problems	not at all (1)	n.s.
types of unprompted problems	on-street pkg. restrictions(1)	on-street pkg. restrictions(1)

1. The prompted question referred to shortfall of on-site parking for visitors' cars.

Effects and costs: (i) The overall effects of group A, B and C problems are discussed below (Table 43).

(ii) Effects are minimal.

Comments: (i) Inadequate on-site parking for visitors mentioned by more firms in HHIA than Stanningley.

(ii) Refer to Chapter 5 for results of the parking surveys.

Group C (public transport)

No firms in either study area reported difficulties for visitor trips caused by public transport. The visitor questionnaire (Chapter 7) indicated that almost all visitors used private transport.

Effects and costs of group A and B problems: Table 43 lists the stated degree of importance of visitor trips, the extent to which they were inconvenienced, and the effects and costs incurred.

Table 43: Management interview: visitor trips, effect of problems (main survey firms only)

	HHIA (8 firms)	Stanningley (8 firms)
no. of firms for which visitor trips were important	8	7
mean score; degree of importance[1]	66	44
no. of firms for which visitor trips were inconvenienced by group A and B problems	5	3
mean score; degree of inconvenience	29	14
operations affected	0	0
costs incurred	0	0
type of effect/reason for inconvenience	no effects (5)	loss of goodwill[2] (1) no effect (2)

1. See Appendix II for explanation of mean scores.
2. This had no real effect on firm.

Comments: (i) The fact that visitor trips were regarded as more important on average by HHIA firms probably reflected the sales/distribution function of some of the firms (2 firms have showrooms and 2 operate trade counters).

(ii) Managements' knowledge of, and interest in, trips by visitors was (in general) considerably less than for business trips by their own staff.

(iii) There were no firms where management was actively trying to identify, or ease, problems of visitors. The impression gained during the management interview was that any problems applied only to visitors and not to the firm. This might be understandable in view of the stated negligible effect of visitors' problems.

(iv) Except for shortfall in on-site parking (five HHIA and two Stanningley firms) there were not significant differences in the type or severity of reported problems.

4.4.4 Personal trips[1]. Management were asked a prompted question relating to difficulties with, and effects of, personal trips made by employees during the day. Table 44 lists the response. One HHIA firm provided an unprompted comment relating to inadequate local facilities.

Table 44: Management interview: personal trips, problems and effects (number of firms mentioning problem; pilot plus main survey)

	HHIA (12 firms)			Stanningley (12 firms)		
unprompted - pilot (8 firms)	1[1]			0		
unprompted - main survey (16 firms)	0			0		
prompted - pilot + main survey (24 firms)						
- inadequate local facilities	2			5		
- transport difficulties	5			5		
- paid time lost	4			5		
types of problems[2]						
- group A	1[3]			0		
- group B	0			14		
- group C	2[5]			4[6]		
- other	4[7]			1[7]		
assistance provided by firm	2[8]			2[8,9]		
costs incurred (£/month)	n.s.			2 (£20, £140)		
paid time lost	4			5		
estimate of paid time lost	firm no.	emp't	man hrs. lost/wk	firm no.	emp't	man hrs. lost/wk
	1	500	9	13	498	d.k.
	2	33	1	14	36	2
	4	73	2	16	228	5
	7	86	2	17	100	d.k.
				18	102	10

1. Inadequate local facilities
2. Some firms stated more than one problem
3. Access to central Leeds
4. Parking in Pudsey town centre
5. Inadequate bus service to central Leeds
6. Inadequate bus services to Bramley (2) and Pudsey (2)
7. Insufficient time to reach local facilities during lunch break
8. Company vehicle used to collect lunch orders; HHIA (2), Stanningley (2).
9. Use of company vehicle to give lifts on personal trips, 1 firm.

... ...

1. Personal trips by employees during the day, e.g. lunch, shopping and services such as bank, dentist, etc.

Effects and costs: (i) No firms reported that operations were affected by personal trips.

(ii) Although reported by a total of nine firms, lost time is small in terms of number of employees. The average for all firms which lost time was 1.76 mins/employee/week, and the maximum lost by any one firm about 6 mins/employee/week. The average is about one-quarter of that for late arrival - see p 65).

(iii) Travel assistance was given by four firms, two of which estimated that costs were incurred.

(iv) There was no indication from the management interview of the extent to which difficulties with personal trips might lead to employee dissatisfaction and retention/recruitment problems.

Comments: (i) There was no indication that effects such as lost time were more severe for particular types of firms, or those employing a particular mix of workforce.

(ii) Although local facilities were considered inadequate by more Stanningley firms there did not appear to be significant differences in the type, severity or effect of transport problems.

(iii) Effects and costs of personal trips depend to some extent on firms' policy towards employees extending the lunch break (either with or without pay) to enable trips to be completed, as well as any travel assistance or service provided by the company. The lunch break arrangements adopted by the main survey firms are listed in Table 45 and Appendix IV gives details of working hours and travel assistance for individual firms.

Table 45: Management interview: lunch break arrangements
(main survey firms only)

	HHIA (8 firms)	Stanningley (8 firms)
lunch break can be extended		
- with pay	2	1
- with pay for some staff, without for other	3	4
- without pay	2	0
	7[1]	5[1]
lunch break cannot be extended	1	3

1. Including 3 firms in each area which only allowed extra time to be taken for important trips (e.g. dentist, doctor, etc. but not for lunch or shopping).

Firms which allowed the lunch break to be extended adopted a variety of policies as to whether the extra time was with or without pay. It was common for office staff to take time with pay and for production staff to take time without pay. All nine firms which reported that paid time was lost allowed the lunch break to be extended (for important trips only in the case of five firms).

(iv) Only one firm in each study area operated an (unofficial) system of flexitime/variable lunch break.

(v) Facilities are not distributed evenly in either HHIA or Stanningley[1]. Because of the size of each of the areas the location of individual firms will be an important determinant of the extent of difficulties with personal trips[2].

(iv) See also Chapter 6 for results of employee questionnaire.

... ...

1. Mainly located in the city centre to the north of HHIA; and in Pudsey and Bramley town centres to the south and east respectively of Stanningley.

2. Location in relation to the facilities themselves and also to transport services e.g. walk distance to bus stop, availability of suitable bus services.

4.5 Group D to F problems: commercial vehicle trips

4.5.1 Group D (on route to site). Table 46 lists managements' response to possible group D problems.

Table 46. Management interview: commercial vehicles, group D problems (number of firms mentioning problem)

	HHIA	Stanningley
unprompted - pilot[1] (8 firms)	2	0
unprompted - main survey (16 firms)	1	0
prompted - congestion (16 firms)	2	2
indirect route/one way streets (16 firms)	2	0
poor road surface[2] (16 firms)	3	4
height or weight restrictions (24 firms)	0	0
stated degree of seriousness of unprompted problems	fairly (2) not stated (1)	n.a.
types of unprompted problems	congestion (3)	n.a.
costs incurred (16 firms) (£/month)		
congestion	0	1 (£100)
indirect route/one way streets	1(£50)	n.a.
poor road surface[2]	1 (£5)	0
locations (unprompted and prompted problems)		
congestion	study area/ central Leeds(3) Leeds/Bdfd (1) external (1)	study area (1) external(1)
indirect route/one way streets	study area (2)	n.a.
poor road surface[2]	on-site (1) study area (2)	study area (4)

1. Group D problems were not asked as a prompted question in the pilot.

2. The question specifically referred to the road condition within 1 mile of the site.

Effects and costs:

(i) Few firms stated that they were affected or that costs were incurred.

(ii) The response to a series of prompted questions relating to delays in delivery of goods-in is shown in Table 47.

Table 47. Management interview: effects of delays, goods-in

(Number of firms mentioning problem, pilot and main survey)

	HHIA (12 firms)	Stanningley (12 firms)
frequency of delays in delivery:		
> 1/week	2	0
> 1/month	1	0
< 1/month	2	4
never	7	8
usual length of delays:		
< 1 hour	1	1
< ½ day	1	0
½-1 day	1	3
1 day - 1 week	1	0
longer	0	0
n.s.	1	0
group D problems contributing to delays	1[1]	1[1]
effects of delays[2]	lost time (1) lost orders/ sales (2) reduced output (1) no effect (2)	lost time (1) lost orders/ sales (1) reduced output (3) supplies obtained elsewhere (2) no effect (1)
no. of firms stating operations affected	3	3
operations affected by group D problems	1[3]	1[3]
costs incurred[4] (£/month)	2 due to gp.D:1(£80) other: 1 (£250)	1 due to gp.D:0 other: 1 (£50)

1. Refers to congestion on local roads in both cases.
2. Some firms specified more than one effect.
3. Refers to effect of time lost because of congestion in both cases.
4. Excluding the costs mentioned in Table 46.

Only 2 firms attributed delays to group D problems. Delays for the remaining seven firms were inevitably caused by suppliers not meeting orders on time or the unreliability of outside hauliers. One HHIA firm estimated that time lost through congestion resulted in a cost of £80/month.

(iii)Table 47 enables the effects of group D problems to be placed within the context of other causes of delays in supplies.

Comments and Summary: (i) Group D problems did not appear to be of serious concern to management.

(ii) Of the problems mentioned, congestion and indirect routeing are the only problems which affected firms. Although frequently mentioned, the poor condition of roads within the study areas resulted in only a small cost to one HHIA firm. This was in spite of several firms mentioning vehicle servicing and reliability (Table 32).

(iii)Congestion may be more of a problem to HHIA firms; and it was seen as mainly a local study area problem for those HHIA firms which reported it. Similarly indirect routeing was a local problem for the HHIA firms which mentioned it.

(iv) Managements' perception of group D problems is likely to be influenced by the fact that for the firms surveyed most trips were made by non-firm vehicles.[1]

(v) See also Chapter 8 for results of the commercial vehicle driver interview.

... ...

1. 83.1% in HHIA; 74.7% in Stanningley - see Chapter 8, Table

4.5.2 Group E problems (within site)

Table 48 lists managements' response to possible group E problems.

Table 48. Management interview: commercial vehicles, group E problems
(Number of firms mentioning problem)

	HHIA	Stanningley
unprompted - pilot (8 firms)	1	0
unprompted - main survey (16 firms)	2	0
prompted: inadequate on-site parking (24 firms)	1	1
available space affects on-site manoeuvrability (16 firms)	5	3
on-site height/width restrictions (24 firms)	4	1
stated degree of seriousness of unprompted problems	fairly (1) not very (1) n.s. (1)	n.a.
types of unprompted problems	restricted manoeuvr. for large loads(1) access into site (2)	n.a.
effects (unprompted problems only)	lost time (2) n.s. (1)	n.a.
costs incurred (24 firms)(£/month)	1 (£80)[1]	0

1. Lost time due to access difficulties.

Effects and costs: Two HHIA firms lost time and one of these firms estimated that costs were incurred.

Comments and summary: (i) Although effects were not felt extensively, the response by management suggested that on-site difficulties might occur more frequently in HHIA than Stanningley.

(ii) The response may be influenced by the fact that most vehicles were not owned by the firms themselves, and by the relatively small proportion of large vehicles which visited the firms which were surveyed (Chapter 8).

(iii) See also Chapter 8 for results of the commercial vehicle driver interview and survey of on-site conditions.

4.5.3 Group F problems (loading/unloading)

Table 49 lists managements' response to possible group F problems.

Table 49. Management interivew: commercial vehicles, group F problems.
(Number of firms mentioning problem)

	HHIA	Stanningley
unprompted - pilot (8 firms)	1	0
unprompted - main survey (16 firms)	1	0
prompted: inadequate loading facilities (24 firms)	2	1
at least some on-street loading (24 firms)	4 (100%(1) (50%(1) (5%(1) (2.5%(1)	3 (10%(2) (n.s.(1)
available space affects loading (16 firms)	4	2
frequency of delays during loading/unloading (24 firms): several times/day	0	1
several times/week	1	1
several times/month	3	2
less frequently	2	3
never	6	5
time restrictions imposed by the firm (24 firms)	0	3[1]
stated degree of seriousness of unprompted problems	very (1) n.s. (1)	n.a.
types of unprompted problems	difficulty ldg. spec. product (1) care req'd unldg. dangerous chems.(1)	n.a.
effects (unprompted problems only)	lost time & delays to other vehs.(1) no effect (1)	n.a.
operations affected (16 firms)	1	0
costs incurred (16 firms) (£/month)	1 (£1000)[2]	0

1. Restrictions apply only to deliveries to the firm.
2. Firm 2: Group F problems contribute to total on-site costs of £1000. For its SIC and employment this firm had an unusually high level of commercial vehicle activity.

Effects and costs: Only one HHIA firm was affected by loading or unloading delays which, because of the specialist nature of the product, contributed to additional handling costs of £1000/month. (see Section 4.3.2). No firms stated that on-street loading involved extra costs.

Comments: (i) Delays during loading or unloading were seen by most firms as a suppliers' problem. Similarly on-street loading was not regarded as a difficulty even if it resulted in disruption to through traffic.

(ii) Table 49 suggests that loading operations were non-optimum at about one-third of firms and that over one-half experienced loading delays.

(iii) With one exception effects and costs were not seen as significant.

(iv) Where management could unambiguously identify the reasons for delays (5 firms) they were the result of staff not being available to unload vehicles. This was more an internal matter related to staffing levels although having implications in terms of costs to suppliers.

(v) There was some indication that group F problems were more widespread in HHIA than Stanningley.

(vi) See also Chapter 8 for the results of the commercial vehicle driver interview and survey of on-site conditions.

4.5.4 Other possible problems related to goods and services

In addition to group D, E and F problems, management were asked a number of more general prompted questions on available space, stockpiles and delivery schedules. This was because of the possibility that these could be influenced by, or related to, both the firms' transport operations and to problems within groups D, E and F. Table 50 summarizes the response to these questions.

Table 50. Management interview: other problems related to goods and services

(Numbers of firms mentioning problem; all questions were prompted)

	HHIA	Stanningley
stockpiles (24 firms):		
levels are non-optimum	5	8
transport affects levels	0	0
extra costs incurred	1 (amount not stated)	5 (£5000,£400, £1500,£100,n.s.1)
available on-site space affects stockpile levels (16 firms)	5	3
deliveries from the firm (24 firms)		
- distrib. frequency is non-opt.	5	6
- transport affects distr. freq.	1 (reliance on suppliers vehs.- 1)	3[1] (inadequate ldg. facilities - 2, shortage of drivers - 1, location of customers - 1)
- extra costs incurred (£/month)	0	6 (£300,£400,£400, d.k. - 3)
- transport contributes to extra cost	n.a.	3(gp.D(1) (gp.F(2)
available on-site space affects despatch schedules or frequency	3	1
restrictions on delivery times imposed by customers	3	5
larger or heavier vehicles would help deliveries	1 (veh.size determd. by internal policy)	1 (loading bay restricts veh.hght.)

1. One firm specified two reasons.

Comment and summary: (i) Stockpile levels were frequently non-optimum and there were consequent cost penalties. The reasons were not related to transport factors and except for one Stanningley firm the costs were associated with cash flow considerations. Transport

of excess stockpiles to a second warehouse was estimated by one Stanningley firm at £400/month. Space availability might be more of a factor for HHIA firms and was the single reason for non-optimum levels given by four of the five HHIA firms which stated that levels were non-optimum[1].

(ii) Distribution frequencies or schedules were non-optimum for almost half the firms. The reason was mainly customer requirements although inadequate on-site loading facilities at two Stanningley firms and space restrictions at three HHIA firms contributed to distribution problems. Costs were incurred for a variety of reasons including extra storage charges, extra mileage and lost time. It appeared from the interview however that the management of many firms had difficulty specifying precisely the reasons why costs were incurred.

(iii) Both non-optimum stockpiles and distribution frequencies affected firms in HHIA and Stanningley. Neither the type of problem, nor its effects, were influenced to a large extent by transport factors although available space limited stockpile levels in HHIA. Apart from this factor neither issue appeared to depend on location.

4.5.5 Some conclusions (i) Partly because of the high proportion of commercial vehicle movements made by non-firm vehicles, management frequently regarded group D to F problems, and any resulting costs, as a matter for suppliers rather than the firm itself.

(ii) Group D problems related to congestion, indirect routeing and one-way streets, and poor road surface. Congestion and routeing difficulties were more associated with HHIA however few firms incurred costs as the result of lost time. Group D problems were not seen as a major contributor to delays in supplies of materials.

(iii) Loading delays occurred infrequently and in most cases did not impose costs. Site conditions appeared to be worse in HHIA although insufficient staff to unload was given as the main reason for delays. On-street loading did not impose additional handling costs on firms and was likely to be more of a problem to through traffic than the firm itself.

... ...

1. Stockpiles of one further firm were considered to be affected by available space, however management did not consider that levels were non-optimum.

(iv) Group D to F problems did not significantly affect stockpiles or delivery schedules although the former was influenced by available on-site space and the latter by restrictions imposed by customers.

4.6 Comparison of group A to F problems

4.6.1 Interpretation. This section compares the different types of reported problem in terms of extent and severity, using the detailed results presented in Sections 4.4 and 4.5. Firstly problem groups and study areas are compared in Section 4.6.2. Section 4.6.3 then lists the more important specific problems within groups A to F and Section 4.6.4 attempts to determine any differences between types of industry in reported problems or their effects.

The tabulations should be interpreted with caution. Many of the problems and their response rates are not directly comparable. Question phrasing used in the interview is also often not directly comparable for different problems or problem groups and the number of questions posed may have given undue emphasis to some problems. Costs may be incurred by the firm in spite of the fact that management considered that operations were not affected. Similarly management may consider that the effect of a problem such as time lost through late arrival may not affect operations or directly result in identifiable costs. Costs will also be incurred by those firms suffering absenteeism, turnover and recruitment difficulties where part of the difficulty was attributable to transport factors. Interview design does not allow these indirect costs to be unambiguously assigned to a particular problem group although the impression gained during the interviews suggests that most are due to group C problems. (Refer to Appendix III - Effect of transport - staff).

To facilitate presentation, responses to several prompted questions relating to one particular problem group have simply been added to give the total number of instances the problems were mentioned. This is the case for groups D to F, and hence comparison between problem groups as to relative degree of severity should be made in the context of the detailed comments of Sections 4.4 and 4.5.

4.6.2 Comparison of problem groups Table 51 summarises the response of management to problems within groups A to F and lists the number of firms which indicated that operations were affected or costs were incurred as a result of the problem.

Table 51. Management Interview: Comparison of problem groups

(Numbers of firms mentioning problem)

Problem group	Response rate[1]						Operations affected[2]		Costs incurred[3]		Comments
	HHIA			Stanningley							
	u.p. pilot	u.p. main	p	u.p. pilot	u.p. main	p	HHIA	Stan.	HHIA	Stan.	
Group A (on route to site)											
(i) employees journey to work	0/4	0/8	2/8	0/4	2/8	1/8	0/12	0/12	1/12[4]	1/12[4]	
(ii) business trips	1/4	0/8	3/8	0/4	0/8	1/8	1/12	1/12	1/12	3/12	
(iii) visitor trips	1/4	0/8	2/8	0/4	1/8	3/8	0/8	0/8	0/8	0/8	
(iv) personal trips	0/4	0/8	1/12	0/4	0/8	0/12	0/12	0/12	n.a.	n.a.	Paid time lost - see note 5.
Group B (parking)											
(i) employees journey to work	1/4	0/8	4/12	0/4	0/8	2/12	0/12	0/12	0/12	0/12	
(ii) business trips	1/4	0/8	1/12	0/4	0/8	2/12	0/12	0/12	1/12	1/12[6]	
(iii) visitor trips	1/4	0/8	5/12	0/4	1/8	2/12	0/12	0/12	0/12	0/12	
(iv) personal trips	0/4	0/8	0/12	0/4	0/8	1/12	0/12	0/12	n.a.	n.a.	Paid time lost - see note 5.
Group C. (public transport)											
(i) employees journey to work	1/4	5/8	2/8	1/4	7/8	0/8	0/12	0/12	2/8[4]	5/8[4]	
(ii) business trips	0/4	0/8	0/8	0/4	0/8	0/8	0/12	0/12	0/12	0/12	No firms use public transport
(iii) visitor trips	0/4	0/8	0/8	0/4	0/8	0/8	0/12	0/12	0/12	0/12	Visitor use of public transport is insignificant
(iv) personal trips	0/4	0/8	2/12	0/4	0/8	4/12	0/12	0/12	n.a.	n.a.	Paid time lost - see note 5.
Group D (on route to site)[7]	2/4	1/8	7/12	0/4	0/8	6/12	1/12	1/12	2/8	1/8	Refers to a total of 4 prompted questions - see note 7 and Table 46.
Group E (within site)[7]	1/4	2/4	10/12	0/4	0/8	5/12	0/12	0/12	1/12	0/12	Refers to a total of 3 prompted questions - see note 7 and Table 48.
Group F (loading/unloading)[7]	1/4	1/8	16/12	0/4	0/8	16/12	1/12	0/12	1/12	0/12	Refers to a total of 5 prompted questions - see note 7 and Table 49.

1. u.p. = unprompted; p = prompted. If a problem was mentioned unprompted, the subsequent prompted question was not asked.

2. Costs may be incurred even though operations are not affected.

3. Only those firms which actually stated a money cost have been included. Firms which stated an effect such as lost time but did not estimate a money cost have been listed as a footnote.

4. In addition, 8 firms in each of HHIA and Stanningley stated that paid time was lost as the result of late arrival without specifying to which mode this referred.

Footnotes 5, 6 and 7 are on next page.

Table 51 footnotes (cont'd)

5. 5 firms in each of HHIA and Stanningley stated that there were transport difficulties for employees making personal trips. It was not possible to assign the difficulties of 2 HHIA firms to a particular problem group. 4 firms in HHIA and 5 firms in Stanningley stated that paid time was lost as the result of difficulties with personal trips without specifying unambiguously to which mode or problem group this referred.

6. An additional Stanningley firm mentioned lost time searching for parking in the city centre but did not estimate a money cost.

7. A series of prompted questions were asked relating to problem groups D, E and F. The prompted response, whether operations were affected, and costs incurred which are tabulated are the sum of responses to all these questions, plus any unprompted effects/ costs mentioned.

Comments:

(i) The number of firms whose operations were affected by group A to F transport problems is very small. There is no indication that operations of HHIA firms were more seriously affected than those of Stanningley firms.

(ii) The number of firms which estimated that money costs were incurred as the result of group A to F problems is similarly very small and there is no indication that more HHIA firms incurred costs than Stanningley firms, or that the magnitude of HHIA costs were greater than those of Stanningley. In fact more Stanningley firms appeared to incur costs as the result of group A and C problems.

(iii) Of the full range of possible transport problems mentioned by, and prompted to management, those which were reported to any significant degree and which may possibly affect firms were:

	unprompted	prompted
Group A	Stanningley	HHIA and Stanningley
Group B	-	HHIA
Group C	HHIA and Stanningley	Stanningley (personal trips)
Group D	HHIA	-
Group E	HHIA	-
Group F	-	HHIA and Stanningley

(iv) With the possible exception of group B and E problems, there do not appear to be differences between study areas which were unambiguously caused by location.

(v) Refer to Chapters 5, 6, 7 and 8 for the results of the other surveys conducted at each firm.

4.6.3 Types of problems

Table 52 lists the specific problems within groups A to F which were mentioned or discussed in the mangement interview and indicates the trips which experienced the particular problem and the resulting effect on firms. Reference should be made to Sections 4.4 and 4.5 for managements' assessment of the severity and relative importance of the various problems and their effects.

Comparing the problems in Table 52 with those suggested by the literature review (Table 1):

Not mentioned in literature review	Not mentioned by management
B. Inadequate parking elsewhere (e.g. city or local centres) C. Walk distances to bus stops F. Restrictions on loading/ unloading times imposed by the firm itself	B. Cost of car parking A and D. Congestion caused by parked or loading vehicles D. Narrow/twisting streets F. Inadequate on-street loading zones D and F. Restrictions on delivery times and loading zones imposed by local authorities

4.6.4 Effect of industrial classification

Section 1.4.3 (Figure 2) outlined the criteria adopted for the selection of firms in each study area. These were primarily designed to ensure that, as far as possible, each sample would be representative of all manufacturing and associated services. It was also intended that firms covering a range of (i) type of workforce (ii) economic status[1] and (iii) level of goods vehicle activity would be included so that there would be the possibility to test whether there were differences in the type or severity of problems (and their effects) between these broad categories of firms. It was recognised when determining sample size that this might be difficult to analyse in practice.

... ...

1. Indicated by declining and expanding industries.

Table 52. Management Interview: Types of problems

	Trips experiencing problem					Effect of problem on firm				
	employee journey to work	business	visitor	personal trips	commercial vehicle trips	employees journey to work	business	visitor	personal trips	commercial vehicle trips
Group A Congestion	✓	✓	✓	?		lost time, staffing[1]	lost time, lost business	none	lost time?	
Indirect route/ one-way street	x	✓	✓	x		n.a.	lost time	none	n.a.	
difficulty finding	x	x	✓	x		n.a.	n.a.	none	n.a.	
poor road surface	x	x	x	x		n.a.	n.a.	n.a.	n.a.	
Group B Inadequate on-site parking for:										
employees	✓	n.a.	n.a.	n.a.		lost time?	n.a.	n.a.	n.a.	
company cars	n.a.	✓	n.a.	n.a.		n.a.	none	n.a.	n.a.	
visitors	n.a.	n.a.	✓	n.a.		n.a.	n.a.	none	n.a.	
Inadequate on-street parking for visitors	n.a.	n.a.	✓	n.a.		n.a.	n.a.	none	n.a.	
Inadequate parking elsewhere	x	✓	x	✓		n.a.	lost time	n.a.	lost time	
Group C										
service coverage	✓	x	x	x		lost time	n.a.	n.a.	n.a.	
service frequency	✓	x	x	✓		staffing[1]	n.a.	n.a.	lost time	
walk distance	✓	x	x	✓		effects on	n.a.	n.a.	lost time	
transfers	✓	x	x	x		production	n.a.	n.a.	n.a.	
cost	✓	x	x	x		schedules	n.a.	n.a.	n.a.	
reliability	✓	x	x	x		- refer to Table 36	n.a.	n.a.	n.a.	
Group D										
congestion					✓					time lost
indirect route/ one-way streets					✓					lost time
poor road surface					✓					none
Group E										
restricted manoeuvrability into or within site					✓					lost time
inadequate on-site parking					✓					none
Group F										
inadequate loading facilities[2]					✓					lost time
on-street loading					✓					none
space restricts loading					✓					none
loading delays					✓					lost time
restrictions on loading times (imposed by the firm)					✓					none

1. I.e. possible effects on absenteeism, turnover, recruitment, and possibly staff dissatisfaction

2. Including difficulty loading/unloading specialist or dangerous products.

✓ = yes; x = no; ? = possibly

The responses by the management of individual firms listed in Appendix III provide an initial assessment as to possible differences between types of firms. Given the restriction on comparisons imposed by sample size Appendix III suggests that unless significant differences can be detected between manufacturing (SICs 3-19) on the one hand and service orientated firms (SICs 20, 22 and 23) on the other it is unlikely that further analysis would reveal other differences. This is because (i) by the nature of their activity firms in the service group are typically more dependent on transport for their day-to-day operations, (ii) these two groups are typically associated with low and high levels of goods vehicle activity respectively, and hence it would be expected that there could be differences in managements' assessment of the impact of transport problems, particularly as they relate to commercial vehicles and the movement of goods and services.

Table 53 lists the response by management to a series of possible problems for firms in the manufacturing and service groups. The numbers of firms in each group are:

	HHIA	Stanningley	total
manufacturing (SIC 3-19)	6[1]	8[1]	14
service orientated (SICs 20, 22, 23)	6[1]	4[1]	10

1. of which 2 are pilot firms

Once allowance is made for the different composition of the pilot and main survey samples, Table 53 indicates that when average response rates per manufacturing firm and per service firm are calculated:

(i) Manufacturing firms appeared worse off as regards group A and C problems, and staffing issues[1], while group B problems were more frequently reported by service firms;

(ii) There was no difference for group D to F problems or their effects.

... ...

1. This may be the result of workforce composition and the importance manufacturers place on suitable skilled labour.

Table 53. Management interview: effect of industrial classification

Number of firms mentioning problem

	Manufacturing (14 firms)			Service (10 firms)		
	HHIA	Stan	Total[1]	HHIA	Stan	Total[1]
(i) Possible problems, groups A to C						
Group A unprompted (24 firms)	2	2	4(0.29)	0	1	1(0.10)
prompted (congestion and indirect routeing for employees and business - 16 firms)	3	5	8(0.80)	3	1	4(0.67)
Group B unprompted (24 firms)	1	1	2(0.14)	1	0	1(0.10)
prompted (total instances of parking shortfall - 24 firms)	4	3	7(0.50)	6	3	9(0.90)
Group C (journey to work only) unprompted (24 firms)	5	7	12(0.86)	1	1	2(0.20)
prompted (additional to unprompted, 16 firms)	0	0	0(0)	2	0	2(0.33)
Unprompted questions: average proportion of firms mentioning problem			(0.43)			(0.13)
Prompted questions: average proportion of firms mentioning problem			(0.65)			(0.63)
(ii) Possible effects of problems, groups A to C						
Late arrival no. stating at least some time lost due to transport (24 firms)	4	4	8(0.57)	3	2	5(0.50)
Absenteeism no. stating at least some absenteeism due to transport (24 firms)	2	2	4(0.29)	0	0	0(0)
Staff turnover no. stating at least some turnover due to transport (24 firms)	2	2	4(0.29)	2	0	2(0.20)
Recruitment recruitment in particular areas for transport reasons						
unprompted (8 firms)	0	1	1(0.25)	1	0	1(0.25)
prompted (16 firms)	1	4	5(0.50)	0	0	0(0)
Business trips costs incurred as result of transport difficulties with business trips (24 firms)	1	3	4(0.29)	1	0	1(0.10)
Visitor trips costs incurred as result of transport difficulties with visitor trips (16 firms)	0	0	0(0)	0	0	0(0)
Personal trips paid time lost as result of transport difficulties with personal trips (24 firms)	3	5	8(0.57)	1	0	1(0.10)
Prompted questions: average proportion of firms mentioning effect[2]			(0.36)			(0.13)

Continued .....

Table 53 (continued)

	Manufacturing (14 firms)			Service (10 firms)		
	HHIA	Stan	Total[1]	HHIA	Stan	Total[1]
(iii) Possible problems, groups D to F						
Group D						
unprompted (24 firms)	1	0	1(0.07)	2	0	2(0.20)
prompted (congestion, indirect routeing, poor road surface - 16 firms)	5	5	10(0.71)	2	1	3(0.50)
Group E						
unprompted (24 firms)	2	0	2(0.14)	1	0	1(0.10)
prompted (parking shortfall, 24 firms)	0	0	0(0)	1	1	2(0.20)
prompted (available space affects on-site manoeuvrability - 16 firms)	2	3	5(0.50)	3	0	3(0.50)
prompted (on-site ht/wt restrictions - 24 firms)	2	1	3(0.21)	2	0	2(0.20)
Group F						
unprompted (12 firms)	2	0	2(0.14)	0	0	0(0)
prompted (inadequate loading facilities - 24 firms)	1	1	2(0.14)	1	0	1(0.10)
prompted (at least some on-street loading - 24 firms)	2	2	4(0.29)	2	1	3(0.30)
prompted (available space affects loading - 16 firms)	2	2	4(0.40)	2	0	2(0.33)
prompted (loading time restrictions imposed by the firm - 24 firms)	0	1	8(0.57)	0	2	2(0.20)
Unprompted questions: average proportion of firms mentioning problem			(0.12)			(0.10)
Prompted questions: average proportion of firms mentioning problem			(0.30)			(0.29)
(iv) Possible effects of problems, groups D to F and other problems						
Deliveries to the firm						
delays in deliveries due to transport factors (24 firms)	0	1	1(0.07)	1	0	1(0.10)
Loading						
occurrence of loading/unloading delays (24 firms)	2	5	7(0.50)	4	2	6(0.60)
Stockpiles						
stockpiles at non-optimum levels due to transport factors (24 firms)	0	0	0(0)	0	0	0(0)
available on-site space affects stockpile levels (16 firms)	2	3	5(0.50)	3	0	3(0.50)
Deliveries from the firm						
distribution frequency at non-optimum level due to transport factors (24 firms)	1	2	3(0.21)	0	1	1(0.10)
available on-site space affects dispatch schedules or frequency (16 firms)	2	1	3(0.30)	1	0	1(0.17)
restrictions on delivery times by customers (24 firms)	0	4	4(0.29)	3	1	4(0.40)
Prompted questions: average proportion of firms mentioning effect			(0.27)			(0.27)

1. Numbers in brackets are proportion of manufacturing or service firms who mentioned problem or effect.
2. Excluding the unprompted question on recruitment.

Since it would be expected that differences would be most pronounced for (ii), and that service firms could be somewhat more affected by transport factors, yet no differences have been identified, there does not appear to be a case to consider other possible disaggregations.

5. PARKING SURVEY

5.1 Background and summary

5.1.1 HHIA. Most of the principal roads that are used for movement through HHIA have waiting and/or loading restrictions either all day or during peak periods, and there is unrestricted parking on both sides of most local access roads. There are no metered spaces although at the northern boundary of the study area there is one public "pay and display" park for approximately 50 cars. There are no other public off-street car parks. A considerable number of vacant sites throughout the area are frequently used for general parking on an ad-hoc basis. There is a small lorry park with capacity for 10-15 vehicles (depending on vehicle size) adjacent to the "pay and display" park. Parking is free, and restricted to commercial vehicles over three tons unladen weight.

The firms with on-street parking restrictions outside at least part of their premises are:

Firm no.	Type of restriction
1	(i) No waiting or loading any time (front) (ii) No waiting working day (side)
3	(i) No waiting or loading any time (ii) Unrestricted (internal road, cul-de-sac)
4	(i) No waiting or loading any time (front) (ii) Unrestricted (cul-de-sac at rear)
5	(i) No waiting any time (one side of frontage road) (ii) Unrestricted but narrow road (other side of frontage road)
6	(i) No waiting or loading any time (front) (ii) Unrestricted (cul-de-sacs at sides)
8	No waiting or loading peak periods

In addition, the frontage road of firm no. 10, which is used as a through route, is of such width that on-street parking is not practical.

5.1.2 Stanningley. Parking on both through and local access roads in Stanningley is generally unrestricted, the exception being the combined no waiting any time/no loading peak periods control imposed at three locations on roads used for through movements. At two of these it is designed to improve the capacity of signalised intersections. Vacant land resulting from slum clearance along Town Street (Leeds-Bradford Road) provides approximately 140 spaces for general use on an ad-hoc basis; there is a designated car park with 50 spaces within the Grangefield Industrial Estate; and several other areas of informal off-street parking both within the estate and elsewhere in the study area. Irrespective of type or location, no charge is levied for parking in Stanningley.

Eleven of the twelve Stanningley firms have unrestricted parking on adjacent streets. Firm no. 19 has no waiting any time/no loading peak periods on two frontage roads although these restrictions end within 100 yards of the firm's main office entrance. There are no firms where permitted on-street parking would seriously reduce road capacity or inconvenience through traffic.

5.1.3 Summary of parking conditions. Parking surveys were carried out at each firm over one full working day[1], during which a record was taken of the estimated number of unused on-site and on-street spaces[2], of evidence of inefficient parking or parking in non-designated areas of the site, and of any on-street parking by goods vehicles associated with the firm. Table 54 summarises whether firms experienced one or more of a number of possible problems at least once during the survey day.

... ...

1. Not necessarily the same day of the week for all firms.
2. Only on-street spaces within a nominal 100 yards of the firm were considered.

Table 54: Parking survey: summary
(occurrence of problem at least once during the day)

Firm No.	on-site			on-street		
	pkg. at capacity	pkg. in non-designated areas	inefficient parking	pkg. at capacity	pkg. affected by restrictions or narrow roads[1]	goods vehs. pkd.
1	-	yes	-	yes[4]	yes	-
2	-	yes	-	-	-	yes
3	-	yes	-	d.k.	yes	-
4[2]	-	-	-	yes[4]	yes	-
5[2]	yes	-	-	yes	-	-
6[2]	yes	-	yes	d.k.[3]	yes	yes
7[2]	-	yes	-	-	-	-
8	yes	-	-	d.k.	yes	yes
9[2]	-	-	yes	-	-	-
10[2]	-	-	-	yes[4]	yes	-
11	-	-	-	d.k.[3]	-	yes
12[2]	-	-	yes	yes	-	yes
total HHIA	3	4	3	5	6	5
13[2]	-	yes	yes	d.k.[3]	-	-
14	-	yes	-	-	-	-
15	-	yes	yes	-	-	-
16	-	-	-	-	-	-
17	-	-	-	-	-	yes
18	-	yes	-	-	-	-
19	-	yes	-	-	yes	yes
20[2]	-	yes	yes	d.k.[3]	-	-
21	-	-	yes	-	-	-
22	yes	-	-	-	-	-
23[2]	-	-	-	d.k.[3]	-	-
24	-	-	-	d.k.[3]	-	-
total Stanningley	1	6	4	-	1	2

1. some on-street parking may be possible
2. these firms stated a parking shortfall in the management interview
3. although not estimated it is certain that there was on-street capacity at these firms
4. at capacity because of restrictions or narrow roads

5.2 On-site parking

5.2.1 Survey results. The conclusion from Table 54 is that although on-site parking may not be as inadequate as might be expected of an inner area, or as would be inferred from the management interview[1], it nevertheless affected three firms to the extent that parking was at capacity for the following periods:

firm 5: 1000 - 1130
firm 6: 0800 - 1200
firm 8: 1000 - 1200

which represent the time of maximum goods vehicle activity and visitor trips. Two of these firms (nos. 6 and 8) also had at least partial restriction of adjacent on-street parking, and the management of all three considered parking to be a problem. There were five HHIA firms which stated a parking shortfall in the management interview that was not substantiated by the site surveys. At worst there were four vacant spaces during the day at three of these firms, and five and six spaces respectively at the other two. It is quite possible that these could be filled at times by employees, visitors or company vehicles.

5.2.2 Parking in non-designated areas and inefficient parking. A relatively large number of instances of on-site parking in non-designated areas and inefficient use of available spaces was observed. The former should be interpreted with caution since although an area of the site not specifically designated may be used for parking this does not necessarily mean that this causes difficulties such as manoeuvering for commercial vehicles or internal movement of materials. In fact difficulties were only observed at firm no.3.

Inefficient parking is likely to be more serious because of the consequent reduction in capacity. This reduction caused a parking shortfall at firm no.6 for four hours, during which time visitors were forced to park on-street; and resulted in lost time as vehicles were re-parked at firms 13 (visitors' cars) and 20 (employees' cars). There were no obvious effects of inefficient parking at the remaining four firms where it was observed.

Without adequate enforcement by firms these two aspects of on-site parking have the potential to disrupt operations and result in lost time and inconvenience, particularly for those firms where on-site parking provision is limited or access within the site is cramped.

... ...

1. 7 firms stated a shortfall of at least one category.

5.2.3 Level of provision. Differences in on-site parking between HHIA and Stanningley are supported by consideration of the number of spaces provided per employee. Overall 32.9% and 43.1% respectively of employees drive a car (or van) to work in the two study areas (Chapter 6); however the unweighted average number of spaces per employee determined from the surveys is 0.23 in HHIA and 0.57 in Stanningley[1].

Figure 8 shows the relation between total employment and number of on-site spaces provided for each firm. It indicates that with the possible exception of very small firms the number of spaces per employee does not appear to depend on the size of the firm; and that over the full range of sizes of firms surveyed the level of provision in HHIA is consistently less than in Stanningley. Similarly the proportion of vacant spaces during the day (taken as the unweighted mean of the proportions for individual firms - Figure 9) suggests that at the time of most vehicle activity, namely 0900 - 1200, availability in HHIA is some 20-30% less than in Stanningley and that someone arriving at a firm in HHIA is likely to find about 25% of the on-site spaces unoccupied[2]. Total vacant spaces available during the day divided by total capacity (i.e. weighted mean) is also shown in Figure 9.

Using the values in Figure 8 to calculate the least squares straight line of best fit gives:

HHIA	$S = 0.3E - 6.09$	$(R^2 = 0.96)$
Stanningley	$S = 0.36E + 11.79$	$(R^2 = 0.86)$

where S = no. of on-site spaces provided
E = total employment

While these fit the observed data well it is likely that a more realistic relationship allows for a certain minimum level of provision of on-site parking even for very small firms, and that firms which provide no employee parking will nevertheless attempt to provide some spaces for visitors. Figure 8 suggests that this is the case for both study areas.

In spite of the relatively small samples it is clear that the inner city firms provide substantially less on-site parking than those of Stanningley. Managements' comments tend to confirm this and the results of the employee questionnaire indicate that 25% of HHIA employees who drive to

... ...

1. Calculated on total number of on-site spaces and total employment at each firm. Corresponding weighted averages are 0.24 and 0.43 respectively.
2. Study area unweighted means may conceal large differences between individual firms.

work park on-street compared with 6% in Stanningley (Chapter 6). The visitor questionnaire results (Chapter 7) show that 28% of visitors to HHIA firms park on-street whereas the corresponding figure for Stanningley is 35%. It may be that this lower HHIA proportion is at the expense of employee parking, with firms having limited site area reserving spaces specifically for visitors. From observation during the surveys it appears that on-street visitor parking in Stanningley is more usually for convenience rather than non-availability of on-site spaces.

5.3 On-street parking

For half of the HHIA firms on-street parking adjacent to the site was either not permitted (peak hour only for one firm) or roads were of such width that any parking would have reduced roadway capacity to an extent where movement of traffic would have been seriously disrupted. In a number of cases (firms 3, 6 and 8) some parking was possible, albeit at a greater distance from the firms' entrances. At two of the nine firms where parking was feasible, available spaces were at capacity for at least part of the day:

firm 5: 0900, 1430 (and only one space available 1530 - 1630)
firm 12: 0830 - 0930

and only one space was available at firm no.7 at 1130 and from 1300 - 1400. No instances of full utilization of on-street provision were noted in the survey of Stanningley firms. In keeping with the conclusions of the on-site surveys, on-street parking of goods vehicles associated with the firm being surveyed was more prevalent in HHIA than Stanningley.

5.4 Some conclusions

The results of the parking survey cover only one working day at each firm, and no estimate has been made of possible daily fluctuations in parking demand. Nevertheless the results indicate that both on-site and on-street parking conditions are more severe in the inner area, largely due to the available space on-site; restrictions imposed by the local authority designed to facilitate movement of through traffic; and by the system of narrow local access roads. Partly as a consequence of this the on-site provision per employee in HHIA is substantially less than Stanningley, as is the proportion of vacant on-site spaces during the morning period when the majority of trips occur. Consideration of on-street parking availability further accentuates the differences between study areas. The results should be put in the context of the other surveys conducted at each firm, none of which contradict these general conclusions, although it is worth noting that management of eight firms indicated an on-site shortfall which was not observed during the survey day.

6. EMPLOYEE QUESTIONNAIRE

6.1 Interpretation and background

6.1.1 Interpretation. Self completion questionnaires were distributed to employees of the firms being surveyed. Samples of 100% were attempted, and the response is discussed in Section 3.2. The intention of the questionnaire was firstly to obtain background information on the journey to and from work, and any personal or business trips made during the day. Secondly respondents' perception of, and attitude towards, problems associated with these trips was determined. Respondents were first given the opportunity to mention any unprompted problems, and then they rated the degree of seriousness of possible prompted problems on a four point scale. In the case of the pilot survey firms, when alternative questionnaire formats were tested, employees either provided unprompted comments or rated a series of possible prompted problems. The pilot questionnaires are however sufficiently compatible with those of the main survey to allow them to be analysed together.

A total of 463 and 700 completed questionnaires were obtained from HHIA and Stanningley, representing 35.4% and 35.8% respectively of the total workforce (full-time plus part-time) of the 12 firms which were surveyed in each study area. The extent to which the samples adequately represent the characteristics of the workforce of the survey firms can be judged from Table 22, which showed that Stanningley works employees were somewhat underrepresented. Table 55 relates the size of the sample to total study area employment and to employment in the SICs of specific interest in this study. Sample sizes are inevitably smaller in HHIA which is a much larger industrial complex.

Table 55: Employee questionnaire: sample size

(percentages)

	HHIA	Stanningley
total employment of firms surveyed:		
(i) % of total study area employment (SIC 3-27)	5.3	37.5
(ii) % of total study area industrial employment (SIC 3-19, 20,22 and 23)	6.6	42.9
responses to employee questionnaire:		
(i) % of total study area employment (SIC 3-27)	1.9	13.4
(ii) % of total study area industrial employment (SIC 3-19, 20, 22 and 23)	2.4	15.3

Because distribution and collection of questionnaires was by the firm itself there was no control over day of completion. Table 56 shows that all days are adequately represented. There has been no assessment of whether day of completion has any effect on either trip data or problem perception.

Table 56: Employee questionnaire: day of completion
(percentages)

	Mon.	Tues.	Wed.	Thurs.	Fri.	total
HHIA	19.4	6.3	14.6	34.9	24.8	100.0%
Stanningley	31.2	25.8	13.2	20.4	9.4	100.0%

The method of presentation follows the format used in the management interview chapter. The type and extent of group A to C problems are considered in relation to the journey to work (Section 6.2), business trips (Section 6.3) and personal trips (Section 6.4). Section 6.5 discusses the types of problems which were mentioned in the previous sections and makes an overall assessment as to their relative severity. Results have been presented as aggregates of responses from all firms in each study area. Full results of the employee questionnaire for each firm can be found in the individual case study reports, and reference 13 contains a listing of the data from the questionnaires which have been retained on computer file. A zoning system consisting of 28 internal and 12 external zones based on ward boundaries has been adopted for the analysis of home location of employees (Appendix V).

6.1.2 Background: journey to work. Apart from some basic background material such as type of workforce, mode split and so on, data which do not show significant differences between study areas and which are unlikely to influence employees' perception of, and subsequent analysis of problems has not been included.

(i) Workforce characteristics. Table 57 contains a breakdown of the respondents and demonstrates the close similarity in workforce characteristics of the two areas.

Table 57: Employee questionnaire: workforce characteristics
(percentages full time plus part time; part time component of total is shown in brackets)

HHIA	managerial/ professional	office (clerical/ technical)	works/ production	total
male	13.7 (0.2)	12.8 (0)	46.6 (2.0)	73.1 (2.2)
female	0.9 (0)	16.4 (4.9)	9.6 (5.4)	26.9 (10.3)
total	14.6 (0.2)	29.2 (4.9)	56.2 (7.4)	100.0 (12.5)

Stanningley	managerial/ professional	office (clerical/ technical)	works/ production	total
male	18.3 (0.2)	14.2 (0.2)	43.4 (0.3)	75.8 (0.6)
female	0.4 (0)	14.8 (4.5)	8.9 (3.8)	24.2 (8.3)
total	18.7 (0.2)	29.0 (4.7)	52.3 (4.1)	100.0 (8.9)

(totals may not add due to rounding)

(ii) Mode split. Table 58 presents the modes used for the journey to work (private mode has been taken as car driver/passenger and van driver/passenger)

Table 58: Employee questionnaire: mode split

HHIA	managerial/ professional	office clerical/ technical)	works/ production	male	female	total[1]
private[2,8]	79.1	37.1	33.7	49.1[4]	20.7[6]	41.6
public[10]	17.9	57.6	51.0	37.9	75.2	47.7
walk	3.0	3.0	11.0	8.9	4.1	7.6
other[11]	0	2.3	4.3	4.1	0	3.1
total	100.0	100.0	100.0	100.0	100.0	100.0

Stanningley	managerial/ professional	office clerical/ technical)	works/ production	male	female	total[1]
private[3,9]	87.7	52.6	43.5	59.4[5]	37.0[7]	54.0
public[10]	7.7	19.4	26.0	19.4	24.8	20.7
walk	3.1	26.0	22.2	14.0	38.2	19.8
other[11]	1.5	2.0	8.3	7.2	0	5.5
total	100.0	100.0	100.0	100.0	100.0	100.0

1. For the journey from work there was an increase in the percentage using private transport of 4.9% in HHIA and 3.4% in Stanningley. In both areas this was almost entirely at the expense of public transport and presumably caused by people obtaining lifts.
2. 78.7% car/van driver; 21.3% car/van passenger (HHIA)
3. 79.7% car/van driver; 20.3% car/van passenger (Stanningley)
4. 84.0% car/van driver; 16.0% car/van passenger (HHIA)
5. 89.5% car/van driver; 10.5% car/van passenger (Stanningley
6. 44.0% car/van driver; 56.0% car/van passenger (HHIA)
7. 29.5% car/van driver; 70.5% car/van passenger (Stanningley)
8. 25.5% of those respondents using private mode travelled in a company vehicle (HHIA)
9. 15.0% of those respondents using private mode travelled in a company vehicle (Stanningley)
10. Bus only (no respondents travelled by rail)
11. Including motorcycle and bicycle.

Comment: (i) Differences in mode split between the study areas which may influence the interpretation of employee questionnaire and management interview results include:

- proportionally less use of public transport in Stanningley, particularly for females and office (clerical/technical) categories.
- proportionally greater use of private transport in Stanningley
- greater proportion walking in Stanningley, particularly females and office (clerical/technical) categories. This is almost certainly due to the higher proportion of employees living in adjacent residential areas (see (v) below)
- limited evidence suggested that fewer HHIA employees have a car available for the journey to work (see (iii) below).

(ii) There has been no further analysis of "other modes" because of the small number of employees involved and because solutions to ease their problems are unlikely to significantly benefit firms.

(iii) Car availability. Questionnaire responses relating to car availability are frequently difficult to interpret. The approach adopted was simply to ask employees, "Was a car available for the journey to work?" Table 59 lists the responses.

Table 59. Employee questionnaire: car availability
(percentage of respondents who answered this question)

	HHIA			Stanningley		
mode of journey to work:	car available	car not available	total	car available	car not available	total
private	85.6	14.4	100.0	86.9	13.1	100.0
public	2.2	97.8	100.0	3.8	96.2	100.0
walk	0	100.0	100.0	10.3	89.7	100.0
other	0	100.0	100.0	22.9	77.1	100.0

While there are not large differences in car availability for those using private and public modes for the journey to work, the proportion of respondents walking and using other modes who have a car available is considerably higher in Stanningley than HHIA. This is likely to result from a combination of home location and differing car ownership rates.

(iv) Travel time. Table 60 lists the stated travel time to and from work by mode, and suggests that there are not large differences in travel time between areas.

Table 60: Employee questionnaire: mean stated travel time (minutes)

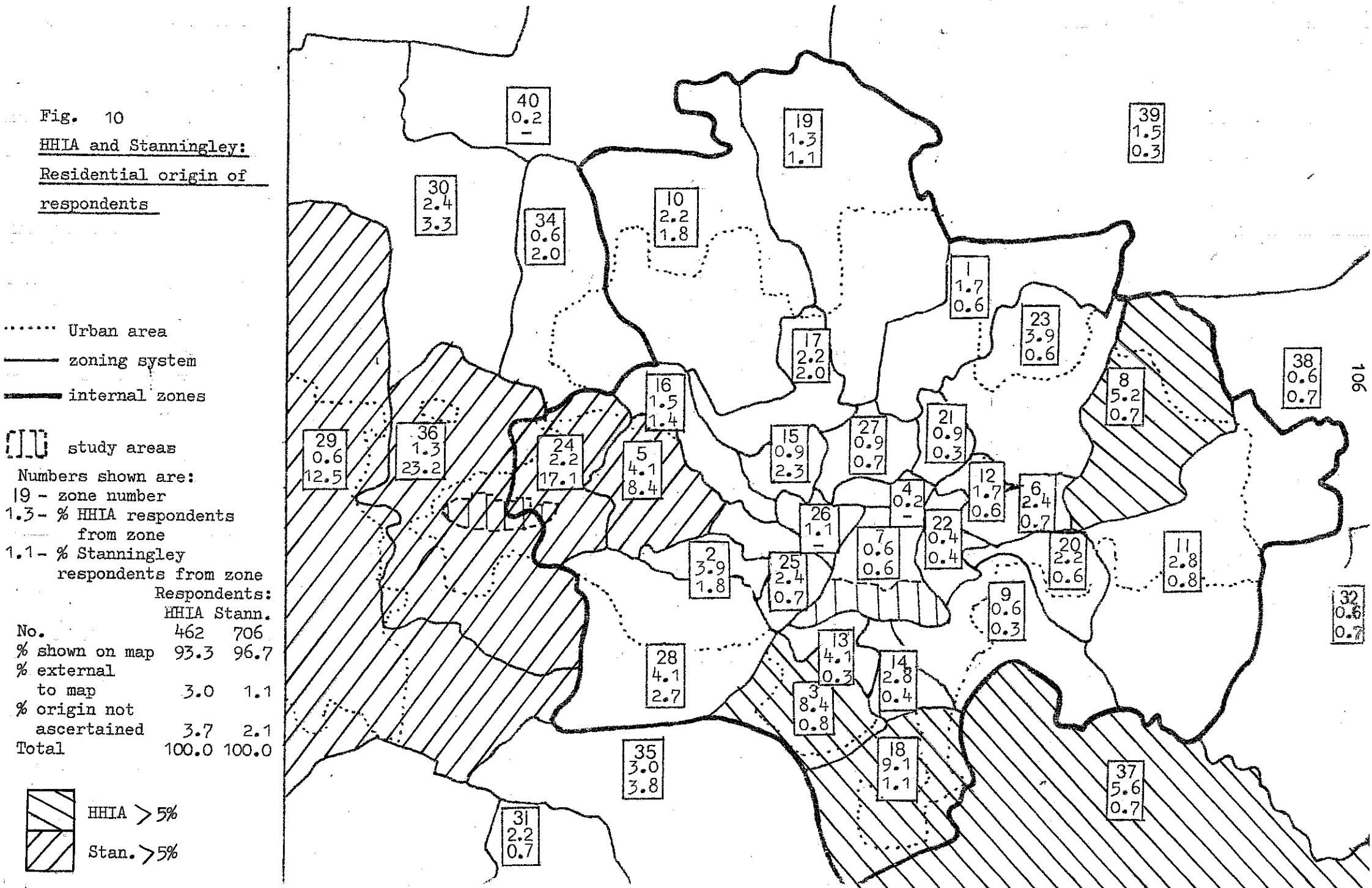
	HHIA		Stanningley	
	to work	from work	to work	from work
private	22.7 (14.4)	26.0 (16.4)	18.4 (14.3)	20.2 (15.1)
public	34.4 (18.7)	37.6 (17.3)	36.6 (18.5)	36.8 (19.4)
walk	17.8 (10.2)	18.4 (11.5)	14.6 (9.4)	13.7 (8.3)
other	14.2 (5.9)	16.2 (6.9)	12.6 (7.5)	13.2 (8.0)

(Numbers in brackets are standard deviations)

(v) Home locations. Home locations for all employees of each study area are plotted in Figure 10, and Figures 11 and 12 show home location by mode of journey to work for HHIA and Stanningley respectively. Only those travelling by private (car or van) or public (bus) mode have been plotted in Figures 11 and 12. From the travel times in Table 59 it is clear that most walkers live within about a mile of their workplace, and from Table 58 those using "other" modes (mainly motorcycle or bicycle) are a relatively small proportion of the total workforce in each area.

Fig. 10

HHIA and Stanningley: Residential origin of respondents



	Respondents: HHIA	Stann.
No.	462	706
% shown on map	93.3	96.7
% external to map	3.0	1.1
% origin not ascertained	3.7	2.1
Total	100.0	100.0

Fig. 11

HHIA: Residential origin of respondents by main mode of transport to work

··· Urban area

— zoning system

▬ internal zones

study areas

mbers shown are:
) - zone number
0 - % of total private mode users from zone
8 - % of total public mode users from zone

	Respondents: private	public
.	192	221
shown on map	89.0	96.4
external to map	6.3	0.5
origin not ascertained	4.7	3.2
TAL	100.0	100.0

car > 5%
bus > 5%

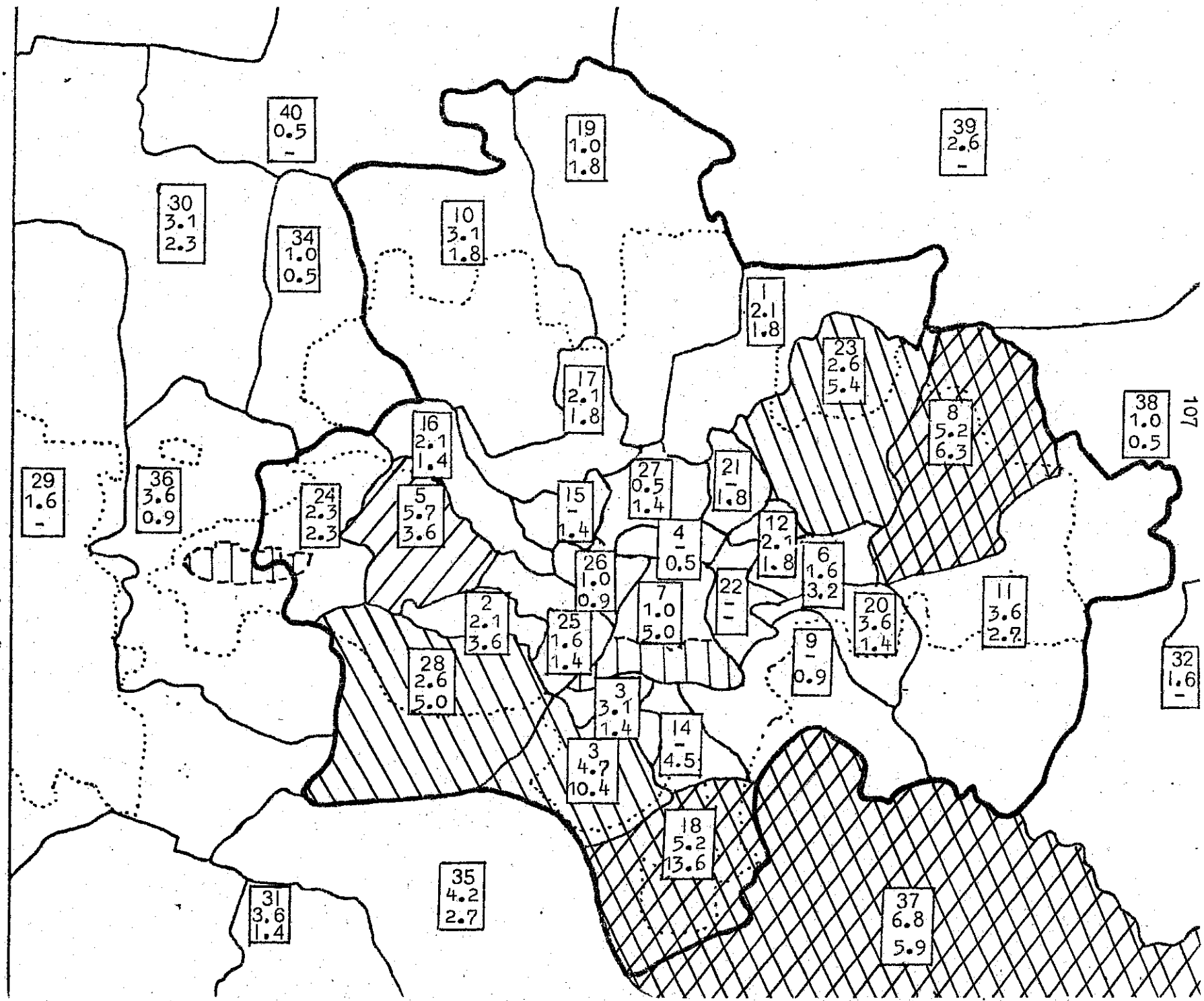


Fig. 12

Stanningley: Residential origin of respondents by main mode of transport to work

..... Urban area

——— zoning system

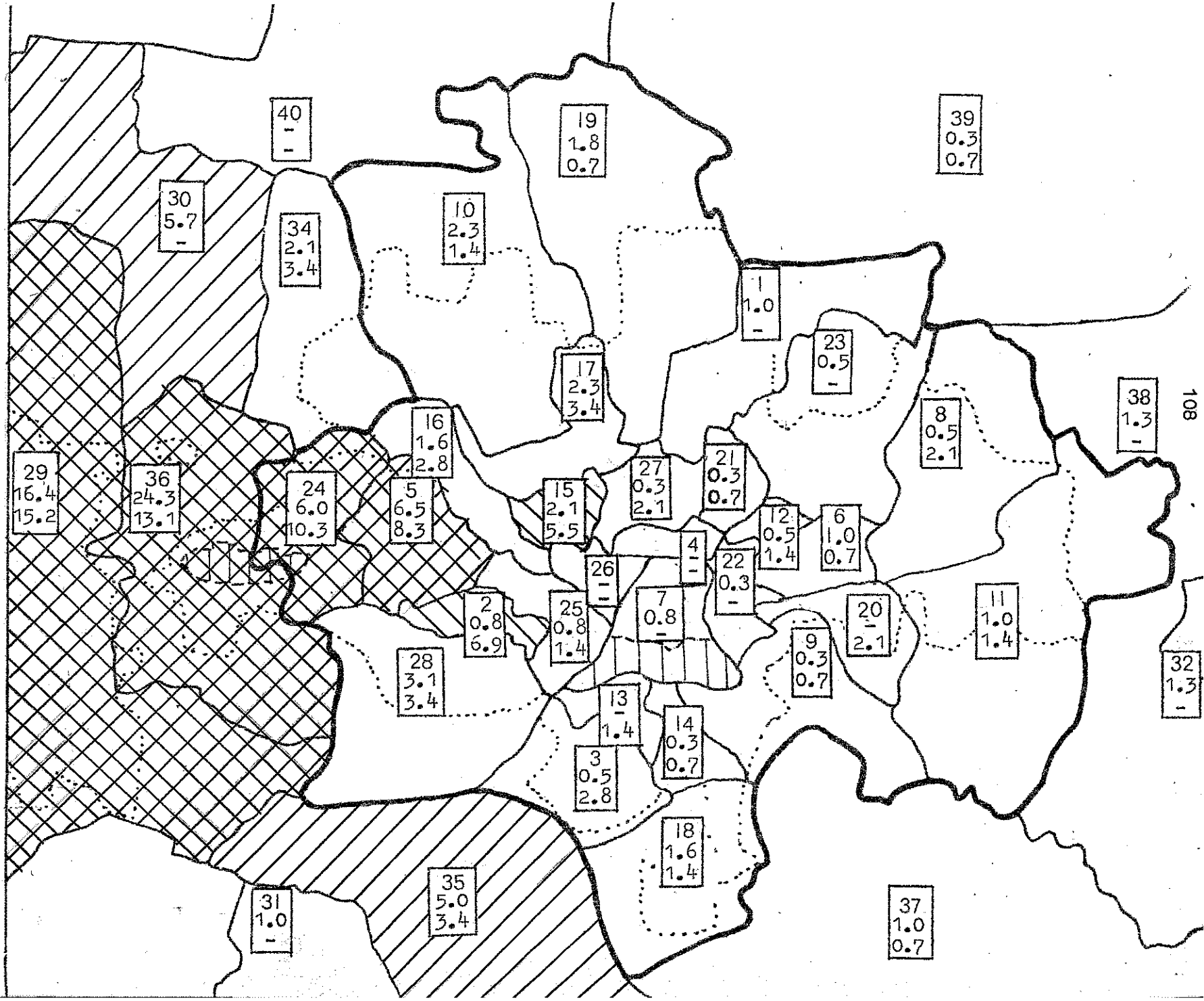
▬▬ internal zones

[1.0] study areas

Numbers shown are:
19 - zone number
1.8 - % of total private mode users from zone
0.7 - % of total public mode users from zone

	Respondents: private	public
No.	383	145
% shown on map	94.8	97.9
% external to map	2.1	-
% origin not ascertained	3.1	2.1
Total	100.0	100.0

cars > 5%
bus > 5%



Comments: The results indicate generally the expected pattern of walkers living close to the study areas, bus users living predominantly in the older suburbs, and car uses in the newer ones. Particular results of note are:

HHIA (i) a significant cross city centre movement from the N.E. (zones 8, 23) particularly by bus
(ii) a high level of bus use from the freestanding towns to the south of the built-up area (zone 36)

Stanningley (i) a significant outbound bus movement (from zones 2, 5, 15)

6.1.3 Background: business trips

(i) The sample of respondents who reported business trips was small, viz.
28 respondents in HHIA reported making 75 trips, and 33 respondents in Stanningley reported making 78 trips.
Results in Section 6.1.3 and 6.3 should therefore be treated with caution.

(ii) Trip characteristics. Table 61 lists the characteristics of reported business trips.

Table 61. Employee questionnaire: characteristics of business trips

(% of reported trips)

	HHIA	Stanningley
Mode split:		
private	93.3	100.0
public	6.7	0
walk	0	0
other	0	0
	100.0%	100.0%
Time of departure from firm:		
0730 - 0930	30.0	32.1
0931 - 1200	44.0	30.8
1201 - 1400	18.0	12.8
1401 - 1630	8.0	11.5
1631 - 1800	0	12.8
	100.0%	100.0%
Destination:		
study area	4.8	0
Leeds/Bradford	57.1	67.6
region	28.6	17.6
outside region	9.5	14.7
	100.0%	100.0%
Length of trip i.e. total time away from building:		
less than ½ hour	19.0	15.2
½ - 1 hour	26.7	24.2
1 - 2 hours	21.4	27.3
2 - 4 hours	14.3	18.2
4+ hours	19.0	15.2
	100.0%	100.0%

Comments:

(i) Business trips were typically made by car and commenced before midday. About one-third of destinations were outside Leeds/Bradford and total time away from the firm was more than one hour for 50-60% of all trips.

6.1.4 Background: personal trips

(i) Extent and daily variation. Table 62 lists the proportion of respondents in each study area who reported making at least one personal trip, and the average number of return trips per person making any trips.

Table 62. Employee questionnaire: personal trips, extent and variation

	Mon	Tues	Wed	Thurs	Fri	average
% of respondents reporting at least one trip[1]:						
HHIA	11.9	10.6	10.8	13.0	14.9	12.24
Stanningley	14.3	13.1	13.6	13.6	16.6	14.24
Average no. of trips per person:						
HHIA	1.07	1.14	1.08	1.10	1.12	1.10
Stanningley	1.09	1.09	1.06	1.08	1.09	1.08

1. Because of non-completion of this section of the questionnaire the extent of personal trips is likely to be understated to an unknown extent.

(ii) Trip characteristics. Table 63 lists the characteristics of reported personal trips.

Table 63. Employee questionnaire: characteristics of personal trips

(% of respondents)

	HHIA	Stanningley
Trip purpose:		
lunch	35.8	53.7
shopping	25.4	21.3
services	13.9	10.6
other[1]	24.8	14.4
	100.0%	100.0%
Mode split		
private	32.4[2]	60.2[3]
public	18.9	5.4
walk	46.5	31.2
other	2.2	3.2
	100.0%	100.0%
Average cost of return trip for those using public transport	20.6p	41.9p
Average total time away from firm per return trip	39.0mins	42.9mins
Proportion of trips with destinations inside the respective study area	45.9	66.2

1. Because of questionnaire design a large proportion of trips reported in the pilot survey could not be categorised by purpose.
2. 71.6% car/van driver; 28.4% car/van passenger (HHIA)
3. 88.0% car/van driver; 12.0% car/van passenger (Stanningley).

Comments:

(i) Both study areas showed a slight increase in the proportion of employees making trips on Friday.

(ii) Although precise figures are not available it appeared from the questionnaires that proportionately more Stanningley employees travelled home for lunch. This might account for the slightly higher proportion of respondents making trips and for the differences in trip purpose.

(iii) Car use was considerably greater in Stanningley; however fewer travelled as passengers than in HHIA. The trip home for lunch may be partly responsible, as is the mode split of the journey to work. Almost half the HHIA employees who made trips were able to walk to their destination in spite of the fact that compared with Stanningley fewer destinations are inside the study area. The definition of the study area boundaries is the main reason. The central shopping area of Leeds to the north and the Hunslet town centre to the south are both excluded from the HHIA study areas whereas Stanningley contains a number of small shopping areas.

(iv) Proportionately more HHIA employees use bus, but trips are relatively short and usually to the central shopping area. Fewer Stanningley employees use bus, but the trips that are made are more wide-ranging.

6.2 Group A to C problems: journey to work

6.2.1 Group A (on route to site)

Car or van driver/passenger. Table 64 lists employees' response to possible group A problems.

Table 64. Employee questionnaire: Group A problems, private mode

(% of employees who used private mode mentioning problem)

	HHIA			Stanningley		
	un-prompted	prompted	mean score[1]	un-prompted	prompted	mean score[1]
Delays by traffic	48.8[2]	61.9	30.1	34.3[2]	44.3	18.4
Indirect route	1.8	20.6	8.8	1.1	12.3	4.9
Effect of traffic management measures	7.1	n.a.	n.a.	6.4	n.a.	n.a.
Poor road surface	1.2	n.a.	n.a.	2.1	n.a.	n.a.
Others	1.2[3]	n.a.	n.a.	5.3[3]	n.a.	n.a.
Stated at least one unprompted problem	37.6			33.2		
Stated there were no problems	8.2			4.2		
No response (unprompted)	54.2			62.6		

1. See Appendix II for calculation of mean score .
2. Several respondents stated more than one aspect of the problem.
3. For example traffic light failure, accidents, bad weather etc.

Comments:

(i) Delay due to congestion was the only unprompted problem which was reported to any degree. Prompting increased the response for both delays and indirect route. Only delay was rated of any significance by employees.

(ii) Both delays and indirect route appeared to be more severe in HHIA. This was supported by employees' stated variability of their journey to work:

	HHIA	Stanningley
journey to work varied by:		
less than 5 mins	44.4	60.2
between 5 and 10 mins	44.4	33.4
more than 10 mins	11.2	6.4
	100%	100%

(iii) Employees' overall rating of their journey to work did not vary greatly between study areas, viz. 32.1 HHIA and 28.0 Stanningley[1]. Similarly the proportion of unprompted problem locations specified as within HHIA and Stanningley were 41.8% and 38.4% respectively and in response to the prompted question on delays 29.6% of HHIA respondents and 26.1% of Stanningley respondents specified a location within the study area.

(iv) Comparison with management interview: Employees' response supported managements' claim that congestion was the only significant problem. The inference from both surveys was that congestion throughout the urban area contributed to journey to work difficulties, although HHIA's location close to the centre may have aggravated the problem. On the other hand congestion in Stanningley was frequently associated with the Outer Ring Road. The journey time variability listed above supports managements' assessment that although equal numbers of firms lose time at least partially because of transport factors, transport was a much more important factor in HHIA (Table 37)[2].

Walk Table 65 lists the response of employees who walked to work to possible group A problems.

... ...

1. See Appendix II for calculation of mean scores.

2. See Section 6.2.4 for a discussion of late arrival.

Table 65. Employee questionnaire: group A problems, walk mode

(% of employees who walked to work mentioning problem)

	HHIA			Stanningley		
	un-prompted	prompted	mean score[1]	un-prompted	prompted	mean score[1]
Delays by traffic	7.1	21.7	8.7	1.0	11.5	5.1
Indirect route	0	4.3	1.4	0	6.4	8.1
Effect of traffic management measures	3.6	n.a.	n.a.	0	n.a.	n.a.
Danger walking	7.1	30.4	21.7	1.0	25.6	14.1
Poor road/footpath surface	0	n.a.	n.a.	2.0	n.a.	n.a.
Walk distance	0	n.a.	n.a.	1.0	n.a.	n.a.
Others	0	n.a.	n.a.	2.0[2]	n.a.	n.a.
Stated at least one unprompted problem	17.9			7.0		
Stated there were no problems	14.3			3.0		
No response (unprompted)	67.8			90.0		

1. See Appendix II for calculation of mean scores

2. Vehicle exhaust

Comments:

(i) Delays by traffic and danger walking were the only problems reported to any extent. The stated degree of severity, measured by the mean score, was low except for danger walking.

(ii) Both delays and danger were reported by proportionately more HHIA employees, and the overall rating of their journey was 29.2 compared with 21.4 for Stanningley. This may partly be due to the slightly longer journey time for HHIA employees, 17.8 mins compared with 14.6 mins.

(iii) Except to the extent that management in Stanningley attempted to recruit locally to ease journey to work difficulties, the management interview contained no comments on those walking to work.

6.2.2 Group B (parking)

Table 66 lists the response of employees who travelled to work by private transport to possible group B problems.

Table 66: Employee questionnaire: Group B problems

(% of employees who used private mode mentioning problem)

	HHIA			Stanningley		
	un-prompted	prompted	mean[1] score	un-prompted	prompted	mean[1] score
inadequate parking	0	5.8	2.8	0	3.7	1.7
parking cost	0	1.9	1.9	0	0.7	0.3
walk distance from parking	0	3.2	1.5	0.4	2.3	0.9
danger walking	0.6	2.6	1.7	0	2.3	1.4

1. See Appendix II for calculation of mean scores.

Comments:

(i) Response rates and stated degree of severity were extremely low. These suggested that the problem was not serious for employees and that there were not large differences between study areas.

(ii) In addition to the problems in Table 66, employees provided data on parking location and distance. The results are listed in Table 67.

Table 67: Employee questionnaire: parking data

(% of respondents who used private mode)

	HHIA	Stanningley
parking location:		
firms's car park	67.7	82.5
other off-street	2.7	2.5
on-street	24.7	6.1
car not parked	4.9	8.9
	100.0%	100.0%
stated walk distance from parking:		
0-50 yards	83.0	85.8
50-100 yards	9.1	8.2
100-200 "	4.2	3.5
200-400 "	1.2	1.6
400+ yards	2.4	0.9
	100.0%	100.0%
proportion of respondents who stated that time was spent searching for parking	3.1%	2.4%

(totals may not add due to rounding)

With the exception of on-street parking which was more prevalent in HHIA, neither Table 66 nor 67 indicate differences in parking conditions between study areas (as stated by employees). On-street parking may reduce roadway capacity and cause manoeuvring difficulties for commercial vehicles but did not lead to increased walk distances.

(iii) Employees' response to possible parking problems did not support either the management interview or parking survey results, both of which indicated that conditions were more severe in HHIA (Chapters 4 and 5).

6.2.3 Group C (public transport). Table 68 lists the response to possible group C problems of employees who travelled by public transport.

Table 68: Employee questionnaire: group C problems
(% of employees who used public transport who mentioned problem)

	HHIA			Stanningley		
	un-prompted	prompted	mean[1] score	un-prompted	prompted	mean[1] score
delays by traffic	5.6	61.1	30.6	6.2	35.8	16.9
indirect route	0.6	21.1	11.3	0.9	20.0	11.9
effect of traffic management measures	2.8	n.a.	n.a.	0.9	n.a.	n.a.
poor road surface	0.6	n.a.	n.a.	0	n.a.	n.a.
inadequate service frequency	9.0	44.4	25.0	7.1	48.3	31.7
inadequate service coverage	0.6	n.a.	n.a.	5.3	n.a.	n.a.
reliability[2]	36.0	70.6	46.5	37.2	64.2	41.9
walk distance from bus stop	4.5	34.4	20.0	4.4	20.0	10.3
cost	0.6	55.6	38.7	0.9	55.0	39.4
transfers	4.5	17.8	10.7	2.7	17.5	11.4
crowded buses	7.3	n.a.	n.a.	2.7	n.a.	n.a.
comfort	0.6	n.a.	n.a.	0.9	n.a.	n.a.
danger walking	0	22.8	11.3	0	10.0	5.8
others	1.1	n.a.	n.a.	0.9	n.a.	n.a.
stated at least one unprompted problem	42.7			48.7		
stated there were no problems	6.2			0.9		
no response (unprompted)	51.1			50.4		

1. See Appendix II for calculation of mean scores
2. Buses not keeping to timetable

Comments:

(i) Reliability (i.e. buses not keeping to timetable) was extensively reported in both study areas as an unprompted problem. There are no discernable differences between study areas in the unprompted problems which were mentioned except perhaps "crowded buses" (worse in HHIA because of its central location) and "inadequate service coverage" (worse in Stanningley because of its outer location).

(ii) On prompting, the rank order of problems in terms of stated degree of seriousness was:

	HHIA	Stanningley
delays by traffic	3	4
indirect route	6	5
inadequate service frequency	4	3
reliability	1	1
walk distance	5	7
cost	2	2
transfers	8	6
danger walking	6	8

(iii) The prompted response rates and mean scores indicated that there were differences between study areas in:

- delays by traffic (worse in HHIA)
- walk distance from bus stop (worse in HHIA)
- danger walking (worse in HHIA)

In addition reliability appeared somewhat worse in HHIA, and service frequency worse in Stanningley. Table 69 lists background data supplied by respondents against which stated problems can be assessed.

Table 69. Employee questionnaire: public transport data

(% of employees who used public transport)

	HHIA	Stanningley
Average travel time (minutes):		
all trips	34.4	36.6
trips of one stage	29.8	30.4
trips of two stages	48.9	49.5
trips of three stages	55.0	73.3
Stated variability:		
less than 5 mins	24.9	30.0
5 - 10 mins	48.8	49.3
more than 10 mins	26.3	20.7
	100.0%	100.0%
Average cost[1] (one-way)	34.7 p	37.7 p
% using multiride or season tickets[2]	19.1	10.3
Number of stages on trip:		
one	72.9	71.5
two	24.6	26.3
three or more	2.5	2.2
	100.0%	100.0%
Stated walk distance:		
0-50 yards	12.4	19.5
50 - 100 yards	11.0	13.5
100 - 200 yards	18.1	19.5
200 - 400 yards	22.4	15.8
400 - 800 yards	21.9	23.3
800+ yards	14.3	8.4
	100.0%	100.0%
Overall rating of journey to work (100 = very dissatisfied, 0 = very satisfied)	40.1	40.7

1. March 1980 prices
2. Main survey respondents only

(iv) The overall rating of the journey to work was identical for both areas. Reliability and delays can be compared with stated variability. Differences in variability were not large and would not explain the large difference in reporting of delays, but did agree with response rates for reliability. It is likely that respondents had difficulty separating congestion effects from other factors affecting reliability. It might be reasonable to conclude that reliability affected both areas more or less equally, but that congestion was a greater contribution to reliability in HHIA.

(v) The stated walk distances in Table 69 indicated that HHIA respondents walked relatively further than those in Stanningley, however the difference would not appear large enough to account for the difference in mean score. Danger walking would in part be related to walk distance, but also to street environment, which seems more likely to explain mean score differences.

(vi) The small reported difference in service frequency cannot be related to the data in Table 69 with any confidence.

(vii) Considering the location of the study areas in relation to the urban area as a whole, and the home locations of respective workforces, there were surprisingly few differences in public transport travel and its perceived problems between HHIA and Stanningley. It is clear however that there were several issues of major concern to employees using public transport. These were reliability, cost, delays by traffic and service frequency.

(viii) Comparison with management interview. The results support managements' assessment of group C problems, although the management of only one firm (in HHIA) mentioned cost as a problem. Management of two HHIA and five Stanningley firms estimated that costs were incurred through late arrival[1]. The results of the employee questionnaire do not suggest any reasons for this difference.

6.2.4 Late arrival. The results of the employee questionnaire provide a comparison against which managements' estimate of late arrival can be judged. They should, however, be treated with caution because (i) the incidence of late arrival is likely to be underreported to an unknown

... ...

1. Late arrival resulting from all modes - Table 37.

extent, (ii) some late arrival will be "genuine"[1], and (iii) it is not possible to assign reasons for late arrival, in particular the contribution made by transport factors. Two approaches can be adopted. The first considers stated start times and arrival times from the employee questionnaire for each study area, and the second compares employees' stated arrival times with managements' stated start time for a single firm.

Table 70 lists the respondents in each study area who stated an arrival time later than their normal start time.

Table 70: Employee questionnaire: stated late arrival

	HHIA	Stanningley
percentage of total respondents who stated late arrival	3.2	2.6
percentage of late arrivals which were 15 minutes or less[1]	73.3	55.6
mode split of those respondents who stated late arrival:		
private	46.7	77.8
public	46.7	11.1
walk	6.6	11.1
	100.0%	100.0%

1. A nominal cut-off above which non-transport reasons for late arrival could be expected to predominate.

Comments:

(i) The number of respondents was small (15 in HHIA; 18 in Stanningley), however the figures might imply that transport-related late arrival was more of a problem in HHIA.

(ii) The mode split data for HHIA does not indicate that late arrival was associated with particular modes. In the case of Stanningley however proportionately more private mode users reported late arrival.

Analysis of a single HHIA firm using management's stated start time confirmed that (i) employees understated late arrival, (ii) the majority of late arrivals were less than 15 minutes, and (iii) late arrival was not associated with particular modes. It also appeared that on the basis of employees' stated arrival times management overestimated time lost through late arrival.

... ...

1. For example business calls before arrival at the firm, employees taking time in lieu, etc.

Table 71. Employee questionnaire: mode comparisons

(totals may not add due to rounding)

		HHIA					Stanningley				
		varies by:					varies by:				
(i)	Stated variability in travel time: (% of respondents using each mode)	< 5 mins		5 - 10		> 10	< 5 mins		5 - 10		> 10
	private	44.4		44.4		11.1	60.2		33.4		6.4
	public	24.9		48.8		26.3	30.0		49.3		20.7
	walk	87.1		9.7		3.2	82.5		14.9		2.6
	other	45.5		45.5		9.0	83.8		13.5		2.7
	Total (all respondents)	38.1		44.1		17.8	58.8		32.4		8.5
(ii)	Overall rating of journey to work (% of respondents using each mode)	very satis.	satis.	neither	unsat.	very unsat.	very satis.	satis.	neither	unsat.	very unsat.
	private	12.0	62.0	13.9	9.5	2.5	24.4	49.6	18.0	5.3	2.3
	public	4.7	55.0	19.9	16.4	4.1	4.6	54.6	20.4	13.9	6.5
	walk	12.5	66.7	16.7	0	4.2	34.8	47.8	14.5	2.9	0
	other	0	76.9	15.4	0	7.7	33.3	58.3	8.3	0	0
	Total (all respondents)	8.2	59.6	16.9	11.7	3.6	21.5	50.8	17.8	6.8	3.1
(iii)	Mean score of rating of journey to work (100 = very dissatisfied; 0 = very satisfied)										
	private			32.1					28.0		
	public			40.1					40.7		
	walk			29.2					21.4		
	other			34.6					18.8		
	Total (all respondents)			35.7					29.8		
(iv)	Proportion of respondents providing at least one unprompted comment										
	private			37.6					33.2		
	public			42.7					48.7		
	walk			17.9					7.0		
	other			23.1					16.7		

6.2.5 Problems A to C, journey to work, comparative data

The tables in Sections 6.2.1, 6.2.2 and 6.2.3 allow comparisons between areas for each problem group. It is useful also to compare trip details for different modes in order to assess their relative advantages and disadvantages. Table 71 repeats some of the data presented in previous sections and allows inter-modal comparisons of journey time variability, employees rating of their journey to work, and response rates to unprompted questions. The mode split in each area (Table 57) is important in evaluating the results. The relative advantages of walking are coupled with a high proportion of Stanningley employees who walk to work, and conversely the relative disadvantages of travel by bus are coupled with a high proportion of HHIA employees using this mode.

6.3 Group A to C problems: business trips

Table 72 lists details of the unprompted and prompted problems which were mentioned by employees who reported making business trips.

Table 72. Employee questionnaire: business trips, group A to C problems
(% of respondents who made business trips mentioning problem)

	HHIA		Stanningley	
	unprompted	prompted	unprompted	prompted
Delays by other traffic (A)	3.6	82.1	0	57.5
Indirect route (A)	0	25.0	0	18.2
Difficulty finding parking at destination (B)	0	39.3	6.1	60.6
Difficulty finding parking on return (B)	0	3.6	0	0
Danger walking (B)	0	7.1	0	3.0
Other (A)	7.1	n.a.	3.0	n.a.
Stated at least one unprompted problem	10.7	n.a.	9.1	n.a.
Stated there were no problems	17.9	n.a.	18.2	n.a.
No response (unprompted)	71.4	n.a.	72.7	n.a.

Comments: (i) Unprompted response rates were low. On prompting only congestion, parking availability at destination, and to a lesser extent indirect routeing, were seen as significant problems by respondents.

(ii) Few respondents specified locations. The locations which were stated are listed below:

Table 72(a) Employee questionnaire: business trips, locations of problems

(percentage)	HHIA			Stanningley		
	study area	Lds/Bdfd	elsewhere	study area	Lds/Bdfd	elsewhere
Delays by traffic	18.2	36.4	45.4	0	71.4	28.6
Indirect routeing	0	66.7	33.3	0	100.0[1]	0
Difficulty finding parking at destination	0	40.0	60.0	0	100.0	0

1. Only one Stanningley respondent specified a location.

(iii) The only problem dependent on location and which might be worse for HHIA respondents was delays, which was seen as more of a local problem in HHIA.

(iv) The results support the conclusions of the management interview (Section 4.4.2) that firms in both study areas experienced similar types of problems, and that local congestion was more severe for HHIA firms. The employee questionnaire results do not help explain the fact that twice as many Stanningley firms mentioned that costs were incurred.

6.4 Group A to C problems: personal trips

Table 73 lists details of the unprompted and prompted problems which were mentioned by employees who made personal trips.

Table 73: Employee questionnaire: personal trips, group A to C problems

(% of respondents who made personal trips mentioning problem)

	HHIA		Stanningley	
	unprompted	prompted	unprompted	prompted
delays by traffic (A or C)	0.5	13.5	0	11.8
indirect route (A)	0	4.9	0.5	4.5
difficulty finding parking at destination (B)	0	6.5	0	5.9
difficulty finding parking on return (B)	0	3.2	0	0.9
inadequate service frequency (C)	0	5.9	1.4	2.3
inadequate service coverage (C)	0	n.a.	0.5	n.a.
reliability (C)	1.6	6.5	0.5	3.6
transfers (C)	0	2.7	0	1.4
cost (B or C)	1.1	5.4	1.4	3.2
danger walking (B or C)	0	5.4	0	5.9
other transport problems	0.5	n.a.	0.5	n.a.
insufficient time in lunch break	1.6	n.a.	0.5	n.a.
lack of local facilities	0.5	n.a.	0	n.a.
stated at least one unprompted problem	6.5	n.a.	5.4	n.a.
stated there were no problems	11.9	n.a.	4.5	n.a.
no response (unprompted)	81.6	n.a.	90.1	n.a.

Comments:

(i) Even after allowing for a reduced response rate for this section of the questionnaire[1], the proportion of those respondents making personal trips who provided unprompted comments was extremely small. Apart from delays caused by other traffic prompting did not reveal any major problems.

(ii) The response did not suggest differences in type or extent of problems between study areas.

... ...

1. Details of personal trips followed a section requesting considerable journey to work data.

(iii) Of those responding to a prompted question, 13.5% in HHIA stated that they were prevented from making personal trips because of transport reasons. The corresponding figure for Stanningley was 6.8%. The reasons given for not making trips were:

	HHIA[1]	Stanningley[1]
indirect route	1	0
service frequency	3	3
service coverage	1	0
reliability	1	3
walk distance to stop	1	0
transfers	0	1
cost	2	3
other transport problems	1	0
insufficient time in lunch break	2	2
lack of local facilities	0	1

Although the response rate indicated that it might be more difficult to make trips in HHIA, the reasons given for not making trips did not suggest differences between study areas.

(iv) The types of transport problems mentioned by employees agreed with those stated by management (Table 44). Except for the proportion of respondents prevented from making trips (higher in HHIA) there was no indication from either survey that the type, severity and effects of personal trips varied significantly between study areas.

6.5 Comparison of group A to C problems

Table 74 lists specific problems within groups A to C which were mentioned or prompted in the employee questionnaire, and indicates the trips which experienced the particular problem. It summarizes material presented in preceding sections, and highlights the relative severity of (i) delays for car and public transport users, (ii) indirect routing and (iii) difficulties with travel by public transport on the journey to work.

... ...

1 Numbers are numbers of respondents mentioning reason.

Table 74. Employee questionnaire: types of problems

(combined results, HHIA plus Stanningley)

	journey to work		business trips		personal trips	
	un-prompted	prompted	un-prompted	prompted	un-prompted	prompted
Group A						
Delays by traffic - private mode	√√	√√	x	√√	x	?
Indirect route - private mode	x	√	x	√	x	x
Delays by traffic - walk mode	?	√	x	x	x	x
Indirect route - walk mode	x	x	x	x	x	x
Effect of traffic management measures - private mode	?	n.a.	x	n.a.	x	n.a.
Danger walking - walk mode	?	√	x	x	x	?
Poor road/footpath surface - private and walk mode	x	n.a.	x	n.a.	x	n.a.
Group B						
Inadequate parking at firm (on-site or on-street)	x	x	x	x	x	x
Inadequate parking at destination	n.a.	n.a.	x	√√	x	?
Parking cost	x	x	x	x	x	x
Walk distance from parking	x	x	x	x	x	x
Danger walking from parking	x	x	x	x	x	x
Group C						
Delays by traffic	?	√√	x	x	x	
Indirect route	x	√	x	x	x	x
Effect of traffic management measures	x	n.a.	x	n.a.	x	n.a.
Poor road surface	x	n.a.	x	n.a.	x	n.a.
Inadequate service frequency	√	√√	x	x	x	?
Inadequate service coverage	?	n.a.	x	x	x	x
Reliability (buses not keeping to timetable)	√√	√√	x	x	x	?
Walk distance from bus stop	x	√	x	x	x	x
Cost	x	√√	x	x	x	
Transfers	x	√	x	x	x	x
Crowded buses/comfort	?	n.a.	x	x	x	x
Danger walking from bus stop	x	√	x	x	x	?

√√ High response rate (nominally > 20% unprompted, 40% prompted)

√ Problem mentioned (nominally > 10% unprompted, 20% prompted)

? Problem mentioned but response rate low or results inconclusive (nominally >5% unprompted 7.5% prompted)

x Problem not mentioned (nominally < 5% unprompted, 7.5% prompted)

7. VISITOR QUESTIONNAIRE

7.1 Background and trip characteristics

The intention of this survey was to obtain information on trips to the firm which were not associated with the movement of goods and services. Typically these would be for meetings, calls by sales representatives, to drop off/collect documents etc. Visitors arriving at main office entrances were asked by firms' receptionists/telephonists to complete a self-completion questionnaire before leaving.

Reference has already been made in Chapter 3 to the poor response, due in part to the fact that because of their activity and type of operation many of the firms surveyed receive very few visitors during a normal week. A final sample of 96 (HHIA) and 102 (Stanningley) was obtained although as Table 25 indicates there is considerable variation in the number of completed returns between individual firms. A preliminary analysis suggested that provided the results were considered in conjunction with those from the management interview and parking survey the sample was sufficient to identify the relative importance, characteristics, and problems of trips by visitors. The remainder of this section summarizes the characteristics of reported visitor trips (Tables 75 and 76), and section 7.2 discusses the problems which were mentioned.

There is a striking similarity in trip characteristics between the study areas, which even includes parking location and walk distance, both of which may be expected to be influenced by study area infrastructure. The only difference of any importance is in origin, with a larger proportion of HHIA trips being generated from within the study area whereas Stanningley attracts proportionally more trips from outside the Yorkshire region. The former is likely to result from the large concentration of industry within HHIA, some 389 firms compared with 150 in Stanningley. The fact that several Stanningley firms are part of nationally based groups may help to explain the greater proportion of longer distance trips. These differences plus the slightly lower frequency of visits by respondents in Stanningley suggests that on average visitors to HHIA firms may be more familiar with firms' locations, the transport network and local traffic conditions.

Tables 75 and 76 indicate that for the purposes of analysis the only visits of any significance are business trips by car. These are typically made about once per month, take place in the morning and last 15-30 minutes. There is typically little or no delay finding parking which is usually on-site and within 50 yards of final destination.

Table 75 Visitor questionnaire: summary of trip characteristics
(% of respondents in each study area)

	HHIA (96)	Stanningley (102)
Origin of trip:		
study area	16.1	3.8
elsewhere in Leeds/Bradford	43.6	45.0
elsewhere in region	24.2	16.3
outside region	16.1	35.0
	100% (62)	100% (80)
Trip purpose:		
business	97.7	100.0
personal	2.3	-
	100% (87)	100% (91)
Mode split:		
car driver	89.6	93.1
car passenger	3.1	5.9
van/lorry	4.2	-
bus	3.1	1.0
	100% (96)	100% (102)
Arrival time:		
0700-0930	5.3	7.9
0931-1200	46.8	42.6
1201-1400	23.4	19.8
1401-1630	23.4	29.7
1631-1800	1.1	-
	100% (94)	100% (101)
Length of visit: (i.e. time at site)		
0 - 5 mins	6.3	4.7
6 -15 "	21.2	30.2
16-30 "	53.7	45.3
31-60 "	13.8	15.1
60+	5.0	4.7
	100% (80)	100% (86)
Frequency of visits:		
> 1/week	14.8	10.9
> 1/month	30.7	25.0
< 1/month	40.9	46.7
first visit	13.6	17.4
	100% (88)	100% (92)

numbers in brackets are no. of respondents

totals may not add due to rounding

Table 76 Visitor questionnaire: parking
(% of respondents in each study area)

	HHIA (93)	Stanningley (101)
Parking location[1]:		
on-site	71.4	65.0
on-street	27.5	35.0
other	1.1	-
	100% (91)	100% (100)
Walk distance from parking location:		
0-50 yds	84.1	84.0
50-100 "	12.5	9.6
100-200 "	2.3	5.3
200-400 "	1.1	1.1
400+ "	-	-
	100% (88)	100% (94)

1. Unweighted mean of proportion of visitors parking on site is 65.4% HHIA and 61.6% Stanningley.

7.2 Problem identification

7.2.1 Unprompted problems. Visitors were given the opportunity to raise unprompted problems, and then in a subsequent section of the questionnaire were asked to rate a number of possible prompted problems. Comments were provided by fourteen HHIA and four Stanningley visitors (14.6% and 3.9% of area totals respectively) and are listed in Table 77.

Table 77. Visitor questionnaire: unprompted problems
(% of respondents mentioning problem)

	HHIA (96)	Stanningley (102)
delays by other traffic (group A)	5.2	0
delays by parked vehicles "	1.0	0
indirect route "	3.1	0
poor road surface/road works "	3.1	3
inadequate signing "	2.1	1
availability of parking (group B)	2.1	0
% stating at least one problem	14 (14.6%)	4 (3.9%)
% stating no problems	31 (32.3%)	36 (35.3%)
% not responding to this question	51 (53.1%)	62 (60.8%)

HHIA: Congestion and delays by other traffic and parked vehicles were reported equally by visitors based in the Leeds inner area and from outside the region. Eight locations were specified; two referred specifically to HHIA, two to the city centre, one to the inner ring road and three to the outer ring road. The two comments on parking referred to firms 10 and 12, both of which have on-street parking difficulties (Chapter 5). At least two of the three comments on indirect route refer to HHIA; both on inadequate signing refer at least to Leeds and most probably specifically to HHIA; and at least one of those on road condition is directed against roads within the study area. Although the sample is very limited it appears that visitors from different origins associated many of the problems of their trip with conditions within the study area.

Stanningley: Two of the four respondents were from Leeds and two from outside the region. It is not possible to determine precise locations of problems although at least one referred to conditions on the M1 motorway. As with HHIA about one third of all respondents specifically stated that they had no difficulties with their trip.

7.2.2 Prompted problems. Approximately 80% of visitors in both HHIA and Stanningley completed the section of the questionnaire on prompted problems. This figure was slightly higher for the first of the listed problems ("difficulty finding"), and lower for "cost of parking" - partly because of the position of this problem in relation to the full list of possible private and public mode problems. These small differences in individual problem response rates are unlikely to indicate any fundamental difference in problem identification by visitors. Percentages mentioning and mean scores will then be satisfactory indicators of problem perception and severity.

Table 78 lists the percentage of all visitors who rated a given factor as a problem on their trip. Mean scores, calculated on all respondents who completed a questionnaire[1], are calculated on a four point scale from very serious (100) to not a problem at all (0). Because of the small numbers using public transport Table 78 only contains the prompted problems applicable to visitors arriving by car or van.

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1. See Appendix II for method of calculation of mean scores.

Table 78. Visitor questionnaire: prompted problems
(% of all visitors who mentioned problem, and mean score calculated on all visitors)

		HHIA		Stanningley	
		%	mean score	%	mean score
Group A	difficulty finding firm	17.8	8.5	10.6	4.6
	delays caused by other traffic	32.2	14.8	24.5	9.6
	delays caused by parked or loading vehicles	32.2	13.7	12.8	5.0
	indirect route	28.9	11.8	9.6	4.6
Group B	inadequate parking	18.9	9.3	4.3	1.8
	cost of parking	1.1	0.4	-	-

HHIA: In spite of the low response to unprompted problems, prompting resulted in about one-third of HHIA visitors assessing that their trip was affected by congestion (either by other traffic or parked/loading vehicles) and by indirect routes although the rated degree of severity is quite low[1]. Somewhat fewer visitors considered lack of parking to be a problem and this tends to agree with the stated parking locations and walk distances of Table 76. It also appears that finding firms within the study area is difficult, especially for the 13.6% who were first time callers, although even for this group only just over half stated this to be a problem and the mean score of all first time callers was only 14.6.

Stanningley: The figures suggest the relative perceived advantage of Stanningley compared with HHIA in terms of transport. For example the proportion of respondents mentioning traffic problems, and the mean score of their problem rating, was less than HHIA. Although stated parking locations and distances are similar for both study areas respondents apparently found parking considerably easier in Stanningley. Similarly although there was a higher proportion of first time visitors to Stanningley, there were proportionally fewer mentioning difficulty finding the firm as a problem.

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1. Compare for example the response by car users to unprompted and prompted problems in the employee questionnaire - Chapter 6, Table 64.

7.3 Some conclusions

The characteristics of visitor trips vary little between study areas and the only trips of significance to this project are those by private transport for business purposes. When prompted, visitors to HHIA mentioned difficulty finding the firm, traffic and routing problems, and inadequate parking, although their rating of the severity of these is low. The results concur with those of the management interview, namely that visitor trips are not seriously affected by transport factors and that those problems which do occur have no effect on firms' operations nor do they result in costs being incurred. It is unlikely that the additional information obtained from expanding the sample would alter these conclusions.

8. COMMERCIAL VEHICLE SURVEY

8.1 Background

8.1.1 Interpretation. On-site surveys were conducted at each of the firms during one full working day. A suitable survey day was discussed with management prior to the work in an attempt to ensure that on-site conditions and commercial vehicle activity would be, as far as possible, normal for each firm. Some firms require only infrequent delivery or dispatch of goods, and for others management stated that activity fluctuated in an unpredictable manner, so it is possible that the vehicle movements recorded at some firms may not represent typical days. A check was made of the vehicle movements on the survey day at the eight pilot firms against company records covering a full week. This suggested that the survey day was sufficiently representative to ensure an adequate sample of drivers was obtained and that on-site conditions could be regarded as typical.

The commercial vehicle survey consisted of (i) an interview with the drivers of all vehicles arriving at the site[1] in order to collect background data on the trip and to determine the drivers' perceptions of possible problems and (ii) observations by survey staff of conditions on site such as manoeuvrability, loading operations and any delay to vehicles[2]. During the pilot survey prompted and unprompted approaches to problem identification in the driver interview were tested. The main survey interview of all drivers used an unprompted followed by a prompted format.

The response to the driver interview was discussed in Section 3.4 (Table 26) where it was seen that commercial vehicle activity varied considerably between firms and depended not only on broad industrial classification and size of firm but also on the particular operations of the individual firms. While this variation is unlikely to affect study area summaries of the characteristics of vehicle movements and drivers' identification of problems en route to the site, it is a factor to be noted when considering study area totals of both drivers' on-site problems and difficulties observed by survey staff. In particular, one firm operating a trade counter (no. 9, SIC 23, employment 32) was

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1. Including the firm's own vehicles. Vehicles making multiple trips to the site were only interviewed on the first trip, although a record of subsequent trips was made.

2. On-site observations were only made during the main survey.

responsible for 27% of all recorded vehicle movements and 26% of all driver interviews in HHIA.

Section 8.1.2 contains a summary of the characteristics of commercial vehicle movements and provides a background against which the subsequent discussion of problems can be viewed. Vehicles have been grouped into five categories A to E depending on plated gross weight and axle configuration. These are explained in Appendix VI. Section 8.2 presents the results of the driver interviews as they relate to group D problems (on route to the site), and Section 8.3 summarizes group E and F problems (at the site) using both the driver interview and the observations of on-site conditions.

8.1.2 Characteristics of commercial vehicle activity. The total number of vehicle movements recorded at each firm is shown in Table 79, and vehicle type by study area in Table 80. Table 81 then lists characteristics of trips aggregated by study area.

Comments: (i) Overall there do not appear to be significant differences between study areas. What differences there are largely result from the high number of type A vehicles calling to pick up goods at trade counters operated by two HHIA distribution firms. Together these firms account for 43.5% of all HHIA trips, and 61.5% of all trips in HHIA by type A vehicles were to these two firms. This helps to explain differences in the total numbers of trips, types of vehicle, proportions of firms' own vehicles, trip purposes, and destinations of goods out.

(ii) The high proportion of vehicles spending more than half an hour on-site in Stanningley was partly due to firms' own vehicles spending extended periods at the site. It was seldom due to the actual time of the loading or unloading operation[1].

(iii) There are two factors which, although not thought to influence the results significantly, should be noted when comparing reported and observed study area problems:

- The higher proportion of HHIA drivers spending 75-100% of their driving time within the study area may have influenced their perception of group D problems. (This is almost certainly the result of location within the urban area and the large industrial concentration in HHIA.)

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1. An exception being firm no. 19 - see Section 8.3.

Table 79. Commercial vehicle survey: vehicle movements at each firm

HHIA				Stanningley			
Firm no.	SIC	Employ-ment	Total no. of c.v. movements	Firm no.	SIC	Employ-ment	Total no. of c.v. movements
1	6	500	6	13	6	498	15
2	6	33	25	14	7	36	8
3	7	152	22	15	7	213	10
4	15	73	8	16	9	228	27
5	17	65	1	17	9	100	11
6	18	31	8	18	12	102	4
7	20	86	35	19	13	250	16
8	22	28	7	20	18	326	22
9	23	32	67	21	20	38	8
10	23	119	14	22	20	26	4
11	23	72	40	23	22	36	10
12	20	118	13	24	23	113	15
total HHIA (including 13 return trips)			246	total Stanningley (including 9 return trips)			150

Table 80 Commercial vehicle survey: vehicle type[1] (percentage)

	A 	B 	C 	D 	E 	total
HHIA						
firm's own vehicle	2.7	7.3	4.1	0.9	1.8	16.9
other	29.7	25.1	22.8	0.9	4.6	83.1
total	32.4	32.4	26.9	1.8	6.4	100.0
Stanningley						
firm's own vehicle	6.8	4.8	12.3	1.4	-	25.3
other	10.3	21.2	35.6	2.7	4.8	74.7
total	17.1	26.0	47.9	4.1	4.8	100.0

1. refer to Appendix VI for description of vehicle types.

Table 81 Commercial vehicle survey: summary of trip characteristics (percentages of respondents in each study area)

		HHTA	Stanningley
Arrival time at site:	0700-0930	23.3	22.4
	0931-1200	31.9	36.3
	1201-1400	17.7	15.4
	1401-1600	23.3	20.3
	1601-1800	3.9	5.6
		100.0	100.0
Net time on site (including firm's own vehicles):			
	0-5 mins	33.6	25.3
	6-10 mins	22.6	22.9
	11-30 mins	29.0	19.3
	31+ mins	14.8	32.5
		100.0	100.0
Trip purpose:			
	deliver to firm	37.2	61.8
	pick-up from firm	46.4	14.6
	both deliver and pick up	9.8	13.8
	repair or service	2.2	5.7
	other	4.4	4.1
		100.0	100.0
Origin of goods in:			
	study area	1.7	2.8
	urban area	44.8	62.5
	elsewhere	53.5	34.7
		100.0	100.0
Destination of goods out:			
	study area	7.5	-
	urban area	77.4	33.3
	elsewhere	15.1	66.7
		100.0	100.0
Frequency of visits to site (excluding firm's own vehicles):			
	>1/week	60.8	54.2
	>1/month	22.4	23.9
	<1/month	8.7	14.6
	first visit	8.1	7.3
		100.0	100.0
Proportion of drivers spending stated percentage of their driving time within respective study area (including firm's own drivers):			
	0-24%	66.0	66.0
	25-49%	11.3	14.9
	50-74%	10.3	14.9
	75-100%	12.4	4.2
		100.0	100.0

(Totals may not add due to rounding)

- The higher proportion of type C vehicles in Stanningley may have influenced both driver perception of on-site problems and the number of instances of observed on-site difficulty.

8.2 Group D problems - driver interview

8.2.1 Possible problems. Interviews with drivers of commercial vehicles arriving at the side provided the data source against which managements' assessment of group D problems could be judged. The unprompted and prompted responses by drivers to a series of possible group D problems are listed in Table 82.

Table 82. Driver interview: group D problems (on route to site) (percentage of drivers mentioning problem)[2]

	unprompted		prompted[1]	
	HHIA (126)	Stanningley (105)	HHIA (180)	Stanningley (100)
difficulty finding site	6.3	2.9	5.6	3.0
delays by other traffic	13.5	5.7	22.8	10.0
delays by parked or loading vehicles	9.5	1.9	18.3	14.0
narrow or twisting streets	3.2	1.0	8.9	11.0
indirect route or one-way streets	4.0	1.0	18.9	6.0
poor road surface	5.6	2.9	29.4	23.0
height or weight restrictions	0.8	-	2.2	4.0
other	11.9[3]	2.9	11.7[4]	4.0

1. including unprompted response if appropriate, viz. if during the interview a particular problem was mentioned unprompted it was not asked in the subsequent prompted list of possible problems
2. Numbers in brackets are sample size - drivers at pilot firms were either prompted or unprompted; drivers at main survey firms were unprompted followed by prompted (hence it is possible for the prompted response rate to be less than the unprompted response rate).
3. 86.7% of other problems refer to roadworks in HHIA
4. 76.2% " " " " " " " "

8.2.2 Effect and costs. (i) It was considered that there was insufficient time during the interview to question drivers on the possible effects and costs (either to the firm being surveyed, their employer if a non-firm vehicle, or themselves) of problems which they mentioned, or to estimate the length of any delays on route to the site.

(ii) The only data source is the management interview in which congestion was mentioned unprompted by three HHIA firms, congestion and poor road surface by HHIA and Stanningley firms when prompted, and indirect route/one-way streets by HHIA firms. Three firms estimated that costs were incurred (Table 46). The management interview also suggested that somewhat less than half of all firms in each study area experienced delays in deliveries. It should be noted that Table 82 refers to traffic conditions, whereas managements' reasons for delays were concerned much less with these factors. In fact the inference from the management interview was that small delays due to congestion and indirect routing were unlikely to affect most firms' operations to any significant extent[1].

8.2.3 Comment and summary.

(i) Unprompted. Delays, either by other traffic or parked or loading vehicles, were most frequently mentioned. Temporary roadworks[2] requiring diversions in HHIA clearly influenced drivers' perceptions of problems. Many of the first time visitors experienced difficulty finding firms.

(ii) Prompted. There were significant increases in the response rate for:

- delays due to traffic or parked or loading vehicles (HHIA)
- narrow/twisting streets (Stanningley)
- indirect route/one-way streets (HHIA)
- poor road surface (HHIA and Stanningley)

With the exception of the first of these it seems likely from the change in response rate that the others may be accepted by drivers as part of their normal operating conditions.

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1. The exception might be the haulage and distribution firms which operate their own large vehicle fleets.

2. Particularly the reconstruction of Sweet Street which was in progress during the main survey.

(iii) Location of problems. Drivers in the main survey were asked to specify the location of problems which they mentioned. The proportion of those drivers mentioning a problem who specified a location, and the proportion of those locations within respective study areas, are shown in Table 83. A greater proportion of problems were identified with conditions in the HHIA study area than was the case for Stanningley. The local transport infrastructure, its layout and maintenance, and the effect on through movement of parked or loaded vehicles were most strongly associated with the HHIA area.

Table 83 Driver interview: location of Group D problems

	% of respondents (of those who mentioned problem) stating a location		% of locations within study area	
	HHIA	Stanningley	HHIA	Stanningley
1. difficulty finding site	22.2	0	0	0
2. delays by other traffic	51.6	25.0	50.0	0
3. delays by parked/loading vehicles	58.6	66.7	70.6	25.0
4. narrow or twisting streets	85.7	100.0	75.0	50.0
5. indirect route or one-way streets	66.7	100.0	71.4	50.0
6. poor road surface	75.6	33.3	93.5	60.0
7. height or weight restrictions	66.7	0	100.0	0
8. other[1]	78.9	0	80.0	0

1. mostly "roadworks"

(iv) HHIA/Stanningley comparison. Both unprompted and prompted response rates in Table were consistently higher from HHIA drivers. The fact that somewhat more HHIA drivers spent most of their time driving in the study area may have influenced the reporting of problems although a subjective analysis suggested that any effect on the results was extremely small. The main difference between the study areas was in the perception of congestion, indirect routes and one-way streets, and surface condition of study area roads.

8.3 Group E and F problems - driver interview and on-site observations

8.3.1 Possible problems. The driver interview and on-site observation of vehicle movements by survey staff provided an indication of the type and extent of group E and F problems. The unprompted and prompted responses to a series of possible problems are listed in Table 84. Table 85 summarizes the extent to which vehicles were observed to encounter on-site difficulties, and any resulting delays, and Table 86 details the types of observed difficulty and their relative contribution to total delay in each study area.

Table 84. Driver interview: Group E and F problems (at the site) (percentage of drivers mentioning problem)[1]

	unprompted		prompted[2]	
	HHTA (126)	Stanningley (105)	HHTA (180)	Stanningley (100)
manoeuvring into site (E)	4.8	1.0	6.7	8.0
manoeuvring within site (E)	2.4	1.9	10.0	10.0
obstructions such as eqpt, pkd. vehs. etc. (E)	6.3	5.7	12.2	15.0
difficulty finding loading point (E)	0	0	0	1.0
insufficient parking/waiting spaces (E)	4.0	1.0	7.2	6.0
loading facilities not suited to vehicle (F)	1.6	1.9	2.2	3.0
other vehicles loading/ unloading (F)	2.4	1.9	5.6	2.0
other	1.6	3.8	1.7	2.0

1. Numbers in brackets are sample size - drivers at pilot firms were either prompted or unprompted, drivers at main survey firms were unprompted followed by prompted.

2. including unprompted response if appropriate, viz. if a particular problem was mentioned unprompted it was not asked in the subsequent list of possible prompted problems.

Table 85. On-site survey: observed difficulties and delays[1]
(% of total observed vehicle movements)

	HHIA	Stanningley
vehicles encountering one or more on site difficulties	32.7%	29.1%
vehicles delayed	15.6%	29.1%
total delay	49 mins. for 23 vehicles	102 mins. for 18 vehicles[2]
average delay to delayed vehicles	2.13 mins.	5.67 mins.
average delay to all vehicles	0.33 mins.	1.29 mins.
drivers mentioning at least one on-site problem in driver interview	27.2%	23.4%

1. for group E and F problems combined.

2. 3 vehicles at firm no.19 were delayed a total of 67 minutes waiting to load. Excluding these 3 vehicles, the total delay is 35 mins. for 15 vehicles, i.e. average delay to delayed vehicles = 2.33 mins and average delay to all vehicles = 0.52 mins.

Table 86. On-site survey: types of observed difficulty

	% of vehicles experiencing stated difficulty		proportion of total delay recorded in each study area	
	HHIA	Stan.	HHIA	Stan.
vehicle loaded on-street (F)[1]	13.7	10.0	n.a.	n.a.
manoeuvring into site (E)	8.2	11.4	1.0	11.6
manoeuvring within site (E)	6.9	10.1	8.0	1.0
positioning vehicle at loading point (E)	4.1	3.9	-	1.0
delays due to other vehicles loading (F)[2]	11.6	13.9	71.0	67.3
insufficient parking/waiting spaces for delayed vehicles (E)	23.5	0	n.a.	n.a.
loading or unloading difficulties (F)	2.8	1.3	8.0	15.1
other vehicles queued during loading/ unloading (F)	4.2	3.8	n.a.	n.a.
other vehicles obstructed or delayed (E)	8.3	2.6	n.a.	n.a.
manoeuvring away from loading point (E)	2.3	2.6	6.0	4.0
manoeuvring out of site (E)	6.2	3.8	6.0	-
	total		100.0%	100.0%
			(49 min)	(102 min)

1. For the full sample of 12 firms in each area; on-street loading was observed at 5 HHIA and 2 Stanningley firms (% of vehicles at these firms loaded on-street were 16, 100, 7.5, 7.1, 61.5 and 12.5, 45.5).

2. For main survey firms only; delays were observed at 5 HHIA and 3 Stanningley firms.

8.3.2 Effect and costs. (i) Drivers were not asked the effects of, or costs resulting from, their stated on-site problems. The on-site observations provided some indication and could be compared with the results of the management interview (Tables 47 and 48).

(ii) Although one-third of HHIA vehicles experienced at least one on-site difficulty only half of these suffered a measurable delay. Taken over all vehicle movements this delay was of the order of 20 seconds per trip. Delay in Stanningley was considerably more, however if the the effect of delays to three vehicles waiting to load at one firm (no. 19) are removed the figures are comparable with those of HHIA (Table 85). The most important contribution to lost time was through delays incurred while waiting to use loading facilities, this also being the most commonly observed on-site difficulty.

(iii) There appears to be little difference in the observed effects, and probable costs, between the two study areas.

(iv) In assessing the effects of group E and F problems the on-site survey provides an opportunity to compare the response of the management interview of main survey firms with the observed occurrence of problems.(Table 87)

Table 87. On-site survey - management interview comparison[1]
(main survey firms only; numbers tabulated are individual firm numbers)

unprompted comments in MI	unprompted comments confirmed by OSS	inadequate[2] parking		on-street loading[3]		occurrence of loading delays		site manoeuvr-ability	
		MI	OSS	MI	OSS	MI	OSS	MI	OSS
2	yes	no	2	no	2(16%)	1	1	2	2
5	yes	no	6	5(2.5%)	no	2	2	4	4
6(gp E)	yes	no	11	6(100%)	6(100%)	7	7	no	5
6(gp F)	yes	12	12	no	9(7.5%)	9	9	9	9
12	yes	no	17	10(5%)	10(7.1%)	10	10	10	10
		no	19	12(50%)	12(61.5%)	15	no	12	12
		23	no	no	14(12.5%)	no	16	no	14
				17(10%)	17(45.5%)	17	17	15	15
				no	19(10%)	19	19	16	16
						21	no	17	17
								no	18
								no	19
								no	22

1. M.I. = management interview; OSS = on-site survey
2. Goods vehicles parked on adjacent streets at least once during the day.
3. Numbers in brackets are MI estimated and OSS observed proportion of all vehicle trips loaded/unloaded on street.

Inadequate parking facilities for goods vehicles in both areas and on-site manoeuvrability in Stanningley were underreported by management. However other possible problems appear to have been reliably reported given the inherent variability which is possible with one day surveys of sites. There was no evidence that management exaggerated the extent of these problems.

8.3.3 Comments and summary. (i) Unprompted response rates for the driver interview were low. Prompting increased the response although only manoeuvring difficulties due to lack of space and obstructions to movement caused by equipment, parked vehicles, etc. emerged as a significant problem to drivers.

(ii) The necessity for vehicles to wait because loading facilities were busy was the most commonly observed on-site difficulty and the major cause of delays. Perhaps predictably drivers did not report this as much as their difficulties in actually driving a vehicle around the site.

(iii) Of the full sample of twelve firms in each area, on-street loading was observed at five HHIA and two Stanningley firms. In the case of the two Stanningley firms this was more for convenience than necessity.

(iv) Although the management interview suggested that HHIA may be relatively worse off then Stanningley as regards group E and F problems, driver reported and observed differences were small and did not appear to be attributable to either location or the firms' activity. The exception may be on-street loading where a combination of site conditions and level of goods vehicle activity combined to make more HHIA firms worse off than those in Stanningley. The effects of on-street loading are more likely to be felt by through traffic than by the firm itself. Serious problems such as the length of delays at firm 19 were much more likely to be one-off situations rather than a general characteristic of an area. A much larger sample of firms would be required to determine conclusively if there were in fact any effects more severely felt in the inner area and caused by locational factors.

8.4 Some conclusions

Of all drivers interviewed, 56.7% in HHIA and 30.5% in Stanningley mentioned at least one group D problem. The corresponding figures for

group E and F problems (combined) are 27.2% and 23.4% respectively. Type D problems were reported more frequently by drivers in HHIA and a higher proportion of the problems were located within the HHIA study area. This suggested a relative disadvantage of the inner area. However, the overall response to particular problems in either area (particularly to unprompted problems) does not seem unduly high. Whether this simply reflects resignation to, and acceptance of, existing operating conditions is difficult to judge.

The response of drivers to specific on-site problems was low and the difficulties reported refer to driving the vehicle within the site. Although on-site observations indicated that almost one-third of all vehicles experienced at least one difficulty, the more serious delays were almost inevitably caused by vehicles waiting to load or unload. The average delay to all vehicles was between 20 and 30 seconds per visit. With the possible exception of the extent, but not necessarily effect, of on-street loading, the surveys do not indicate large differences between study areas.

9. SUMMARY AND EVALUATION

9.1 Outline

This chapter draws together the surveys reported in Chapters 4 to 8 to make an overall assessment of the type, extent and cost of the transport problems of inner area firms. These are compared with those of firms in the outer control area, and with the list of possible problems which were suggested by the review of the literature. The results of the different surveys carried out at each firm are compared and any differences noted. Comparisons are made between study areas and between different types of firms. Chapter 10 identifies a shortlist of the more serious problems facing firms in the inner area of Leeds and makes some overall conclusions from the surveys.

9.2 Problem summary - all firms

9.2.1 Person and commercial vehicle trips (groups A to F)

Tables 88 and 89 list those problems in groups A to F which were revealed during the surveys and which may affect firms' operations or result in costs being incurred. (Potential problems not identified by the surveys have not been listed.)

Table 88 PROBLEM SUMMARY: BRITA

Problem	MI-propn. of firms mentioning		severity					effect on firm (as stated in MI)	MI-propn. of firms incurring cost	Comments
			MI		EQ/VQ/DI		OSS			
	up	p	up	p	up	p				
GROUP A (on route to site)										
(i) Journey to work-car/van										
- congestion/delays	0	0.25	n.a.	very/fairly	✓✓	✓✓	n.a.	lost time, staffing issues, staff dissatisfaction	0.13	MI prompted severity refers to late arrival by all modes
- indirect routeing	0	0	n.a.	n.a.	x	✓	n.a.	no effect	0	
- effect of traffic management measures	0	n.a.	n.a.	n.a.	?	n.a.	n.a.	no effect	0	
(ii) Journey to work - walk										
- congestion/delays	0	0	n.a.	n.a.	?	✓	n.a.	no effect	0	
- danger walking	0	0	n.a.	n.a.	?	✓	n.a.	no effect	0	
(iii) Business trips										
- congestion/delays	0.08	0.38	fairly	not very	x	✓✓	n.a.	lost time & business	0.08	MI prompted severity refers to all aspects of business trips
- indirect routeing	0	0.08	n.a.	not very	x	✓	n.a.	lost time & business	0.08	
(iv) Visitor trips										
- difficulty finding	0.08	n.a.	not very	n.a.	x	?	n.a.	no effect	0	Difficulty finding partly caused by indirect routeing
- congestion delays	0	0.25	n.a.	not very	?	✓	n.a.	no effect	0	MI prompted severity refers to all aspects of visitor trips
- indirect routeing	0	0	n.a.	n.a.	x	✓	n.a.	no effect	0	
(v) Personal trips										
- congestion delays and other access difficulties	0	0.08	n.a.	n.s.	x	?	n.a.	lost time	0	33.3% of firms mentioned inadequate time to reach local facilities (MI)
- danger walking	0	0	n.a.	n.a.	x	?	n.a.	no effect	0	
GROUP B (parking)										
(i) Journey to work										
- inadequate parking at firm	0.08 (on-site)	0.33 (on-site)	fairly	n.a.	x	x	0.25 (on-site 0.42 (on-street	no effect	0	OSS severity refers to propn. of firms with pkg at capacity at least once during the day
(ii) Business trips										
- inadequate parking at firm	0	0.08	n.a.	not very	x	x	0.25 (site) 0.42 (street)	no effect	0	MI prompted severity refers to all aspects of business trips
- inadequate parking elsewhere	0.08	n.a.	fairly	n.a.	x	✓✓	n.a.	lost time	0.08	
(iii) Visitor trips										
- inadequate parking at firm	0.08	0.42	not at all	not very	x	?	0.25 (site) 0.42 (street)	no effect	0	MI prompted severity refers to all aspects of visitor trips
(iv) Personal trips										
- inadequate parking at firm	0	0	n.a.	n.a.	x	x	0.25 (site) 0.42	no effect	0	May contribute to lost time but not stated in MI

Table 88 (continued)

Problem	MI-propn. of firms mentioning		Severity					effect on firm (as stated in MI)	MI-propn. of firms incurring cost	Comments
			MI		EQ/VQ/DI OSS					
	up	p	up	p	up	p				
GROUP C (public transport)										
(i) Journey to work										
- congestion/delays	0		↑	↑	?	√√	n.a.	Overall		(i)50% of firms mentioned unprompted problems. These firms were not subsequently asked a prompted question. (ii) The prompted question referred to public tpt. difficulties in general. (iii) MI prompted severity refers to late arrival by all modes (iv)66.7% of firms mentioned time lost through late arrival
- indirect routeing	0				x	√	n.a.	effects of		
- inadequate frequency	0.19	0.25	fairly/	very/fairly	√	√√	n.a.	public	0.25	
- inadequate coverage	0.08		not		?	n.a.	n.a.	transport		
- reliability	0.25		very		√√	√√	n.a.	difficulties:		
- walk distance	0.08				x	√	n.a.	- lost time		
- cost	0				x	√√	n.a.	- staffing		
- transfers	0.08				x	√	n.a.	issues		
- crowded buses/ comfort	0				?	n.a.	n.a.	- staff dissatis-		
- danger walking	0		↓	↓	x	√	n.a.	faction?		
(ii) Personal trips										
- congestion/delays	0	0	n.a.	n.a.	x	?	n.a.	Overall		33.3% of firms mentioned inadequate time to reach local facilities (MI)
- service frequency	0	0.08	n.a.	n.s.	x	?	n.a.	effects:		
- reliability	0	0	n.a.	n.a.	x	?	n.a.	- lost time	0	
- walk distance	0	0.08	n.a.	n.s.	x	x	n.a.	- provision		
- cost	0	0	n.a.	n.a.	x	?	n.a.	of		
- danger walking	0	0	n.a.	n.a.	x	?	n.a.	transport assistance by firm		
GROUP D (on route to site)										
- difficulty finding	0	n.a.	n.a.	n.a.	?	x	n.a.	no effect	0	
- congestion/delays	0.25	0.25	fairly	not asked	√	√	n.a.	lost time	0.08	41.7% of firms experience delays in deliveries but most delays are due to non-tpt factors
- indirect routeing	0	0.25	n.a.		x	?	n.a.	lost time	0.13	effect is minimal
- narrow/twisting streets	0	n.a.	n.a.		x	?	n.a.	no effect	0	
- poor road surface	0	0.38	n.a.		?	√	n.a.	no effect	0.13	costs are minimal
GROUP E (within site)										
- manoeuvring into/ out of site	0.17	n.a.	fairly		x	x	?	lost time	0.08	
- manoeuvring within site	0.08	0.62	not very		x	?	?	lost time	0	
- obstructions such as equipment, pkd vehs etc.	0	n.a.	n.a.	not asked	?	?	n.a.	no effect	0	
- inadequate parking/ waiting areas	0	0.08	n.a.		x	?	√	no effect	0	
- obstruction caused to other vehicles	0	n.a.	n.a.		x	n.a.	?	no effect	0	
- on site ht/wt restrictions	0	0.33	n.a.		x	n.a.	x	no effect	0	see "manoeuv. within site" above
GROUP F (loading/unloading)										
- on street loading	0	0.33	n.a.	not at all	x	n.a.	?	no effect	0	41.7% of firms have at least some on street laoding (OSS)
- inadequate/unsuitable loading facilities	0.17	0.17	very	n.s.	x	x	x	lost time & delays to other vehs.	0.13	severity affects one firm only
- available space affects loading	0	0.33	n.a.	n.a.	x	n.a.	x	no effect	0	
- loading delays	0	0.50	n.a.	n.a.	x	?	?	lost time	0	11.6% of all vehs. delayed (OSS)

Notes: MI = management interview; EQ = employee questionnaire; VQ = visitor questionnaire;
DI = driver interview; OSS = on-site survey
up = unprompted; p = prompted;
√√ = high response rate (nominally > 20% up; 40% p)
√ = problem mentioned (nominally > 10% up; 20% p)
? = problem mentioned but response rate low (nominally > 5% up; 7.5% p)
x = problem not mentioned (nominally < 5% up; 7.5% p)
Group A to C problems refer to person trips.
Group D to F problems refer to commercial vehicle trips.

Table 89 PROBLEM SUMMARY: STANNINGLEY

problem	MI-propn. of firms mentioning		severity					effect on firm (as stated in MI)	MI-propn. of firms incurring cost	comments
			MI		EQ/VQ/DI		OSS			
	up	p	up	p	up	p				
GROUP A (on route to site)										
(i) Journey to work-car/van										
- congestion/delays	0.167	0.125	not very	fairly/ not very	✓✓	✓✓	n.a.	lost time, staffing issues, staff dissatis.(?)	0.125	MI prompted severity refers to late arrival by all modes.
- indirect routeing	0	0	n.a.	n.a.	x	?	n.a.	no effect	0	
- effect of traffic management measures	0	n.a.	n.a.	n.a.	?	n.a.	n.a.	no effect	0	
(ii) Journey to work-walk										
- congestion/delays	0	0	n.a.	n.a.	x	?	n.a.	no effect	0	
- danger walking	0	0	n.a.	n.a.	x	✓	n.a.	no effect	0	
(iii) Business trips										
- congestion/delays	0	0.125	n.a.	not very	x	✓✓	n.a.	lost time	0.25	MI prompted severity refers to all aspects of business trips.
- indirect routeing	0	0	n.a.	n.a.	x	?	n.a.	lost time	0	
(iv) Visitor trips										
- difficulty finding	0	0.25	n.a.	not very/ not at all	x	?	n.a.	loss of goodwill(?)	0	MI prompted severity refers to all aspects of visitor trips
- congestion/delays	0	0.125	n.a.	not very/ not at all	x	✓	n.a.	no effect	0	——— " ———
- indirect routeing	0	0	n.a.	n.a.	x	?	n.a.	no effect	0	
- effect of traffic management measures	0.083	n.a.	n.s.	n.a.	x	n.a.	n.a.	no effect	0	
(v) Personal trips										
- congestion/delays	0	0	n.a.	n.a.	x	?	n.a.	time lost	0	8.3% of firms mentioned inadequate time to reach local facilities (MI)
- danger walking	0	0	n.a.	n.a.	x	?	n.a.	no effect	0	
GROUP B (parking)										
(i) Journey to work										
- inadequate parking at firm	0 (on-site)	0.167 (on-site)	n.a.	n.a.	x	x	0.083 (on-site) 0 (street)	no effect	0	OSS severity refers to propn. of firms with pkg. at capacity at least once during the day
(ii) Business trips										
- inadequate parking at firm	0	0.167	n.a.	not very	x	x	0.083 (site) 0 (street)	no effect	0	MI prompted severity refers to all aspects of business trips.
- inadequate parking elsewhere	0	0.083	n.a.	not very	?	✓✓	n.a.	lost time	0.083	
(iii) Visitor trips										
- inadequate parking at firm	0.083	0.167	n.a.	not very/ not at all	x	x	0.083 (site) 0 (street)	no effect	0	MI prompted severity refers to all aspects of visitor trips.
(iv) Personal trips										
- inadequate parking at firm	0	0	n.a.	n.a.	x	x	0.083 (site) 0 (street)	no effect	0	
- inadequate parking elsewhere	0	0.083	n.a.	n.s.	x	?	n.a.	no effect	0	May contribute to lost time but not stated in MI.

problem	MI-propn.of firms mentioning		severity					effect on firm (as stated in MI)	MI-propn. of firms incurring cost	comments
			MI		EQ/VQ/DI		OSS			
	up	p	up	p	up	p				
GROUP C (public transport)										
(i) Journey to work										
- congestion/delays	0		↑	↑	?	✓	n.a.	Overall		(i)66.7% of firms mentioned unprompted problems. These firms were not subsequently asked a prompted question. (ii)66.7% of firms mentioned time lost through late arrival.
- indirect routeing	0				x	✓	n.a.	effects of		
- inadequate frequency	0.333				?	✓✓	n.a.	public trans.		
- inadequate coverage	0.167				?	n.a.	n.a.	transport	0.625	
- reliability	0.167	0	fairly	n.a.	✓✓	✓✓	n.a.	diffic.:		
- walk distance	0.167				x	✓	n.a.	-lost time		
- cost	0.25				x	✓✓	n.a.	-staffing		
- transfers	0.167				x	?	n.a.	issues		
- danger walking	0		↓	↓	x	?	n.a.	-staff dissatisf.		
(ii) Personal trips										
- congestion/delays	0	0	n.a.	n.a.	x	?	n.a.	Overall	0	8.3% of firms mentioned inadequate time to reach local facilities.
- inadequate frequency	0	0.333	n.a.	n.s.	x	x	n.a.	effects: -lost time	0	
- danger walking	0	0	n.a.	n.a.	x	?	n.a.	-provision of transport assistance by firm	0	
GROUP D (on route to site) (Commercial vehicles)										
- congestion/delays	0	0.25	n.a.		?	?	n.a.	lost time	0.125	33.3% of firms experience delays in deliveries but most delays are due to non-transport factors
- narrow/twisting streets	0	n.a.	n.a.	not	x	?	n.a.	no effect	0	
- poor road surface	0	0.50	n.a.	asked	x	✓	n.a.	no effect	0	
GROUP E (within site) (Commercial vehicles)										
- manoeuvring into/ out of site	0	n.a.	n.a.		x	?	?	no effect	0	
- manoeuvring within site	0	0.375	n.a.	not	x	?	?		0	
- obstructions such as equipment, pkd vehs etc	0	n.a.	n.a.	asked	?	?	n.a.		0	
- inadequate parking/ waiting areas	0	0.083	n.a.		x	x	x		0	
- on site ht/wt restrictions	0	0.083	n.a.		x	n.a.			0	
GROUP F (loading/unloading) (Commercial vehicles)										
- on street loading	0	0.25	n.a.	not at all	x	n.a.	?	no effect	0	16.7% of firms have at least some on-street loadings
- inadequate/unsuitable loading facilities	0	0.083	n.a.	n.s.	x	x	x	no effect	0	
- available space affects loading	0	0.25	n.a.	n.s.	x	n.a.	x	no effect	0	
- loading delays	0	0.583	n.a.	n.s.	x	x	?	lost time(?)	0	13.9% of all vehs delayed (OSS)
- time restrictions imposed by the firm	0	0.25	n.a.	n.s.	x	n.a.	x		0	

Footnotes are same as previous table for HHIA

9.2.2 Comment

There are four striking features suggested by Tables 88 and 89:

(i) Management's unprompted response rate when asked to specify their transport problems was low and most firms typically mentioned only two problems.

(ii) With the exception of public transport difficulties on the journey to work, there was no single problem which was consistently mentioned by a large proportion of firms' management in either or both study areas.

(iii) There were many problems which though identified by management had, according to them, little effect on firms' operations. The extent to which this reflects acceptance of existing conditions or a lack of appreciation of possible effects is difficult to judge.

(iv) There were relatively few reported cases where actual costs were incurred as the result of group A to F problems. This is partly the result of the low response noted in (i) above and partly the result of managements' inability to associate a money cost with a particular problem and then to estimate an actual value. It may be unwise to infer that because of this some of the problems listed were not of serious concern to at least some firms.

Those group A to F problems which affected operations or resulted in money costs in HHIA were:

(i) Congestion and delays caused by traffic (journey to work, business and personal trips, commercial vehicle trips).

(ii) Indirect routeing and one-way streets (business trips and commercial vehicle trips).

(iii) Parking (inadequate parking at the destination of business trips.)

(iv) Public transport difficulties (journey to work and personal trips.)

(v) Poor road surface (commercial vehicle trips).

(vi) Manoeuvring difficulties into and within sites (commercial vehicle trips.)

(vii) Inadequate or unsuitable loading facilities and loading delays.

The most commonly recorded effect of a problem was lost time which (provided firms' own staff were involved) presumably also resulted in a money cost even if this was not stated by management. In addition to lost time through late arrival, congestion and particularly public transport difficulties contributed to staff dissatisfaction and had implications in terms of staffing such as working times, shift hours, and overtime arrangements, and for the retention and recruitment of suitable staff.

9.2.3 Costings

Cost estimates varied widely due to the different size and activity of firms and also to managements' difficulty in associating problems with a money cost and then estimating that cost. The fact that relatively few firms stated costs makes an assessment of the reliability of the estimates even more difficult. It appeared that, as far as unprompted and prompted group A to F problems were concerned, only about half of those firms which considered that costs could be incurred were able to estimate a value. The other firms could not even suggest a range of possible costs. Actual costs provided by management have been summarised in Table 90.

In addition to the costs identified in Table 90, two HHIA firms provided company transport for the journey to work of some employees, and two firms in each study area provided assistance for personal trips during the day (Appendix IV). Both of these types of services result in direct costs.

As can be seen from Table 90, several individual firms (perhaps 10 - 20% of the sample) had quite severe transport problems. These were usually "one-off" situations, usually the result of characteristics of their operations, and in general it is difficult to predict these problems on the basis of study area averages or sample selection criteria.

9.2.4 Other problems

In addition to the group A to F problems described above, there were also those mentioned by management which resulted directly from internal organisation, company policy, and other more general problems which affected transport operations. These were usually independent of activity or location, although for a number of firms, it was clear

Table 90. Management estimate of costs incurred

Group A to C: £/employee/month

Group D to F: £/vehicle movement

	HHIA	Stanningley
Group A (on route to site)		
Congestion - journey to work [1]	0.42 (1 firm)	0.13 (1 firm)
Congestion - business trips	10.32[2], 0.42 (2 firms) + 3 d.k.	0.56, 0.18, 0.10 (3 firms) + 1 d.k.
Group B (parking)		
Inadequate parking elsewhere - business trips	0.42 (1 firm)	0.20 (1 firm)
Group C (public transport)		
Public transport difficulties[1]	30.3[3], 1.54 (2 firms) + 2 d.k.	0.97, 1.80, 0.98, 1.80, 11.84[4] (5 firms)
Group D (c.v. trips on route to site)		
Convestion/delays	0.31 + 2 d.k. (1 firm)	0.50 (1 firm)
Indirect routeing	0.10 (1 firm)	0
Poor road surface	0.03 (1 firm)	0
Group E (c.v. trips at the site)		
Manoeuvring into and within site	0.31 (1 firm)	0
Group F (c.v. trips, loading)		
Inadequate or unsuitable loading facilities[6]	2.00[5] (1 firm)	0

1. In addition, estimated lost time due to late arrival was 24.8 minutes/employee/month (HHIA) and 12.8 minutes/employee/month (Stanningley)
2. Firm's activity requires frequent face to face contact with clients and congestion contributes to lost business.
3. Start time of a.m. shift affected by public transport services - may not be a recurring cost.
4. Includes reimbursed business trips.
5. Represents total on-site costs, partly due to group F problems and partly due to difficulties with outside hauliers.
6. From the on-site survey 15.6% (HHIA) and 29.1% (Stanningley) of all vehicle movements were delayed. Average delay to all vehicles was 0.33 minutes (HHIA) and 1.29 minutes (Stanningley)

that they were as important as problems within groups A to F. Since there was no subsequent probing on these issues in the management interview, there is the possibility that, as a group, the reporting of these problems may be under-represented. The more serious related to:

(i) Problems at the delivery end of commercial vehicle trips, and consequent disruption to dispatch schedules. They are of a similar type to groups E and F.

(ii) The organisation and administration required to keep a fleet of vehicles operating.

(iii) Difficulty obtaining reliable haulage, when it is required, and at an acceptable cost.

With the possible exception of (i) (restrictions, delays and non-acceptance of goods at the delivery end of the trip), solutions to these problems lie largely with the firms themselves.

9.2.5 Comparison of the results of the different surveys at the firms

Where there is general agreement in the study area results of the different surveys, additional weight can be given to their conclusions. Where results do not agree it may indicate that different groups see potential problems in a different light or, where matters of fact are concerned, that respondents had difficulty identifying or quantifying the problem. Table 91 lists those problems where there appeared to be differences in the aggregated study area results of the surveys.

From Table 91, the differences which are of most concern are:

(i) Group A: congestion/delays on the journey to work. Although stated by a large proportion of employees of all firms to be a problem[1], only 25% of HHIA and 30% of Stanningley management considered (after prompting) that it constituted a problem to the firm. There were clearly large differences in the assessment of the problem by management and employees.

(ii) Group B: on-site parking. Managements' assessment of an on-site car parking shortfall at ten firms was confirmed by the on-site survey at only two of these firms, although at six of the remaining eight there were only a limited number of available spaces which could quite possibly be filled on other days. Shortfalls not stated by management were recorded at two firms.[2]

1. See tables 64 and 68 for study area responses.
2. See table 54.

Table 91. Differences in results of surveys

The table lists only those problems where there was not substantial agreement between the results of different surveys.

	HHIA	Stanningley
Group A (on route to site)		
Congestion - journey to work	More emphasis in EQ than MI	More emphasis in EQ than MI
Effect of traffic management measures - journey to work	Mentioned[1] in EQ, not in MI	Mentioned[1] in EQ, not in MI
Difficulties walking - journey to work	Mentioned[1] in EQ, not in MI	Mentioned[1] in EQ, not in MI
Indirect routeing - visitor trips	Mentioned[1] in VQ, not in MI	(Surveys agree)
Group B (parking)		
Inadequate on-site parking	Over-statement of shortfall in MI, not mentioned[1] in EQ	Over-statement of shortfall in MI
Inadequate parking elsewhere - business trips	Surveys agree (but more emphasis in EQ than MI)	Surveys agree (but more emphasis in EQ than MI)
Group C (public transport)		
Public transport difficulties - personal trips	(surveys agree)	Mentioned in MI not mentioned[1] in EQ
Group E (c.v. trips, at site)		
Manoeuvring into/within the site	(surveys agree)	More severe in DI and OSS than MI
Inadequate parking/waiting areas	More severe in OSS than MI	(Surveys agree)
Group F (c.v. trips, loading)		
Inadequate/unsuitable loading facilities	More severe in MI than OSS	(Surveys agree)
Available space affects loading	More severe in MI than OSS	More severe in MI than OSS

MI = Management interview
EQ = Employee questionnaire
VQ = Visitor questionnaire
DI = Driver interview
OSS = On-site survey

1. For a problem to be "mentioned" in the EQ, VQ and DI the response must be nominally greater than 5% unprompted and 7.5% prompted.

(iii) Group E: On-site conditions for commercial vehicles. Compared with the results of the on-site survey, HHIA management understated the problem of inadequate parking/waiting areas while Stanningley management did not mention difficulties manoeuvring into sites.

(iv) Group F: Loading facilities. Compared with the results of the driver interview and on-site survey management overstated somewhat the problems of loading operations and facilities.

In matters of fact, which can be verified by, for example, the results of the on-site survey there is no evidence that any group of respondents exaggerated the extent of problems in any deliberate or consistent manner. In fact, a number of problems[1] may have been under-reported and if further study showed this to be the case, it could have implications in terms of insufficient resources being devoted to possible solutions. It is somewhat more difficult to resolve differences in subjective response rates. In the case of the journey to work, the effect of congestion is viewed as being much more serious by employees than management.

9.3 Comparison between study areas

The overall impression from Tables 88 and 89 is that firms in both study areas experienced similar types of problems. Table 92 compares differences in the types of problems while Table 93 lists those problems where differences in severity were noted between study areas.

9.4 Comparisons by type of firm

9.4.1 Characteristics of firms

Chapter 2 discussed in detail the criteria for sample selection and how adequately the final samples satisfied these criteria. The selection process ensured that the samples were representative of industry in their respective study areas. It also enabled disaggregation according to the main selection criteria so that possible differences between firms attributable to these criteria could be investigated. The management interview provided additional information on the characteristics of firms, e.g. conditions of tenure, age, and future plans. (Table 94)

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1. Journey to work difficulties (HHIA and Stanningley), on-site manoeuvrability (Stanningley), inadequate parking elsewhere (HHIA and Stanningley), parking shortfall in the case of some HHIA firms.

Table 92. HHIA - Stanningley: Differences in types of problems[1]

Problem mentioned or observed in HHIA but not in Stanningley	Problem mentioned or observed in Stanningley but not in HHIA
Group C (Public transport) Crowded buses/comfort - journey to work (EQ) Reliability - personal trips (EQ) Walk distance - personal trips (MI) Cost - personal trips (EQ)	Group A Effect of traffic management measures - visitor trips (MI)
Group D (c.v. trips) Difficulty finding firm (DI) Indirect routeing (MI and DI)	Group B Inadequate parking elsewhere - personal trips (MI)
Group E (c.v. trips - at site) Obstruction caused to other c.v.s on the site (OSS)	Group F Loading/unloading time restrictions imposed by the firm (MI)

1. Abbreviations in brackets refer to the survey in which the difference was noted. A problem is "mentioned" if the response rate is nominally greater than 5% unprompted and 7.5% prompted.

Table 93. HHIA - Stanningley: Differences in severity of problems

More severe in HHIA	More severe in Stanningley
Group B (parking) Inadequate employee parking[1] Inadequate parking for firms' vehicles[1] Inadequate parking for visitors' vehicles[1]	Group C (public transport) Costs incurred as a result of public transport difficulties with the journey to work.
Group D (commercial vehicle trips) Congestion/delays (possibly) Indirect routeing	Group F On-site delays to commercial vehicles[4]
Group E (c.v.s at the site) Manoeuvring difficulties[3] Inadequate parking/waiting areas[2] Obstruction caused to other c.v.s on the site[2]	
Group F (loading/unloading) On-street loading [1,5] Inadequate/unsuitable loading facilities [3]	

1. Management stated that the problem did not affect operations.
2. Little or no effect on firms' operations.
3. Differences between study areas noted in management interview but not supported by the on-site survey.
4. As measured by both total time lost per vehicle, and the proportion of all commercial vehicles delayed.
5. As measured by the no. of firms which load/unload on street, but not the proportion of all c.v.s which are loaded/unloaded on street.

Table 94. Condition of premises

	HHIA (12 firms)		Stanningley (12 firms)	
	expanding SIC's[1]	declining SIC's[1]	expanding SIC's[1]	declining SIC's[1]
Conditions of tenure	4 owned 2 leased	5 owned 1 n.s.	5 owned	6 owned 1 leased
Average age of firm (years)	73.8	88.6	58.0	66.0
Average age of premises (years)	64.2	94.0	59.0	62.7
Average time at present site (years)	24.5	39.6	27.2	45.6
No. of premises modernised within last 10 years	2	2	3	4
No. not recently modernised	4	4	2	3
Total	6	6	5	7
No. of firms with plans to:				
- expand on-site	1	2	1	1
- move elsewhere	0	0	0	0
- both expand on-site and establish elsewhere	1	1	0	1
- no plans	4	3	4	5
Total	6	6	5	7

1. As measured in terms of changes in proportion of total Leeds MD employment 1971-75.

9.4.2 Comparison by expanding and declining industries

Table 94 lists the condition of premises disaggregated by expanding and declining industries. The majority of firms whether from expanding or declining industries owned their own premises, which may partially explain why no firms in either study area were considering closing down and establishing elsewhere. The average age of premises in both areas is relatively old. There are three post World War II premises in HHIA and five in Stanningley. Half the HHIA and one-quarter of the Stanningley premises are over 100 years old. Although on average firms from expanding SIC's in both study areas were younger, had been at their present sites for a shorter period, and occupied newer premises compared with firms from declining SIC's, the differences are not significant when compared with either the stages in a firm's lifecycle or the scale and rate of post war industrial development.

With the proviso that slightly more Stanningley than HHIA firms had recently invested in modernisation (irrespective of SIC) there are not significant differences in the conditions or future plans of firms from expanding and declining SIC's and there does not appear to be a case to treat expanding and declining industries separately. This is not to say that easing the transport problems of particular declining firms will not assist their overall financial position. Furthermore, as Sections 4.6.4 and 9.4.3 indicate, declining industries are frequently those typically associated with low levels of commercial vehicle activity while the reverse is true of expanding industries. The survey data does not indicate that the type or severity of transport problems of individual firms are dependent on the expected level of commercial vehicle activity. This supports the conclusion that firms' transport problems are independent of the economic status of the industrial group from which they are drawn.

9.4.3 Comparison by industrial classification

In section 4.6.4 it was argued that unless a broad manufacturing versus service grouping of firms suggested significant differences, there would not be a case for further disaggregation by industrial classification.

Table 53 (p89) uses the management interview as a basis to identify possible differences between manufacturing and service firms. The results suggest that:

(i) Manufacturing firms may be relatively worse off as regards group A and C problems and their effects. Further examination of workforce composition, journey to work mode split and travel times, and managements' statements about recruiting difficulties is inconclusive. It does not indicate reasons for the difference which could be attributable to firms' activity or to a broad manufacturing/service categorisation, although the importance manufacturers place on suitable skilled labour may be a contributory factor in HHIA.[1]

(ii) There is no difference for group D to F problems (i.e. related to commercial vehicle trips) or their effects.

The second result is somewhat unexpected in that it could be anticipated that service firms may be more affected by transport factors because of their greater usage of transport during day-to-day operations. Since no differences were identified there does not appear to be a case to consider further disaggregation by activity.

9.4.4 Comparison by expected level of commercial vehicle activity

As a generalisation the service industries are characterised by high commercial vehicle generation rates, while by comparison the rates for the manufacturing sector are typically medium to low.[2] It may therefore be thought that service firms as a group could be more susceptible to group D to F problems (i.e. those associated with commercial vehicles). Table 53 indicates no differences between manufacturing and service firms in the problems (and their effects) associated with commercial vehicle activity. While further work on possible differences at this level of disaggregation may prove useful,[3] it is unlikely that further disaggregation would be warranted.

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1. Where 62% of the manufacturing workforce are "skilled", (compared with 33% in Stanningley).
2. Within each group the range of values is likely to be large.
3. For example; have service firms as a group invested more heavily in facilities/fleets etc. in order to reduce previously identified problems.

9.4.5 Comparison by size of firm

Table 95 presents the results of a comparison between small and large firms in each study area using data from the management interview and on-site survey.

Table 95. Comparison of problems by size of firm

	HHIA	Stanningley
Worse for small firms (< 100 employees)	(i) On-site parking (ii) On-street parking of goods vehicles (iii) Available on-site space for loading (iv) Possibly availability of on-site space for manoeuvring (v) Possibly the effect of congestion on commercial vehicle trips[1]	(i) Importance of transport as a factor in late arrival of staff
Worse for large firms (100+ employees)	Nil	(i) Available on-site space for - stockpiles - loading - manoeuvring (ii) Possibly the effect of public transport difficulties[2]

1. Firms' activity will also be a factor - many of the distributors are small firms.
2. Firms' location relative to bus services will also be a factor.

It is difficult to associate problems unambiguously with a particular size category. Of the differences noted in Table 95, it is likely that space restriction in HHIA (both on-site, and consequent on-street difficulties) is most strongly related to size of firm, partly because of the characteristics of premises into which small firms frequently locate.

9.4.6 Comparison by location within each study area

Figures 6 and 7 indicate the sub-areas into which each of the study areas were subdivided for sample selection. A review of the problems revealed by the surveys, grouped by location within the study area, suggests that intra-study area differences are unlikely to be as significant as inter-study area differences (which themselves are small), with the following exceptions:

- public transport (journey to work and personal trips)
  - coverage and frequency
  - walk distance to bus stops
- on-street parking restrictions
- proximity to local facilities
- particular characteristics of the road network.

There are three sub-areas of particular interest:

HHIA Areas B and D (both of which have been identified as potential Industrial Improvement Areas). On-street parking appears to be worse than average study area conditions, due in part to on-street restrictions, narrow roads and lack of on-site spaces.

Stanningley Area B (Grangefield Industrial Estate). There is no bus service onto the Estate (and hence long walk distances to the nearest bus stop). The single exit from the Estate results in delays, especially on the journey from work, and there is a lack of maintenance of Estate roads.

Because of the implications of the application of area wide solutions, further examination of the identification of, and extent of, differences in problems due to location would be useful.

9.5 Comparison with problems suggested by the literature

A review of the literature (6) provided an initial listing of possible problems while saying little on their relative severity (Table 1). This was used as a basis for much of the survey design. Table 96 compares the problems revealed during the present surveys with those from previous studies.

Free, and to a large extent unrestricted, on-street parking and loading in the two Leeds study areas explains why several problems were not revealed. Of the new problems shown by the present study, restrictions on loading times imposed by the firms themselves had no effect on their

Table 96. Comparison with other studies

Not in literature	Not in present study
Group A: Effect of traffic congestion for those walking to work[1]	Group B: Cost of car parking
Groups A and C: Danger during walking stage of trip[1]	Group D: Narrow/twisting streets[2]
Group B: Inadequate parking elsewhere especially for business trips (e.g. city centre)	Groups D and F: Restrictions on delivery times and loading zones imposed by local authorities
Group C: (i) walk distance to bus stop (ii) crowded buses/comfort[1]	Group F: Inadequate on-street loading zones
Group F: Restrictions on loading/unloading imposed by the firms themselves	

1. Also not mentioned by any firms in the management interview.
2. Mentioned (prompted) by about 10% of commercial vehicle drivers during driver interview.

operations and probably improved their overall planning and staffing arrangements.[1] Similarly difficulties walking to work and with public transport comfort are unlikely to affect firms directly, but may result in some degree of staff dissatisfaction. Inadequate parking elsewhere (especially for business trips) and walk distances to bus stops (journey to work and personal trips) are more likely to affect firms and their staff, and were not suggested as problems by the review of previous studies.

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1. The restrictions may, however, be a problem to those delivering to the firm.

10. CONCLUSIONS OF THE LEEDS SURVEYS[1]

10.1 Conclusions relating to the type of firm

As regards the criteria adopted for sample selection, the transport problems of individual firms in either study area were:

Independent of:

(i) The industrial classification of the firm

(ii) The economic condition of the industry from which the firm was drawn[2]

(iii) The expected level of commercial vehicle activity of the industry from which the firm was drawn

Dependent on:

(i) Size of firm (HHIA only)
- problems associated with restricted on-site space (parking and loading) were more common among smaller firms of HHIA.

(ii) Location within the study area - location influenced problems associated with
- employee access to public transport services[3]
- on-street parking restrictions
- proximity to local facilities and the difficulty making personal trips

10.2 Conclusions relating to firms' transport problems

(i) Unprompted response by management to possible problems was low, typically two problems were mentioned. Firms in HHIA mentioned more problems related to person and commercial vehicle trips and rated the effect of transport problems as more serious than firms in Stanningley.[4] Employee response was high to several problems associated with the journey to work, while the response of visitors and commercial vehicle drivers to similar types of problem was about half.

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1. The results of the surveys in Leeds and London will be compared in a subsequent working paper in this series.
2. As represented by an expanding or declining proportion of total Leeds M.D. employment.
3. Frequency, service coverage and walk distance.
4. Average of 1.50 problems/firm in HHIA c.f. 1.00 problems/firm in Stanningley. Mean score of seriousness of the effect of transport problems 60 for HHIA c.f. 40 for Stanningley.

(ii) The more widespread problems for HHIA firms were those associated with:

(a) Congestion and delays on employee journey to work, business trips, personal trips and commercial vehicle trips.

(b) Indirect routeing and one-way streets on business and commercial vehicle trips.

(c) Poor road surface condition for commercial vehicle trips.[1]

(d) Inadequate on-site and on-street parking (at specific locations within the study area)[1]; and inadequate car parking elsewhere (e.g. city centre).

(e) Public transport difficulties for employee journey to work and (to a lesser extent) personal trips.

(f) On-site conditions for commercial vehicles (at specific locations within the study area), including manoeuvring difficulties,[1] inadequate loading facilities and loading delays, and on-street loading.[1]

(iii) The management of half the firms in each study area mentioned transport problems which were not directly related to person or commercial vehicle trips, but which nevertheless were important to the firms concerned. The most significant were those resulting from:

(a) company policy

(b) organisation and operation of firms' own vehicle fleets

(c) the use of outside haulage.

(iv) A number of problems did not affect the operations of the firms which were surveyed but are likely to affect other firms or other traffic:

(a) on-site delays to commercial vehicles, restrictions on loading/unloading times imposed by the firm, inadequate parking for visitors;

(b) on-street car and commercial vehicle parking, on-street loading/unloading, difficult access into premises for commercial vehicles.

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1. Stated by management not to affect operations. Problem may, however, affect other firms or other traffic.

(v) The surveys did not indicate large differences in the type and severity of problems between inner and outer areas, and consequently solutions are likely to have general applicability. Those problems which were more severe in the inner area were:

(a) congestion (particularly within the study area itself) and indirect routeing

(b) inadequate on-site and on-street parking for cars and commercial vehicles

(c) on-street loading/unloading, inadequate on-site space for commercial vehicles, inadequate parking and waiting areas.

(vi) The results generally agreed with the possible problems suggested by a review of a number of previous surveys. Differences were of three types:

(a) those attributable to conditions at specific locations within the study areas - on-street parking and loading

(b) those which were relatively unimportant and unlikely to affect firms - comfort of public transport services

(c) those which may affect firms operation - the site conditions mentioned in (a) above, parking availability at other locations, walk distance to public transport services.

(vii) Although few problems seriously affected firms' operations, instances of lost time and inconvenience were common and a number of firms stated that problems resulted in loss of business (or sales) rather than a direct cost. Time lost through late arrival of staff was a common result of journey to work problems. Staff dissatisfaction and staffing issues such as working hours, willingness to work overtime etc. were mentioned, however firms were generally unable to identify transport deficiencies as a possible cause of the more general problem of recruitment and staff turnover.

(viii) There was an inability of firms to cost their transport problems, and of those firms which considered that costs were incurred only about half were able to estimate a value. There is consequently the danger that the effect of problems may be understated by local authorities and that insufficient resources may be allocated to their solution.

(ix) Few firms in either study area operated a system of variable working hours or provided transport assistance for their employees (although most adopt a lenient attitude to extending the lunch hour to enable employees to complete at least the more important personal trips).[1]

(x) Problems were, for the most part, local or site specific and were seldom concerned with longer distance movement outside the urban area. Some of the site specific problems, and problems associated with the journey to work and personal trips, may be as amenable to solution by the firms themselves as they are to solution by local authorities.

(xi) Either because of their relative importance, or the scarcity of appropriate research, the following shortlist of problems warrants further study:

(a) congestion and access by car and commercial vehicles (HHIA and Stanningley)

(b) public transport difficulties (HHIA and Stanningley)

(c) parking (at selected firms) (HHIA)

(d) on-site conditions (at selected firms) (HHIA)

(e) personal trips during the day (HHIA and Stanningley).

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1. e.g. dentist, doctor etc.

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APPENDIX I: EXAMPLE CASE STUDY REPORT

THE INSTITUTE FOR TRANSPORT STUDIES

TRANSPORT AND FIRMS PROJECT

CASE STUDY REPORT: No.10

Contents

This report summarizes the results of various surveys conducted at the firm. The primary purpose is to provide background information on the firm, and to identify transport related problems and their effect on the operation of the firm and on the firm's employees.

Separate reports treat the transport problems of the study area as a whole and consider the type and value of possible solutions. These reports are available from the Institute for Transport Studies.

To keep the length of the report to a minimum, the survey results have been presented in summary form, with abbreviated notes and comments.

Summary of Major Problems:

source	person trips	goods vehicle trips
management	parking shortfall for employees & visitors	
management		delays at delivery end delivery schedule difficulties
management employees	(i)inadequate local facilities (ii) duration of personal trips	
employees	(i)congestion (ii)inadequate and unreliable bus services (iii)cost of public transport (iv) danger walking	
visitors	delays by pkd/ldg vehs.	
goods veh. drivers		(i)delays by pkd/ldg vehs. (ii) narrow streets (iii) manoeuvring within site (iv) bad roads
On site survey		delays to goods vehicles.

CASE STUDY REPORT: FIRM No. 10

PART A: BACKGROUND INFORMATION

1. GENERAL

Location: Holbeck-Hunslet

Industrial classification: SIC 23 distributive trades

Age of company: 70 years Time at present site: 15 years

Age of premises: 100 years

Tenure: owned

Part of larger group: yes

Other integral branches: yes, Kings Lynn, Dunfirmline

Site area: 43,500 sq. ft 80 % occupied by buildings.

Employment 119

	mngr/ prof.	office (cler/tech)	skilled	unskilled	total
male	15	2	29	24(7)	70(7)
female	-	17(9)	8	24(8)	49(17)
total	15	19(9)	37	48(15)	119(24)

(Numbers in cells are total full time plus part time; numbers in brackets are part time components)

Shift system: no

Variable working hours/variable lunch hour: no (lunch break is staggered 45 mins)

Comments:

2. TRANSPORT

Transport costs (as% of total non-capital costs): 5% (d.k. if includes veh. depreciation/replacement)

Importance of transport to firm's operations: extremely

Transport assistance for employees: all business trips reimbursed

Importance of business trips: very

Mode split of business trips: 100% company car

Importance of trips by visitors: extremely

Firm No: 10

On-site parking provision:

	employee cars	company cars	visitors cars	goods vehicles
estimated on-site spaces	-	8	6	1
estimated short fall	15	-	6	-

Can additional off-street spaces be provided: no

Goods inward: clothing, bedding, footwear

Goods outward: ditto

Origin/destination of goods:

	goods inward	goods outward
within study area	-	5
within urban area	5	15
within region	15	25
outside region	80	55
	100%	100%

Method of carriage:

	goods inward	goods outward
own vehicles (incl. long term hire)	5	20
specialist haulier	85	75
suppliers'/customers' vehicles	10	5
other	-	-
	100%	100%

Vehicle fleet (based at premises and available for normal ops.)

priv. cars	co. cars	A 	B 	C 	D 	E 
-	30	-	1	1	-	-

Number of loading bays: 2

Sufficient: yes

On-street loading: yes (5% of vehicle trips)

Restrictions:

times (goods inward) no

times (goods outward) yes, depends on customer

vehicle size or weight no

Required frequency of delivery (goods inward): daily

Comments: (i) many company cars operated by reps. who work away from the firm for extended periods.
(ii) adjacent vacant land used for some employee parking.

Firm No: 10

PART B SURVEY RESULTS AND IDENTIFICATION OF PROBLEMS

3. MANAGEMENT INTERVIEW

Effect of transport problems on operations: extremely serious

Problems more serious than transport: transport is most serious problem

Unprompted problems

group	problem description	effect	seriousness	cost/ month
other traffic problems	(i) non-acceptance of deliveries) (ii)delays at delivery end of trip)	lost time; re-scheduling of deliveries	very	£100
other	(i)vehicle reliability	affects delivery schedule	fairly	d.k.
	(ii) loss of goods in transit	slight problem only	n.s.	n.s.
	(iii) high haulage rates	must be considered when determining delivery schedules	n.s.	n.s.

Prompted problems

group	problem description	does problem affect firm	cost/ month
A	congestion/delays on journey to work	no	-
A	congestion/delays for business trips	yes - slight only; outside region	d.k.
D	congestion/delays for goods vehicle trips	no	-
A & D	indirect routes or one-way streets	no	-
C	public transport travel for employees	no	-
D	poor maintenance of roads within 1 mile	no	-

Comments:

(i) 75% of deliveries are made by specialist hauliers

(ii) 5% of deliveries are within HHIA, 15% elsewhere within Leeds/Bradford ∴ delivery end problems are not confined to study area.

Firm No: 10

Effect of transport problems - Employees

problem	degree of seriousness	importance of transport	comment
late arrival of staff	not serious 50 m hr/wk	not very	not assoc. with part. categories of staff
absenteeism	not serious	not at all	
staff turnover	not a problem		
recruitment of staff	difficulty with: no rec't. in partic. areas: no rec't diffic. in partic. areas:		
personal trips	local facilities: poor paid time lost: none transport difficulties: yes (employees unable to take extra time off for pers. trips)		
business trips	inconvenienced by tpt: fairly reasons & effect: traffic congestion; no cost to the firm		
visitor trips to the firm	inconvenienced by tpt: d.k. reasons & effect:		

Effect of transport problems - Goods and services

problem	reasons, effect and cost/month
delays in deliveries to the firm	frequency: never duration: effect: cost: -
delays loading/unloading	frequency: yes once/month effect: unload on street - cost:
stockpile levels	non-optimum: yes, prefer less so capital not tied up does tpt. affect levels: no cost: d.k.
distribution of output	non-optimum: no does tpt. affect distr. freq: cost:
vehicle size	adequate

Effect of available space

available space affects	stockpile levels	yes
" " "	dispatch schedules/frequency	no
" " "	loading/unloading facilities	no
" " "	goods veh. manoeuvrability	yes

Firm No: 10

Comments on management interview:

4.1 EMPLOYEES - JOURNEY TO WORK - BACKGROUND (Source: Employee Questionnaire)

Total no. of respondents: 35 (29.4 % of total employment)

Mode split (percent)

(a) by sex

	male	female	total
private	25.7	5.7	31.4
public	28.6	31.4	60.0
walk	2.9	5.7	8.6
others	-	-	-
total	57.1	42.9	100%

(35 respondents)

(b) by job category

	man/prof.	office	works	others	*total
private	14.7	8.8	5.9	2.9	32.4
public	-	14.7	35.3	8.8	58.8
walk	-	2.9	5.9	-	8.8
others	-	-	-	-	-
total	14.7	26.5	47.1	11.8	100%

(34 respondents) (*totals may not add due to rounding)

(c) 4 of 11 respondents (36.4 %) travelling by private mode used a company vehicle

Time of journey to work:

(a) average time and std. dev. in minutes

	average	std.dev.
private	21.8	5.1
public	35.0	28.5
walk	16.7	2.9
other	-	-

(34 respondents)

(b) stated variability in travel time - % of respondents using each mode

	0-5 mins	5-10 mins	10+ mins	total
private	18.2	63.6	18.2	100%
public	10.5	65.3	21.1	100%
walk	100.0	-	-	100%
other	-	-	-	100%
total	18.8	62.4	18.8	100%

Parking (private mode users only) (32 respondents)

(a) location

firm's car park	80.0 *
other private park	-
on-street	-
public car park	-
car not parked	20.0
	100%

(10 respondents)

(b) walk distance

0-50 yds	88.9
50-100 yds	-
100-200 yds	-
200-400 yds	11.1
400+ yds	-
	100%

(9 respondents)

(c) - of 11 respondents (- %) travelling by private mode stated that time was spent looking for parking.

Public transport

(a) average cost = 32.7 pence (std.dev. = 14.8 pence)

* or vacant land adjacent to premises

Firm no.: 10

(b) number of stages on trip

one	72.2
two	27.8
three or more	-
	100%

(18 respondents)

(c) walk distance from stop to firm

		% cum freq.
0 - 50 yds	-	-
50 - 100 yds	-	-
100 - 200 yds	-	-
200 - 400 yds	38.1	38.1
400 - 800 yds	23.8	61.9
800+ yds	38.1	100.0
	100%	

(21 respondents)

Comments:

4.2 EMPLOYEES - JOURNEY TO WORK - PROBLEM IDENTIFICATION (Source: Employee quest.)

Rating of journey to work

	very satis.	satis.	neither	unsat.	very unsatis.	total*	mean score of rating
private	36.4	63.6	-	-	-	100%	15.9
public	10.5	63.2	5.3	21.1	-	100%	34.3
walk	-	100.0	-	-	-	100%	25.0
others	-	-	-	-	-	100%	-
all modes	19.4	64.5	3.2	12.9	-	100%	27.4

(*totals may not add to 100 due to rounding) (respondents)

Unprompted problems (Number of occasions the stated problem was mentioned)

	private	public	walk	other	total
Traffic delays	1	1	1	-	3
Poor road surfaces	-	1	-	-	1
Traffic management measures	1	-	-	-	1
Infrequent bus service	-	1	-	-	1
Unreliable bus service	1	2	-	-	2
no. of respondents stating no problems	-	1	-	-	1
no. of respondents mentioning problems	1	4	1	-	6
total no. of respondents	11	21	3	-	35

Firm no: 10

Prompted problems - public transport users

(No.of respondents mentioning problem)

	a very serious problem	a serious problem	a slight problem	not a problem*	total % mentioning problem	mean score (calc. on all respondents)
1. Delays caused by other traffic	2	3	10	6	71.4	34.9
2. Indirect route to reach here	-	1	4	16	23.8	9.5
3. Services not frequent enough	5	4	5	7	66.7	44.4
4. Services do not keep to timetable	9	5	4	3	85.7	65.1
5. Distance from bus stop or station to this building	1	1	4	15	28.6	14.3
6. Cost of your trip here	8	5	2	6	71.4	57.1
7. Need to use more than one bus, train etc.	-	1	3	17	19.0	7.9
8. Danger while walking	5	1	3	12	42.9	31.7
9. Others (specify)	-	-	-	21	-	-

(* incl. questionnaires where a response was not ascertained)

Prompted problems - private mode users

(No.of respondents mentioning problem)

	a very serious problem	a serious problem	a slight problem	not a problem*	total % mentioning problem	mean score (calc. on all respondents)
1. Delays caused by other traffic	1	1	5	4	54.5	30.3
2. Indirect route to reach here	-	-	-	11	-	-
3. Difficulty finding a parking space	-	-	1	10	9.1	3.0
4. Cost of parking	-	-	-	11	-	-
5. Distance from parking space to this building	-	-	-	11	-	-
6. Danger walking	-	-	-	11	-	-
7. Others (specify)	-	-	-	11	-	-

(*incl. questionnaires where a response was not ascertained)

Comments:

Firm no:10

4.3 EMPLOYEES - PERSONAL TRIPS

Number of trips reported

	Mon.	Tues.	Wed.	Thurs.	Fri.
No. of respondents reporting trips	5	5	6	10	10
% of respondents reporting trips	14.3	14.3	17.1	28.6	28.6
Total no. of trips	5	5	6	10	11
Total no. of respondents *	35	35	35	35	35

(*incl. questionnaires where a response was not ascertained)

Trip purpose:		Mode split:	
lunch	20.0	private	70.0 *
shopping	20.0	public	10.0
services	30.0	walk	20.0
other	30.0	other	-
(10 trips)	100%	(10 trips)	100%

Average cost of trip for public mode users: n.s. *50% driver, 20% passenger

Average duration of trips: 53.5 min (includes 1 trip of 150 mins and 1 trip of 90 mins)

25.0% of trips were to destinations within the study area.

Prompted problems with personal trips

(No.of respondents mentioning problem)

	a very serious problem	a serious problem	a slight problem	not a problem at all *
1. Delays by other traffic	1	2	2	30
2. Indirect route to destination	-	2	-	33
3. Difficulty finding a parking space at destination	2	-	-	33
4. Difficulty finding a parking space here on return from trips	-	-	1	34
5. Buses, trains etc. not frequent enough	1	1	-	33
6. Buses, trains etc. do not keep to timetable	1	1	-	33
7. Need to use more than one bus, train etc.	1	-	-	34
8. Cost of trips	1	2	-	32
9. Danger walking or cycling	1	-	1	33
10. Others (specify)	-	-	-	35

(*incl. questionnaires where a response was not ascertained.)

Comments:

(i) higher proportion of personal trips on Thursday and Friday

(ii) lifts given by those owning cars

(iii) average duration of trips is greater than period of lunch break - however management does not consider paid time is lost, and employees cannot take extra time off to complete personal trips

Firm no: 10

2 out of 17 respondents to this question(11%) stated they were prevented from making personal trips because of transport reasons

Reasons : unreliable bus service, cost

Comments (incl. business trips):

---

5. VISITOR QUESTIONNAIRE (covering one week period)

Number of respondents:

(a) Mode split:

private	24
public	-
other	-
total	24

(b) Frequency of visits:

more than once/week	5
more than once/month	11
less than once/month	4
first visit	-
total	20

(c) Parking location (for those using private mode):

firms car park	24
other private car park	-
on-street	-
public car park	-
total	24

(d) Parking distance:

0 - 50 yards	24
50 - 100 yards	-
100 - 200 yards	-
200 - 400 yards	-
400+ yards	-
total	24

(e) - respondents paid for parking (av. cost for those paying = n.a.)

(f) Average cost for those using public or other mode = n.a.

(g) Origin of trips: Leeds - Bradford 10, elsewhere Yorks. 6

Prompted problems (number of times problem was mentioned)

1. Difficulty finding premises	3
2. Delays caused by other traffic	8
3. Delays caused by parked or loading vehicles	9
4. Indirect route	6
5. Inadequate parking	3
6. Inadequate public transport services	-
7. Public transport not keeping to timetable	-
8. Cost of parking	-
9. Cost of public transport	-
10. Others	-

(12 Respondents mentioned at least one problem)

Comments:

Firm no: 10

6. COMMERCIAL VEHICLE DRIVER INTERVIEW

Number of respondents: 13

Problems on route to site:

(No. of respondents mentioning problem)

	Unprompted	Prompted	Total
1. Finding premises	-	-	-
2. Delays by other traffic	-	1	1
3. Delays by parked vehicles	1	2	3
4. Delays by loading vehicles	2	1	3
5. Narrow or twisting streets	1	2	3
6. Indirect route	-	-	-
7. One-way streets	-	1	1
8. Poor surface condition of streets	2	4	6
9. Height or weight restrictions	1	2	3
10. Others	-	-	-

(7 drivers mentioned at least one problem)

Problems at the site:

(No. of respondents mentioning problem)

	Unprompted	Prompted	Total
1. Manoeuvring into site	-	1	1
2. Manoeuvring within site	1	2	3
3. Obstructions e.g. equipment, pkd. vehs.	-	2	2
4. Difficulty finding loading point	-	-	-
5. Insufficient parking/waiting spaces	-	-	-
6. Facilities not suited to veh. or load	-	-	-
7. Other vehicles loading	-	-	-
8. Others	-	-	-

(4 drivers mentioned at least one problem)

Comment:

Firm no: 10

7. ON-SITE SURVEY

Total no. of vehicle movements: 14 (Including — return trips)

	A 	B 	C 	D 	E 
Company owned	-	-	2	-	-
Other	-	-	12	-	-
Total	-	-	14	-	-

Frequency of visits to site: (no. - excl. co. vehs.)

more than once/week	7
more than once/month	2
less than once/month	1
first visit	-
total	10

Trip purpose (number):

only deliver goods	9
only pick up goods	5
both pick up and del.	-
repair or service	-
other	-
total	14

Arrival time on site:

0700 - 0930	0931 - 1200	1201 - 1400	1401 - 1600	1601 - 1800	Total
1	4	2	6	-	13

No. of drivers spending stated proportion of their driving time within study area (incl. co. drivers):

0 - 24%	25 - 49%	50 - 74%	75 - 100%	Total
5	1	-	-	6

	study area	urban area	elsewhere	total
Origin of goods in	-	1	4	5
Destination of goods out	-	5	-	5

Number of vehicles loaded on street: 1

On-site problems observed by survey staff:

	No. of vehs.	total delay recorded
manoeuvring into site	1	½ min
manoeuvring to bay	1	-
positioning at bay	1	-
having to park/wait	5	24 min
unloading vehicle	1	-
this vehicle delayed other vehicles	2	-

(6 vehicles encountered one or more difficulties)

Firm no: 10

No. of vehicles delayed on site: 5

Total delay: 24½ min

Comments: (i) lost time waiting to load/unload. (average delay to all vehicles = 1.7 mins; longest delay to any vehicle = 10 mins)

(ii) on-street parking by waiting vehicles

---

8. PARKING SURVEY

On-site parking capacity: 18

On-street parking capacity within 100 yards of premises: -

Number of vacant spaces available during the day:

Time	on-site	on-street	Comment
0800	d.k.	-	On Friday, rep's cause inefficient parking, delays in unloading
0900	9	-	
1000	6	-	
1100	5	-	
1200	7	-	
1300	8	-	
1400	12	-	
1500	11	-	
1600	10	-	
1700	15	-	

Comments: (i) adjacent streets are too narrow to premit parking without seriously reducing capacity.

(ii) parking spaces on site not availalbe for employee parking - they park on adjacent vacant land.

(iii) on-street parking of waiting goods vehicles observed.

APPENDIX II CALCULATION OF MEAN SCORES

1. Rating scales were used in the following questionnaires:
   (i) EQ prompted - rating of each of a list of possible problems (4 point scale)
   (ii) EQ unprompted - rating of degree of difficulty and level of dissatisfaction with journey to work (5 point scale)
   (iii) EQ - rating by c.v. drivers of each of a list of possible problems. (4 point scale)

   As explained in ref. 3, it is reasonable to assume mean scores are calculated by assigning values at equal intervals in the range 0 to 100 for each individual response, summing for all respondents and dividing by the total number of respondents.

2. Values are assigned as follows:

Degree of difficulty		Degree of dissatisfaction	
extremely	100	very unsatisfactory	100
very	75	unsatisfactory	75
fairly	50	neither	50
not very	25	satisfactory	25
not at all	0	very satisfactory	0

Rating of a prompted problem	
very serious	100
serious	66.7
slight	33.3
not at all/not applicable	0

3. Example of calculation.

   Stanningley, bus unreliability (i.e. buses not keeping to timetable) on the journey to work, as perceived by bus passengers.

Rating	no. of respondents	score value	sum of score values
a very serious problem	5	100	500
a serious problem	7	66.7	466.9
a slight problem	10	33.3	333
not a problem at all/ not applicable	7	0	0
	29		1299.9

$$\text{Mean score} = \frac{1299.9}{29}$$

$$= 44.8$$

APPENDIX III : MANAGEMENT INTERVIEW

This appendix tabulates the results of the interviews conducted at individual firms, for both study areas. Pilot firms are identified by an asterisk (*) since a number of questions were not asked during the pilot survey.

Notation:

✓	problem mentioned by management
-	problem not mentioned by management, or a zero value for that item
n.s.	not stated
n.a.	not applicable
d.k.	respondent did not know
I, SA, CL, L/B, EX	internal, study area, Central Leeds, Leeds/Bradford urban area, external to Leeds/Bradford
importance of	1 = extremely, 2 = very, 3 = fairly, 4 = not very, 5 = not at all
seriousness of	as above
severity of	1 = extremely serious, 2 = very serious, 3 = fairly serious, 4 = not very serious, 5 = not at all
how often inconvenienced	1 = very often, 2 = fairly often, 3 = not very often, 4 = not at all
frequency of delivery delays	1 = more than once/week, 2 = more than once/month, 3 = less than once/month, 4 = never, 5 = not applicable.
usual length of delay	1 = less than 1 hr., 2 = less than $\frac{1}{2}$ day, 3 = $\frac{1}{2}$-1 day, 4 = 1 day-1 week, 5 = longer
frequency of loading delays	1 = several times/day, 2 = several times/week, 3 = several times/month, 4 = less frequently.

Blanks in the tabulations for pilot firms indicates that the question was not asked.

HOLBECK HUNSLET INDUSTRIAL AREA

Firm no.	01	02	03*	04	05	06*	07	08*	09	10	11*	12	Total HHIA
BACKGROUND													
SIC	6	6	7	15	17	18	20	22	23	23	23	20	
total employment	500	33	152	73	65	31	86	28	32	119	72	118	
no. of co. cars	n.s.	2	6	3	5	3	20	3	5	30	16	14	
no. of co. goods vehs.	n.s.	2	4	1	2	2	7	22	3	2	8	15	
Parking													
(i) inadequate on-site parking for: employees	-	-	-	-	✓	✓	-	-	-	✓	-	✓	4
co. cars	-	-	-	-	-	-	-	-	-	-	-	✓	1
visitors	-	-	-	✓	✓	-	✓	-	✓	✓	-	-	5
goods vehicles	-	-	-	-	-	-	-	-	-	-	-	✓	1
(ii) are costs incurred?	-	-	-	-	-	-	-	-	-	-	-	✓	1
(iii) cost per month	-	-	-	-	-	-	-	-	-	-	-	£80	
(i) inadequate loading facilities	-	-	-	-	-	✓	-	-	-	-	✓	-	2
(ii) on-street loading	-	-	-	-	✓	✓	-	-	-	✓	-	✓	4
(iii) proportion of ldg. on-street	-	-	-	-	2.5%	n.a.	-	-	-	5%	-	50%	
Restrictions on goods in													
(i) by the firm	-	-	-	-	-	-	-	-	-	-	-	-	-
(ii) elsewhere	-	-	-	-	-	-	-	-	-	-	-	-	-
Restrictions on goods out													
(i) by the firm	-	-	-	-	-	-	-	-	-	-	-	-	-
(ii) elsewhere	-	-	-	-	-	-	✓	-	-	✓	-	✓	3
Weight/height restrictions (1 = within premises)	-	✓1	-	-	✓1	-	-	-	-	-	✓1	✓1	4
Does available space affect													
(i) stockpile levels	✓	✓		-	-		✓		✓	✓		-	5
(ii) dispatch sched. &/or freq.	✓	✓		-	-		-		✓	-		-	3
(iii) on-site ldg/unldg.	-	✓		✓	-		✓		✓	-		-	4
(iv) on-site manoeuvrability	-	✓		✓	-		-		✓	✓		✓	5
TRANSPORT PROBLEMS													
(i) tpt cost as % of total cost	n.s.	2%	2%	3%	5%	20%	15%	100%	n.s.	5%	d.k.	12%	
does tpt cost incl. veh.dep/rep.	n.s.	n.s.	no	yes	no	no	yes	n.s.	n.s.	n.a.	n.s.	no	
(ii) importance of transport (1=extremely, 5=not at all)	2	1	1	1	1	1	1	1	1	1	1	1	
(iii) seriousness of tpt probs. (1=extremely, 5=not at all)	4	2	4	4	1	1	2	4	4	1	1	3	
(iv) greater problems if co.grows	✓	-	n.a.	✓	✓	n.a.	-	n.a.	-	✓	n.a.	✓	5
(v) new tpt problems if co.grows	-	-	n.a.	✓	-	n.a.	✓	n.a.	-	✓	n.a.	-	3

HOLBECK HUNSLET INDUSTRIAL AREA

Firm no.	01	02	03*	04	05	06*	07	08*	09	10	11*	12	Total HHIA
Unprompted problems													
(i) Group A	-	-	✓	-	-	✓	-	-	-	-	-	-	2
(ii) Group B	-	-	-	-	-	✓	-	✓	-	-	-	-	2
(iii)Group C	✓	✓	✓	✓	✓	-	✓	-	-	-	-	-	6
(iv) Group D	-	-	-	-	-	✓	✓	-	-	-	✓	-	3
(v) Group E	-	-	-	-	✓	✓	-	-	-	-	-	✓	3
(vi) Group F	-	✓	-	-	-	✓	-	-	-	-	-	-	2
(vii)Other traffic problem(s)	-	-	-	-	-	-	-	-	-	✓	✓	-	2
(viii)internal problem(s)	✓	✓	-	-	-	-	-	-	-	-	-	-	2
(ix) other problem(s)	✓	-	-	-	✓	-	-	✓	-	✓	✓	-	5
Cost per month of unprompted problems													
(i) Group A	n.a.	n.a.		n.a.	n.a.		-		n.a.	n.a.		-	
(ii) Group B	n.a.	n.a.		n.a.	n.a.		n.a.		n.a.	n.a.		-	
(iii)Group C	n.s.	£1000		-	£100		d.k.		n.a.	n.a.		-	
(iv) Group D	n.a.	n.a.		n.a.	n.a.		d.k.		n.a.	n.a.		-	
(v) Group E	n.a.	n.a.		n.a.	-		n.a.		n.a.	n.a.		£80	
(vi) Group F	n.a.	£1000		n.a.	n.a.		n.a.		n.a.	n.a.		-	
Location of unprompted probs.													
(i) Group A	n.a.	n.a.	SA	n.a.	n.a.	SA/CL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
(ii) Group B	n.a.	n.a.	n.a.	n.a.	n.a.	SA/CL	n.a.	SA	n.a.	n.a.	n.a.	n.a.	
(iii)Group C	SA	L/B	L/B	CL/SA	L/B	n.a.	L/B	n.a.	n.a.	n.a.	n.a.	n.a.	
(iv) Group D	n.a.	n.a.	n.a.	n.a.	n.a.	SA/CL	n.a.	n.a.	n.a.	n.a.	SA	n.a.	
Prompted problems													
(i) Congestion-employees	-	-		-	-		-		✓	-		✓	2
(ii) Congestion-business	✓	✓		-	-		-		-	✓		-	3
(iii)Congestion-goods	✓	-		✓	-		✓		-	-		-	3
(iv) Indirect/one-way	✓	✓		-	-		-		-	-		-	2
(v) Bus travel	✓	✓		✓	✓		✓		✓	-		✓	7
(vi) Poor road surface	-	-		✓	✓		-		-	-		✓	3
Cost per month of prompted problems													
(i) Congestion-employees	n.a.	n.a.		n.a.	n.a.		n.a.		-	n.a.		£50	
(ii) Congestion-business	d.k.	-		n.a.	n.a.		n.a.		n.a.	d.k.		-	
(iii)Congestion-goods	d.k.	n.a.		-	n.a.		d.k.		n.a.	n.a.		-	
(iv) Indirect/one-way	d.k.	£50		n.a.	n.a.		n.a.		n.a.	n.a.		-	
(v) Bus travel	d.k.	£1000		-	£100		d.k.		-	n.a.		-	
(vi) Poor road surface	-	n.a.		£5	-		n.a.		n.a.	n.a.		-	
Location of prompted problems													
(i) Congestion-employees	n.a.	n.a.		n.a.	n.a.		n.a.		L/B	n.a.		L/B	
(ii) Congestion-business	SA	EX		n.a.	n.a.		n.a.		n.a.	EX		n.a.	
(iii)Congestion-goods	SA/LB	n.a.		CL/SA	n.a.		EX		n.a.	n.a.		n.a.	
(iv) Indirect/one-way	SA	SA		n.a.	n.a.		n.a.		n.a.	n.a.		n.a.	
(v) Bus travel	SA	L/B		CL/SA	L/B		L/B		L/B	n.a.		L/B	
(vi) Poor road surface	n.a.	n.a.		I	SA		n.a.		n.a.	n.a.		SA	

HOLBECK HUNSLET INDUSTRIAL AREA

Firm no.	01	02	03*	04	05	06*	07	08*	09	10	11*	12	Total HHIA
EFFECT OF TRANSPORT - STAFF													
Late arrival													
(i) Severity of problem	3	1	5	4	3	5	4	5	5	4	4	4	
(ii) Importance of tpt	2	3	n.a.	2	2	n.a.	3	n.a.	n.a.	4	2	1	
(iii)Man hrs/week lost	d.k.	20	n.a.	5	20	n.a.	2	n.a.	n.a.	50	8	8	8
(iv) Proportion lost due to transport	75%	50%	n.a.	80%	80%	n.a.	80%	n.a.	n.a.	d.k.	80%	100%	
Staff absenteeism													
(i) Severity of problem	3	1	5	3	5	5	3	5	5	4	5	4	
(ii) Importance of tpt	4	1	n.a.	4	n.a.	n.a.	5	n.a.	n.a.	5	n.a.	5	
(iii)Man hrs/week lost	d.k.	40	n.a.	150	n.a.	n.a.	20	n.a.	n.a.	d.k.	n.a.	110	
(iv) % lost due to tpt	5%	20%	n.a.	–	n.a.	n.a.	–	n.a.	n.a.	–	n.a.	–	
Staff turnover													
(i) Severity of problem	4	2	5	2	4	5	4	4	5	5	5	4	
(ii) Importance of tpt	4	4	n.a.	5	5	n.a.	4	5	n.a.	n.a.	n.a.	4	
(iii)% turnover/year	7%	40%	n.a.	15%	10%	n.a.	10%	20%	n.a.	n.a.	n.a.	5%	
(iv) % due to tpt	5%	15%	n.a.	–	–	n.a.	1 %	–	n.a.	n.a.	n.a.	1%	
Recruitment													
(i) Difficulties experienced	✓	✓	✓	✓	✓	✓	–	✓	✓	–	✓	✓	10
(ii) Is Recruitment concentrated in partic. areas for tpt. reasons	✓	–	n.a.	–	–	n.a.	–	n.a.	–	–	✓	–	2
(iii)Recruitment diff. in part.areas for tpt.reasons	–	–	–	–	–	–	–	–	–	–	–	–	–
Business trips													
(i) Importance	2	3	3	1	2	2	1	2	1	2	1	1	
(ii) How often inconvenienced	4	3	4	3	4	1	3	4	4	2	4	3	
(iii)Are ops. affected	n.a.	–	–	–	–	✓	–	–	–	–	–	–	1
(iv) Are costs incurred	n.a.	–	–	–	–	✓	–	–	–	–	–	✓	2
(v) Costs per month	n.a.	–	–	–	–	£320	–	–	–	–	–	£50	
Visitor trips													
(i) Importance	3	3		3	4		1		2	1		2	
(ii) How often inconvenienced	2	3		3	4		4		3	d.k.		3	
(iii)Are ops. affected	–	–		–	–		–		–	–		–	–
(iv) Are costs incurred	–	–		–	–		–		–	–		–	–
(v) Costs per month	–	–		–	–		–		–	–		–	
Personal trips													
(i) Inadequate local facil.	✓	–	n.a.	–	–	n.a.	–	n.a.	–	✓	✓	–	3
(ii) Difficulties making trips	✓	✓	–	✓	–	–	✓	–	–	✓	–	–	5
(iii)Is paid time lost	✓	✓	–	✓	–	–	✓	–	–	–	–	–	4
(iv) Hours lst/week	9	1	–	2	–	–	2	–	–	–	–	–	

HOLBECK HUNSLET INDUSTRIAL AREA

Firm No.	01	02	03*	04	05	06*	07	08*	09	10	11*	12	Total HHIA
EFFECT OF TRANSPORT - GOODS													
Deliveries to firm													
(i) Are there ever tpt. delays	✓	✓	-	-	d.k.	-	✓	-	-	-	✓	✓	5
(ii) Freq. of delivery delays	3	3	n.a.	n.a.	d.k.	n.a.	2	n.a.	n.a.	n.a.	1	1	
(iii) Usual length of delay	d.k.	3	n.a.	n.a.	4	n.a.	2	n.a.	n.a.	n.a.	3	1	
(iv) Are ops. affected	-	✓	n.a.	-	-	n.a.	✓	n.a.	-	n.a.	-	✓	3
(v) Are extra costs incurred	-	✓		-	-		-		-	n.a.		✓	2
(vi) Extra costs per month	-	£250		-	-		-		-	n.a.		£80	
Loading problems													
(i) Are there ever delays	✓	✓	-	-	-	-	✓	-	✓	✓	✓	-	6
(ii) Frequency of delays	4	3	n.a.	n.a.	n.a.	n.a.	3	n.a.	2	4	3	n.a.	
(iii) Are ops. affected	-	✓		n.a.	n.a.		-		-	-		n.a.	1
(iv) Are extra costs incurred	-	✓		n.a.	n.a.		-		-	-		n.a.	1
(v) Extra costs per month	-	£1000		n.a.	n.a.		-		-	-		n.a.	
Stockpiles													
(i) Are levels non-optimum	✓	-	-	-	-	-	-	✓	✓	✓	✓	-	5
(ii) Does tpt. affect levels	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	n.a.	-
(iii) Are extra costs incurred	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	n.s.	✓	-	n.a.	1
(iv) Extra costs per month	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	n.s.	n.s.	-	n.a.	
Deliveries from firm													
(i) Is distr. freq. non-optimum	✓	✓	-	✓	-	-	-	-	✓	-	✓	-	5
(ii) Does tpt affect distr. frequency	-	✓	n.a.	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	-	n.a.	1
(iii) Are extra costs incurred	-	-	n.a.	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	-	n.a.	-
(iv) Extra cost per month	-	-	n.a.	-	n.a.	n.a.	n.a.	n.a.	-	n.a.	-	n.a.	-
Vehicle size													
(i) Would larger vehs. help	-	-	-	✓	-	-	-	-	-	-	-	-	1

STANNINGLEY

Firm no.	13*	14	15	16	17	18	19	20*	21	22	23*	24*	Total Stan.
BACKGROUND													
SIC	6	7	7	9	9	12	13	18	20	20	22	23	
Total employment	498	36	213	228	100	102	250	326	38	26	36	113	
No. of co. cars	12	9	11	1	2	5	10	12	7	14	5	26	
No. of co.goods vehs.	3	3	4	13	1	1	-	4	6	1	23	12	
Parking													
(i) Inadequate on-site parking for: employees	✓	-	-	-	-	-	-	-	-	-	✓	-	2
co. cars	-	-	-	-	-	-	-	✓	-	-	✓	-	2
visitors	✓	-	-	-	-	-	-	-	-	-	✓	-	2
goods vehicles	-	-	-	-	-	-	-	-	-	-	✓	-	1
(ii) Are costs incurred?	-	-	-	-	-	-	-	-	-	-	n.a.	-	-
(iii) Cost per month	-	-	-	-	-	-	-	-	-	-	n.a.	-	
(i) Inadequate loading facilities	-	-	-	-	-	-	✓	-	-	-	-	-	1
(ii) On-street loading	-	-	-	-	✓	-	✓	-	-	-	✓	-	3
(iii) Proportion of ldg. on-street	-	-	-	-	10%	-	10%	-	-	-	n.a.	-	
Restrictions on goods in													
(i) By the firm	-	-	✓	-	-	-	-	-	✓	✓	-	-	3
(ii) Elsewhere	-	-	-	-	-	-	-	-	-	-	-	-	
Restrictions on goods out													
(i) By the firm	-	-	-	-	-	-	-	-	-	-	-	-	-
(ii) Elsewhere	-	-	✓	-	✓	✓	-	✓	✓	-	-	-	5
Weight/height restrictions (1 = within premises)	-	-	-	-	-	-	✓1	-	-	-	-	-	1
Does available space affect													
(i) Stockpile levels		-	-	✓	-	✓	✓		-	-			3
(ii) Despatch sched.&/or freq.			-	-	-	-	✓		-	-			1
(iii) On-site ldg./unldg.		-	-	✓	-	-	✓		-	-			2
(iv) On-site manoeuvrability		-	✓	✓	✓	-	-		-	-			3
TRANSPORT PROBLEMS													
(i) Tpt. cost as % of total	1.5%	n.s.	2.5%	9.38%	1%	4%	3%	d.k.	4%	1.5%	85%	14%	
does tpt.cost incl.dep./rep.	yes	n.s.	yes	no	no	yes	no	n.s.	no	yes	no	yes	
(ii) Importance of transport (1-extremely, 5=not at all)	3	2	1	2	1	2	1	2	1	2	1	1	
(iii) Seriousness of tpt.probs. (1=extremely, 5=not at all)	5	4	4	3	5	4	2	2	4	2	1	5	
(iv) greater problems if co. grows	n.a.	-	✓	-	-	-	✓	n.a.	✓	-	n.a.	n.a.	3
(v) New tpt problems if co. grows	n.a.	-	✓	-	-	-	✓	n.a.	-	-	n.a.	n.a.	2

STANNINGLEY

Firm no.	13*	14	15	16	17	18	19	20*	21	22	23*	24*	Total Stan.
TRANSPORT PROBLEMS (cont'd)													
Unprompted problems													
(i) Group A	-	-	-	-	-	✓	✓	-	✓	-	-	-	3
(ii) Group B	-	-	-	-	-	-	✓	-	-	-	-	-	1
(iii)Group C	✓	✓	✓	✓	✓	✓	✓	-	✓	-	-	-	8
(iv) Group D	-	-	-	-	-	-	-	-	-	-	-	-	-
(v) Group E	-	-	-	-	-	-	-	-	-	-	-	-	-
(vi) Group F	-	-	-	-	-	-	-	-	-	-	-	-	-
(vii)Other traffic problem(s)	-	-	-	-	-	-	-	-	-	-	✓	-	1
(viii)Internal problem(s)	-	-	✓	-	-	-	✓	✓	-	-	✓	✓	5
(ix) Other problem(s)	-	✓	-	-	-	-	-	✓	-	-	✓	-	3
Cost per month of unprompted problems													
(i) Group A		-	n.a.	n.a.	n.a.	-	n.s.		£5	n.a.			
(ii) Group B		-	n.a.	n.a.	n.a.	n.a.	n.s.		n.a.	n.a.			
(iii)Group C		£35	-	n.s.	£180	£100	£450		£450	n.a.			
(iv) Group D		-	n.a.	n.a.	n.a.	n.a.	n.a.		n.a.	n.a.			
(v) Group E		-	n.a.	n.a.	n.a.	n.a.	n.a.		n.a.	n.a.			
(vi) Group F		-	n.a.	n.a.	n.a.	n.a.	n.a.		n.a.	n.a.			
Location of unprompted probs.													
(i) Group A	n.a.	n.a.	n.a.	n.a.	n.a.	L/B	SA	n.a.	SA	n.a.	n.a.	n.a.	
(ii) Group B	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	SA	n.a.	n.a.	n.a.	n.a.	n.a	
(iii)Group C	SA/L/B	L/B	L/B	SA	L/B	L/B	L/B	n.a.	L/B	n.a.	n.a.	n.a.	
(iv) Group D	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
Prompted problems													
(i) Congestion-employees		✓	-	-	-	✓	-		✓	n.s.			3
(ii) Congestion-business		-	-	-	✓	-	-		-	n.s.			1
(iii)Congestion-goods		-	✓	✓	-	-	-		-	n.s.			2
(iv) Indirect/one-way		-	-	-	✓	✓	-		-	n.s.			2
(v) Bus travel		✓	✓	✓	✓	✓	✓		✓	n.s.			7
(vi) Poor road surface		✓	✓	-	✓	-	-		✓	n.s.			4
Cost per month of prompted problems													
(i) Congestion-employees		-	n.a.	n.a.	n.a.	-	n.a.		n.a.	n.a.			
(ii) Congestion-business		n.a.	n.a.	n.a.	d.k.	n.a.	n.a.		n.a.	n.a.			
(iii)Congestion-goods		n.a.	£100	-	n.a.	n.a.	n.a.		n.a.	n.a.			
(iv) Indirect/one-way		n.a.	n.a.	n.a.	-	£10	n.a.		n.a.	n.a.			
(v) Bus travel		£35	-	n.s.	£180	£100	£450		£450	n.a.			
(vi) Poor road surface		-	-	n.a.	-	n.a.	n.a.		-	n.a.			
14. Location of prompted problems													
(i) Congestion-employees		L/B	n.a.	n.a.	n.a.	L/B	n.a.		n.a.	n.a.			
(ii)Congestion-business		n.a.	n.a.	n.a.	CL	n.a.	n.a.		n.a.	n.a.			
(iii)Congestion-goods		n.a.	EX	SA	n.a.	n.a.	n.a.		n.a.	n.a.			
(iv) Indirect/one-way		n.a.	n.a.	n.a.	CL	CL	n.a.		n.a.	n.a.			
(v) Bus travel		L/B	L/B	SA	L/B	L/B	L/B		L/B	n.a.			
(vi) Poor road surface		SA	SA	n.a.	SA	n.a.	n.a.		SA	n.a.			

Firm No.	13*	14	15	16	17	18	19	20*	21	22	23*	24*	Total Stan.
EFFECT OF TRANSPORT - GOODS													
22. Deliveries to firm													
(i) Are there ever tpt. delays	-	-	n.s.	✓	-	-	✓	-	✓	✓	-	-	4
(ii) Freq. of delivery delays	n.a.	n.a.	n.s.	3	n.a.	n.a.	3	n.a.	3	3	n.a.	n.a.	
(iii) Usual length of delay	n.a.	n.a.	4	1	n.a.	n.a.	3	n.a.	3	3	n.a.	n.a.	
(iv) Are ops. affected	n.a.	n.a.	✓	-	-	n.a.	✓	n.a.	✓	-	n.a.	n.a.	3
(v) Are extra costs incurred		n.a.	n.s.	-	-	n.a.	-		✓	-			1
(vi) Extra costs per month		n.a.	n.s.	-	-	n.a.	-		£50	-			
23. Loading problems													
(i) Are there ever delays	✓	-	✓	-	✓	-	✓	✓	✓	-	-	✓	7
(ii) Frequency of delays	4	n.a.	2	n.a.	4	n.a.	3	1	4	n.a.	n.a.	3	
(iii) Are ops. affected		n.a.	-	n.a.	-	n.a.	-		-	n.a.			-
(iv) Are extra costs incurred		n.a.	-	n.a.	d.k.	n.a.	-		d.k.	n.a.			-
(v) Extra costs per month		n.a.	-	n.a.	d.k.	n.a.	-		d.k.	n.a.			
24. Stockpiles													
(i) Are levels non-optimum	-	✓	✓	-	✓	✓	✓	✓	✓	✓	-	-	8
(ii) Does tpt. affect levels	n.a.	-	-	n.a.	-	-	-	-	-	-	n.a.	n.a.	-
(iii) Are extra costs incurred	n.a.	-	✓	-	✓	-	✓	✓	✓	-	n.a.	n.a.	5
(iv) Extra costs per month	n.a.	-	n.s.	-	£5000	-	£400	£1500	£100	-	n.a.	n.a.	
25. Deliveries from firm													
(i) Is distr. freq. non-optimum	✓	-	-	✓	✓	-	✓	✓	-	-	✓	-	6
(ii) Does tpt. affect distr. freq.	-	n.a.	n.a.	✓	-	n.a.	✓	-	n.a.	n.a.	✓	n.a.	3
(iii) Are extra costs incurred	✓	n.a.	n.a.	✓	✓	n.a.	✓	✓	n.a.	n.a.	✓	n.a.	6
(iv) Extra cost per month	£300	n.a.	n.a.	d.k.	d.k.	n.a.	£400	£400	n.a.	n.a.	d.k.	n.a.	
26. Vehicle size													
(i) Would larger vehs. help	-	-	-	-	-	-	-	✓	-	-	-	-	1

STANNINGLEY

Firm no.	13*	14	15	16	17	18	19	20*	21	22	23*	24*	Total Stann.
EFFECT OF TRANSPORT-STAFF													
Late arrival													
(i) Severity of problem	3	4	5	4	3	4	4	5	4	5	4	4	
(ii) Importance of tpt	3	4	n.a.	5	3	4	4	n.a.	3	n.a.	1	5	
(iii)Man hrs/week lost	200	30	n.a.	5	25	25	10	n.a.	50	n.a.	6	n.s.	8
(iv) Proportion lost due to transport	d.k.	10%	n.a.	-	10%	12%	20%	n.a.	50%	n.a.	100%	d.k.	
Staff absenteeism													
(i) Severity of problem	5	5	5	4	3	5	3	5	5	5	5	5	
(ii) Importance of tpt.	n.a.	n.a.	n.a.	5	3	n.a.	4	n.a.	n.a.	n.a.	n.a.	n.a.	
(iii)Man hrs/week lost	n.a.	n.a.	n.a.	40	300	n.a.	500	n.a.	n.a.	n.a.	n.a.	n.a.	
(iv) % lost due to tpt	n.a.	n.a.	n.a.	-	10%	n.a.	20%	n.a.	n.a.	n.a.	n.a.	n.a.	
Staff turnover													
(i) Severity of problem	5	5	4	5	3	5	4	5	4	4	3	4	
(ii) Importance of tpt	n.a.	n.a.	4	n.a.	5	n.a.	4	n.a.	4	4	5	5	
(iii)% turnover/year	n.a.	n.a.	5%	n.a.	10%	n.a.	40%	n.a.	10%	5%	50%	10%	
(iv) % due to tpt	n.a.	n.a.	1%	n.a.	-	n.a.	10%	n.a.	-	-	-	-	
Recruitment													
(i) Difficulties experienced	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	11
(ii) Is recruitment concentrated in partic. areas for tpt. reasons	✓	-	✓	✓	✓	✓	-	n.a.	-	-	n.a.	n.a.	5
(iii)Recruitment diff. in part.areas for tpt.reasons	-	-	-	-	-	-	-	-	-	✓	d.k.	-	1
Business trips													
(i) Importance	2	2	1	3	4	3	4	3	2	3	5	5	
(ii) How often inconvenienced	1	4	4	3	4	3	3	2	3	4	n.a.	n.a.	
(iii)Are ops. affected	✓	-	-	-	-	-	-	-	-	n.a.	n.a.	n.a.	1
(iv) Are costs incurred	✓	-	-	✓	-	✓	-	-	d.k.	n.a.	n.a.	n.a.	3
(v) Costs per month	£280	-	-	£40	-	£20	-	-	d.k.	n.a.	n.a.	n.a.	
Visitor trips													
(i) Importance		3	2	3	4	3	3		5	3			
(ii) How often inconvenienced		4	4	3	4	3	3		n.a.	4			
(iii)Are ops. affected		-	-	-	-	-	d.k.		n.a.	n.a.			-
(iv) Are costs incurred		-	-	-	-	-	-		n.a.	n.a.			-
(v) Costs per month		-	-	-	-	-	-		n.a.	n.a.			
Personal trips													
(i) Inadequate local facs.	n.a.	✓	✓	-	✓	✓	✓	n.a.	-	-	n.a.	n.a.	5
(ii) Difficulties making trips	✓	✓	✓	-	-	✓	✓	-	-	-	-	-	5
(iii)Is paid time lost	✓	✓	-	✓	✓	✓	-	-	-	-	-	-	5
(iv) Hours lost/week	d.k.	2	-	5	v.little	10	-	-	-	-	-	-	

APPENDIX IV

MANAGEMENT INTERVIEW - WORKING TIME ARRANGEMENTS AND TRAVEL ASSISTANCE

Firm No.	1[1,2]	2[1,2]	3	4[1,2]	5[1]	6	7[1,2]	8	9	10[1]	11[1]	12[1]	Total HHIA
i) Flexitime	n.s.	no	n.a.	no	no	n.a.	no	n.a.	yes[3]	no	n.a.	no	1 out of 7
ii) Variable lunch break	n.s.	no	n.a.	no	no	n.a.	no	n.a.	yes[3]	no	n.a.	no	1 out of 7
iii) Lunchbreak - office staff (mins)	n.s.	60	n.a.	60	60	n.a.	30	n.a.	60[4]	45	n.a.	60	
- works staff (mins)	n.s.	60	n.a.	60	45	n.a.	30	n.a.	60[4]	45	n.a.	45	
iv) Travel assistance	n.s.	yes	yes	no	no	no	yes[5]	no	yes[6]	no	no	no[7]	4 out of 12
Co. veh. collects staff - no. of staff	-	12	3	-	-	-	-	-	-	-	-	-	
v) Staff can take extra time on lunch break:													
- with pay		yes	n.a.			n.a.	yes[8]	n.a.	yes[9]		n.a.		7 out of 8
- with and without pay	yes			yes[8]								yes[8]	
- without pay					yes								
- cannot take extra time on lunch break										yes			
vi) Other		*									*		

1. These firms indicated time was lost through late arrival at work.
2. These firms indicated that paid time was lost as a result of personal trips.
3. Unofficial.
4. Nominal.
5. Occasionally for private use.
6. Drivers take commercial vehicles home.
7. Only during bus strike.
8. Only important trips.
9. Time made up.

* Van collects lunch orders (not cost estimated).

Firm No.	13[1,2]	14[1,2]	15	16[1,2]	17[1,2]	18[1,2]	19[1]	20	21[1]	22	23[1]	24	Total Stanningley
i) Flexitime	n.a.	no	no	no	no	no	no	n.a.	no	no	n.a.	n.a.	0 out of 7
ii) Variable lunch break	n.a.	no	no	no	no	no	no	n.a.	yes[3]	no	n.a.	n.a.	1 out of 7
iii) Lunch break - office staff (mins)	n.a.	60	60	45	60	50	45	n.a.	90	n.s.	n.a.	n.a.	
- works staff (mins)	n.a.	30	60	45	60	45	45	n.a.	30	n.s.	n.a.	n.a.	
iv) Travel assistance	no	no	no	no	no	no	no	yes[4]	yes[5]	yes[5]	no	no	3 out of 12
v) Staff can take extra time on lunch break:													
- with pay	n.a.		no				no	n.a.		no	n.a.	n.a.	5 out of 8
- with and without pay				yes[6]									
- without pay		yes			yes[6]	yes[6]			yes				
vi) Others		* £20/ month		**					*+£140/ month				

1. These firms indicated time was lost through late arrival at work.
2. These firms indicated that paid time was lost as a result of personal trips.
3. Unofficial.
4. Reimbursed for out of normal working hours.
5. Co. vehs. for private use.
6. Only important trips.

* Co. vehs. collect lunch orders and give lifts for personal trips.
** Co. liaises with P.T.E. re provision of bus services to site.
\+ Used for personal trips of office staff.

APPENDIX V

Leeds zoning system

7 - zone number
City - zone name

..... urban area

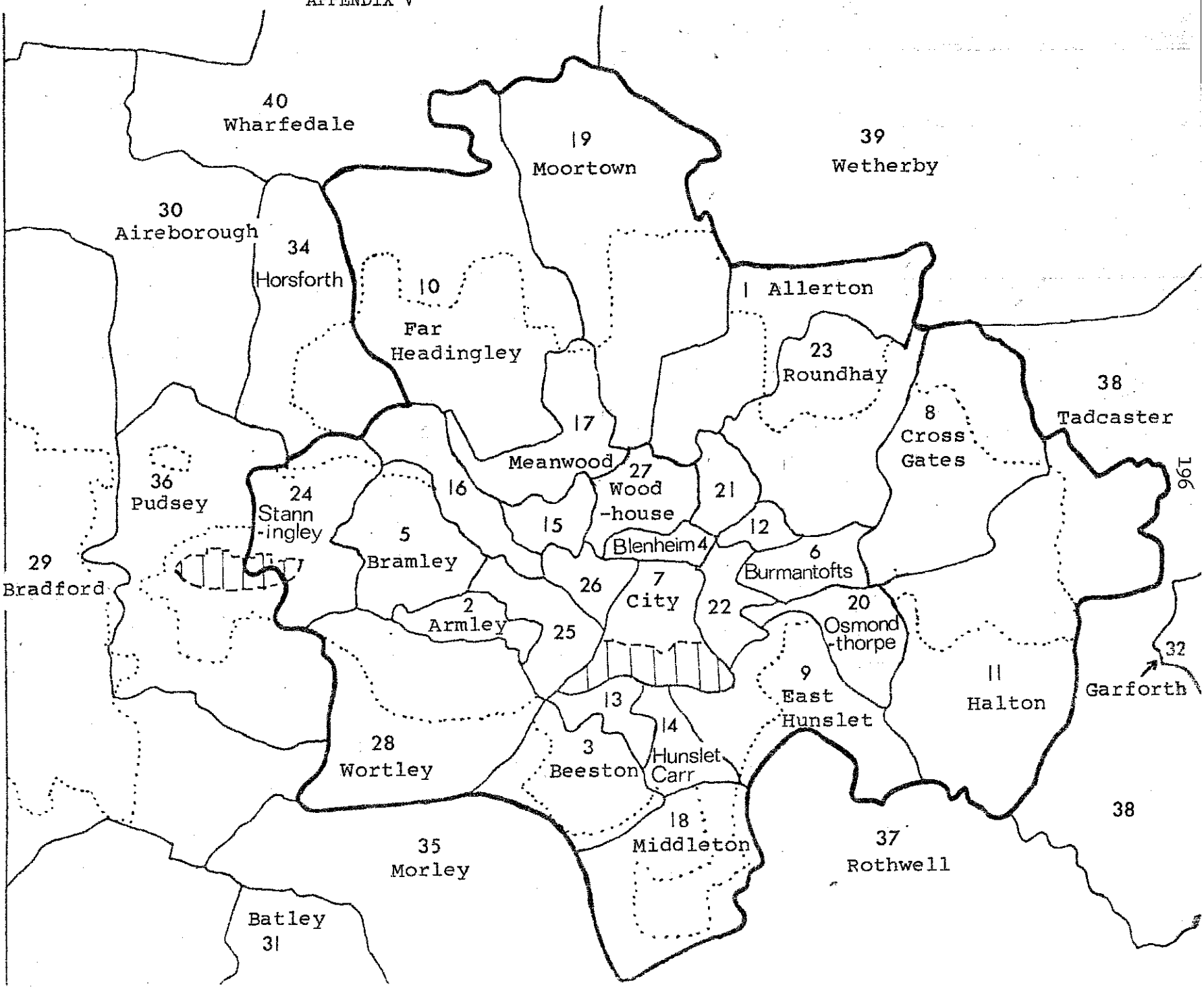
——— zoning system

▬▬ internal zones

▯▯ study areas

Zones not named :
12 - Harehills
13 - Holbeck
15 - Hyde Park
16 - Kirkstall
21 - Potternewton
22 - Richmond Hill
25 - Wellington
26 - Westfield

not shown on map :
33 - Harrogate

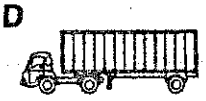


APPENDIX VI : COMMERCIAL VEHICLE CLASSIFICATION

The system of commercial vehicle classification is that adopted by the Freight Division of TRRL for studies of freight transport. The vehicle types A to E correspond to:

A = light vans (car-based)
B = two-axle goods vehicles (non HGV)
C = two-axle goods vehicles (HGV's i.e. with rear reflector plates)
D = three axles (rigids and artics)
E = four of more axles (rigids and artics).

Typical vehicles, plated gross weight, and carrying capacity are shown below. The diagrams show only van bodies, but other body types such as platform, tanker etc. are also included in the relevant category.

TYPE OF VEHICLE	A 	B 	C 	D 	E 
Plated Gross Weight (tons)	Under 1.8	1.8 - 7.4	7.5 - 16.0	16.1 - 24.0	Over 24.0
Approximate equivalent carrying capacity (tons)	Under 0.7	0.7 - 4.9	5.0 - 11.0	11.1 - 16.0	Over 16.0