RESEARCH INTO THE CONTRIBUTION OF WORKPLACE TRAVEL PLANS
TO OVERALL TRAVEL REDUCTION AND THE APPLICABILITY OF
CURRENT WORKPLACE TRAVEL PLAN EVALUATION METHODOLOGIES

by

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with the regulations of the University of East Anglia

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ABSTRACT

Considerable research is being undertaken on the impact of Workplace Travel Plans (WTPs) in achieving modal shift, (DfT 2002b; DfT 2002; SESR 2003; DANTE consortium, 1998). A significant part of this research involves the collection of data on barriers to modal shift and on the conditions which should be in place to achieve modal shift, (SESR, 2003). The impact of WTPs at the network level i.e. in facilitating real reduction in travel, is much less clear, since trips removed by a WTP may simply be replaced by others, (Marshall and Bannister 2000; Rye, 2002; Rye and McGuigan, 2003). This research illustrates the present network impact of WTP and considers their current applicability and future potential in light of changing policy directions towards more integrated and sustainable transport strategies.

Results of empirical analysis into secondary travel effects and behavioural decisions which result from the application of particular modes of transport as encouraged by WTP are analysed, and conclusions are drawn as to the implications of WTP measures on the overall network. Given the complex relationship demonstrated between modal choice and subsequent travel habits, this paper considers the applicability of current evaluation methodologies in planning future local, national and international strategic travel management decisions given the shifting emphasis from local to global issues. This research highlights the implications of current WTP evaluation in terms of providing information on travel reduction and suggests possible future indicators for incorporating measurements of travel reduction into evaluation methodologies. The research investigates issues for future evaluation methodologies and suggests possible directions for future work.
Acknowledgements

The author would like to recognise the contribution of the following to this research. The employees at Jarrold & Sons Ltd for their participation in the questionnaire and travel diary survey, in particular Zita Denmark, and Caroline Jarrold; Dr. Simon Gerrard for his enthusiasm, time and vision in getting the project off the ground; Prof. Dick Cobb for his invaluable guidance in developing the research and Stuart Dodds for his support throughout.
CHAPTER 1       Introduction 1

CHAPTER 2       Transport planning, reduction and evaluation 3

2.1   History of transport planning 3
2.2   Current issues for transport 5
2.3   Identification and measurement of travel reduction 7
2.4   Measurement of travel reduction 8
2.5   Travel reduction strategies 9
2.5.1 Workplace travel plans 10
2.6   Evaluation of travel reduction - the issues 12
2.7   Aims and Objectives 16
2.7.1 Aims 16
2.7.2 Objectives 16

CHAPTER 3       Evaluation of WTP – Methods and Analysis 17

3.1   Introduction 17
3.2   Framework for strategy development 17
3.3   Current evaluation of WTP 20

CHAPTER 4       Influence of modal choice on travel habits – methods and case study development 26

4.1   Introduction 26
4.2   Case study methodology 26
4.2.1 Case study selection 27
4.2.2 Questionnaire survey 28
4.2.3 Review of information requirements 29
4.2.4 Questionnaire design and structure 30
4.3   Questionnaire analysis – towards travel diary design 33
4.3.1 Summary of results 33
4.3.2 Assigning the sub-groups 33
4.4   Travel diary survey 36
4.4.1 Introduction 36
4.4.2 Review of information requirements 36
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.3</td>
<td>Travel diary design</td>
<td>37</td>
</tr>
<tr>
<td>4.4.4</td>
<td>Sample population</td>
<td>37</td>
</tr>
<tr>
<td>CHAPTER 5</td>
<td>Results and Analysis of travel diaries and future direction</td>
<td>39</td>
</tr>
<tr>
<td>5.1</td>
<td>Results</td>
<td>39</td>
</tr>
<tr>
<td>5.1.1</td>
<td>Descriptive analysis</td>
<td>39</td>
</tr>
<tr>
<td>5.2</td>
<td>Discussion</td>
<td>46</td>
</tr>
<tr>
<td>5.2.1</td>
<td>Car-users vs. non car-users</td>
<td>46</td>
</tr>
<tr>
<td>5.2.2</td>
<td>Non car-users</td>
<td>47</td>
</tr>
<tr>
<td>5.2.3</td>
<td>Cyclists vs. Walkers vs. public transport users</td>
<td>48</td>
</tr>
<tr>
<td>5.2.4</td>
<td>Car-users</td>
<td>48</td>
</tr>
<tr>
<td>5.3</td>
<td>Future evaluation</td>
<td>49</td>
</tr>
<tr>
<td>5.3.1</td>
<td>Introduction</td>
<td>49</td>
</tr>
<tr>
<td>5.3.2</td>
<td>Suggestions for an alternative framework</td>
<td>50</td>
</tr>
<tr>
<td>5.3.3</td>
<td>Evaluation and development of alternative indicators</td>
<td>53</td>
</tr>
<tr>
<td>CHAPTER 6</td>
<td>Conclusions and Recommendation</td>
<td>55</td>
</tr>
<tr>
<td>CHAPTER 7</td>
<td>References</td>
<td>57</td>
</tr>
<tr>
<td>CHAPTER 8</td>
<td>Appendices</td>
<td>60</td>
</tr>
<tr>
<td>A.1</td>
<td>Travel Questionnaire</td>
<td>61</td>
</tr>
<tr>
<td>A.2</td>
<td>Questionnaire Results</td>
<td>64</td>
</tr>
<tr>
<td>A.3</td>
<td>Travel Diary</td>
<td>67</td>
</tr>
<tr>
<td>A.4</td>
<td>Introductions</td>
<td>70</td>
</tr>
</tbody>
</table>
List of Figures:

Fig 1.0 Total Road Traffic Volume 1970 – 2003. 3
Fig 2.0 Average % traffic increase by region on all roads, 1993 – 2002. 5
Fig 3.0 Hierarchy of data for evaluating success in travel reduction. 7
Fig 4.0 Framework for strategy development. 19
Fig 5.0 Comparison of the evaluation frameworks currently employed and their relationship to the assessment of travel reduction. 22
Fig 6.0 Heading and weights in DfT evaluation software 24
Fig 7.0 Framework methodology guiding questionnaire development. 29
Fig 8.0 Flowchart summarising how the sample population was divided. 35
Fig 9.0 Summary of total number of activities incorporated into the journey to work by car-users and non car-users. 42
Fig 10.0 Multi-trip rate for sample population. 43
Fig 11.0 Proportion of activities incorporated into the lunch hour for the sample population. 44
Fig 12.0 Percentage of total activities acted out by sample population as defined by gender. 44
Fig 13.0 Relationship between distance travelled to work and number of activities acted out 45
Fig 14.0 Comparison of National Sustainable objectives with the three steps to travel reduction. 52
Fig 15.0 Possible application of indicators for a future evaluation scheme 54

List of Tables:

Table 1.0 Typical WTP measures and their underlying mechanisms. 10
Table 2.0 Breakdown of case-study demographics. 28
Table 3.0 The intricacies of the questionnaire design. 32
Table 4.0 Summary of modal split at WOD in July 2004. 33
Table 5.0 Sub-groups. 34
Table 6.0 Summary of group demographics for travel diary survey. 38
Table 7.0 Summary of questionnaire answers for travel diary sample population. 40
Table 8.0 Summary of travel habits of sample population. 41

List of Boxes:

Box 1.0 Initiatives that have paved the way for travel plans 4
Box 2.0 The measurement of Travel Reduction 8
### List of Figures in the Appendices:

<table>
<thead>
<tr>
<th>Fig A.1</th>
<th>Preferred mode of travel to work for employees at WOD</th>
<th>64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig A.2</td>
<td>Average distance to work per mode</td>
<td>64</td>
</tr>
<tr>
<td>Fig A.3</td>
<td>Main reasons for using the car to get to work</td>
<td>65</td>
</tr>
<tr>
<td>Fig A.4</td>
<td>Reasons which would encourage greater public transport use</td>
<td>65</td>
</tr>
<tr>
<td>Fig A.5</td>
<td>Preferred incentives for car-users to walk, cycle or car-share to work</td>
<td>66</td>
</tr>
<tr>
<td>Fig A.6</td>
<td>Percentage of sample population who've changed the mode by which they travel to work in the last two years</td>
<td>66</td>
</tr>
</tbody>
</table>

### Abbreviations:

- **CBI**: Confederation of British Industries
- **CRed**: Carbon Reduction Scheme
- **DEFRA**: Department of Environment Fisheries and Rural Affairs
- **DETR**: Department of the Environment Transport and the Regions
- **DfT**: Department for Transport
- **DANTE**: Designs to Avoid the Need to Travel in Europe
- **ECMT**: European Conference for Ministers of Transport
- **SESR**: Scottish Executive for Social Research
- **WOD**: Whitefriars Office Development
- **WTP**: Workplace Travel Plans
- **UEA**: University of East Anglia
CHAPTER 1  Introduction

The goal of reducing travel is an increasingly important issue on the local, national and international policy agenda, (DANTE consortium, 1988). Despite the very real demonstration by local authorities, national governments and the European Union to keep transport and travel reduction high on the policy agenda, real\(^1\) reductions in travel are proving elusive, (Rye and McGuigan 2000). Of the many transport issues which need to be addressed, “commuting remains one of the most problematic aspects of the current transport debate”, (Banister and Gallent, 2000 pp.274). There are currently a whole host of measures which are employed to address issues related to the journey to work. However, for a number of reasons a real understanding of the contribution of such measures and how they affect travel reduction directly or indirectly are shown to be minimal, (SESR,2003).

The need to develop a greater understanding of the relationship between transport initiatives and ‘real’ travel reduction is becoming increasingly relevant with the recognition that transport is one of the key contributors of greenhouse gas pollutants, in particular its contribution to CO\(_2\) emissions, (Colvile *et al.*, 2001).

Up until now travel measures have been concerned with addressing local congestion and air-quality problems. There are many policy measures that may reduce the levels of car-use related congestion, noise and air pollution, however they are unlikely to facilitate an overall reduction in car use and traffic volumes, (Bradshaw, 2002; Loukopoulos *et al.*, 2004). “Strategies which are highly coercive often have negative side-effects which out-weigh the benefits e.g. closing out car traffic”, (Loukopoulos *et al.*, 2004 pp.1). “Less coercive strategies are based on “untenable assumptions about how much households are willing to change their car-use”, (Loukopoulos *et al.*, 2004 pp.1).

\(^1\) ‘Real’ travel reduction within the context of this research relates to gross decreases in the use of cars, which may be stimulated by WTP measures as defined by Banister and Marshall (2000).
Across policy-making agenda there are moves to change the emphasis upon which policies are framed to incorporate more sustainable patterns of development, which in turn look to address indirect, long-term and secondary effects more effectively e.g. the issue of global climate change, (DETR, 1998c, Docherty and Shaw, 2003). Strategies such as the ‘Sustainable Development Strategy’, (DETR, 1998c) have been developed which look towards developing a more integrated approach to development, encouraging mixed-use developments and the re-use of urban land to foster a reduction in the need to travel. As a result of this change in emphasis, the applicability of current travel-reduction measures and current evaluation methodologies would benefit from being re-evaluated and further developed to accommodate these changing requirements and legitimise their importance within future transport strategies.

Traditional travel planning measures are widespread; this project focuses on gaining an insight into the contribution of workplace travel plans (WTPs) to travel reduction. It is not clear how traditional travel planning measures such as WTP sit after the objectives of sustainable development, (DETR, 1998c).

It is widely recognised that the evaluation and measurement of travel reduction is complex, (DANTE consortium, 1988). Travel decisions are dependant on behavioural responses, which cannot easily be measured or predicted. With this in mind the research combines literature analysis and case-study evaluation to provide a snap-shot insight into the range and nature of actual behavioural responses which may occur directly, but perhaps more importantly indirectly, as a result of changes encouraged by WTPs.

The research also hopes to stimulate a change in emphasis in the way WTPs are evaluated. The aim is to allow users to predict and monitor WTP effectiveness in terms of real travel reduction. Consequentially WTPs’ contribution to reducing the global impacts of travel and improving and assessing their potential for contributing to sustainable development can be more adequately revealed.
CHAPTER 2  Transport planning, travel reduction and evaluation and the role of WTP

2.1 History of transport planning

Transport in general, and car use in particular, has been widely recognised, and increasingly legislated for its role as an increasing source of air pollution both in terms of global impact on climate change and more locally in terms of congestion and decreasing levels of urban air quality, (ECMT, 1997; DETR, 1998b; Colville et al., 2001).

Car transports' influence on these issues is especially difficult to address because of the rapidly rising demand for mobility, (DETR, 1998b). As can be seen from Figure 1.0, total road traffic volume in the United Kingdom between 1970 and 2003 has more than doubled from approximately 200 billion vehicle kilometres to just under 500 billion vehicle kilometres per year, (DEFRA, 2004).

Figure 1.0 - Total road-traffic volume 1970 - 2003.

Better traffic management, improved public transport, integrated land-use and transport planning are perceived as key factors in achieving long-term and environmentally-sound, development of transport systems, (DETR, 1998a). Indeed,
transport and successful transport planning is seen as being a key indicator of success in terms of the drive towards sustainable development, (DETR, 1999b).

As a result, a mixture of local, national and international policies, Acts of Parliament and sustainable development initiatives have paved the way for travel plans over the years. A selection of the more influential measures are summarised in Box 1.

---

**BOX 1. Initiatives which have paved the way for travel plans**

**Rio Earth Summit (1992)**
The Rio Earth summit highlighted the international concerns at levels of pollution from transport emissions and highlighted the need to take positive action. Introduced the concept of Local Agenda 21 (requires local authorities to address the activities having an effect on the local environment)

**Environment Act (1995)**
Sets statutory requirements for local authorities to achieve air quality objectives by 2005.

**Road Traffic Reduction Act (1997)**
Highlighted commitment to reduce congestion and promote environmentally friendly modes of transport
Emphasised the need for a package of measures to be developed through partnerships with local councils, businesses, operations and individuals

**Kyoto Protocol (1997)**
Resulted in imposition of legally binding targets to reduce greenhouse gas emissions to 1990 levels by 2000
The EU is committed to further reduce greenhouse gas emissions by 8% from 1990 levels by 2008-2012.

Sets the framework to respond to the challenge of climate change. Emphasised the need for an integrated transport policy.

**PPG 13 revision 1999 (DETR 1999)**
Aimed to ensure co-ordination between land use planning and transport and enable reduced reliance on the private car. Sees travel plans as a key consideration for those seeking planning permission for major developments.

**Transport Act 2000**
Provides the statutory basis for a number of the measures in the White paper.

**Transport 2010: The 10-year plan**
Objective - reducing congestion on inter-urban roads and in large urban areas to below 2000 levels by 2010.
Regional Quality of Life counts
Objective - Improve the choice of transport, improve access to education, jobs, leisure and services and reduce the need to travel.

**Local Transport Plans**
All local authorities must produce local transport plans

**Quality of Life Counts (DETR 1999)**
Offers ideas for measuring sustainable development and quality of life in the UK. It includes 15 headline indicators which local authorities and LA21 groups and their partners are encouraged to select and use where appropriate in the context of the new duty on principal local authorities to prepare Community strategies, for promoting or improving the economic, social and environmental well-being of their areas, and so contributing to the achievement of sustainable development in the UK. The indicators are linked with the 'Characteristics of a sustainable society' and the national framework used for 'Quality of life counts (1999)' national sustainable development indicators.

**Environmental Initiatives**
Environmental Management Systems (ISO 14001/ EMAS)

(ECMT, 1997; DETR, 1988; Energy Efficiency Best Practice Programme, 2000)
2.2 Current issues for transport

A Government-commissioned report over 40 years ago, the 'Buchanan report' Traffic in Towns, predicted that traffic would increase dramatically in the future, (DETR, 1998b). In Europe this 'mobility explosion' is outstripping the growth in population by a factor of over ten: for example, "while the population increased by 3.4 % in a decade, there has been a 40% increase in car travel, measured in passenger kilometres", (Banister and Marshall, 2000 pp. 1). On average, traffic in all areas has increased by 18% in England between 1993 and 2002, (DfT, 2003), the only notable exception being the traffic in London, where traffic increased by just over 5%, (see Figure 2.0 below).

![Figure 2.0 - Average % traffic increase by region on all roads, 1993-2002, (DEFRA 2004).](image)

“Transport is widely recognised as a significant and increasing source of air pollution world-wide”, (Colvile et al., 2001 pp.1537). In the UK, road transport emissions of the greenhouse gas carbon dioxide (CO2) make up the fastest growing contributor by source to climate change, (ECMT, 1997; Colvile et al., 2001). Road traffic also substantially adds to local air pollution and consequently is a threat to human health, (DEFRA, 2002). Evidently, transport-related issues would seem to fall into two categories: globally, in terms of its relationship to climate change and locally, in terms of its contribution to local air quality and congestion.

Unquestionably, substantial efforts need to be, and have been directed into addressing both these local and global issues. Indications are however that these strategies have
typically exerted their greatest impact at the local level only, (Colvile et al., 2001). Little significant improvement in situations facing us on a global scale is evident – e.g. global climate change, (Marshall and Banister 2000). Specifically, that “the most significant transport emissions to the atmosphere by mass” i.e. carbon dioxide (CO₂) and water vapour (H₂O) which arise from the complete combustion of fuel are on the increase, (Colvile et al., (2001) pp.1539). It is estimated that 60-65% of life-cycle greenhouse gases that occur during the use of petrol-engine cars are CO₂ exhaust emissions, with a further 10-15% being non-CO₂ exhaust emissions. The Office of National Statistics, (ONS, 2004) says that between 1990 and 2002, total UK greenhouse gas emissions declined by 10%. However, the transport industries were one of the few exceptions to this downward trend, with greenhouse gas emissions being 47% higher in 2002 than in 1990. Local air quality standards pose a serious issue. It is when fuel engine combustion is incomplete that subsequent emissions of carbon monoxide (CO) and particulate matter (PM) are released, and it is these emissions which are the primary contributors to breaches of local air quality standards. However a CEC (1996) study concluded that technological improvements to improve efficiency would eliminate widespread incidences breaching current health-related air quality standards by the end of the first decade of the 21st Century, (Colvile et al., 2001,pp.1555). The issue of global CO₂ emissions however poses a more serious and complex challenge. To tackle CO₂ emissions would require changes in gross traffic reduction and localised traffic schemes bolstered by integrated traffic management strategies, (Colvile et al., 2001 pp. 1543). Transport will in future need to be examined more closely than hitherto for the magnitude of its contribution to greenhouse gas emissions, (Colvile et al., 2001 pp. 1558).

The scale of the problem can be illustrated as follows. For total journeys, car use increased by 20% in the second half of the 1980's but only by around a further 4% in the first half of the 1990's, (DfT, 2003). In 1999/01, the three main reasons for a car trip were shopping (20%), commuting (17%), and visiting friends at home (15%), (DfT, 2003). One of the most significant contributors to the rise in road travel is the journey to work, adding over 1300 miles per year per person to road travel (DETR, 1998b). Between 1985/86 and 1996/98, the average distance travelled to work increased by about a third to 8.1 miles per journey. Journeys by public transport, bicycle and on foot all fell significantly over this period. In Autumn 2001, 70% of the
24 million people in employment travelled to work by car in the UK, (DfT, 2003). In addition to the environmental consequences of such volumes of traffic, congestion and unreliability of journeys adds to the cost of business subsequently undermining competitiveness. The Confederation of British Industry (CBI) estimates the cost of transport related issues to the British economy at fifteen billion every year, (DfT, 2003). Looking to the future, the global potential for growth in the transport sector is immense, therefore greatly reduced air-pollution emissions per person-km would be a most welcome side-effect of a more efficient and integrated transport system, (Colvile et al., pp. 1559).

2.3 Identification and measurement of travel reduction

It is useful to consider here exactly what is meant by travel reduction. Banister and Marshall (2000) adopted a three-stage approach - whereby data of increasing quality can be assembled incrementally, building towards the conclusion of travel reduction. The three stages that follow on from ‘no reaction’ are represented in Figure 3.0. The three stages, move through from data which measures a positive reaction to travel measures, to data which provides evidence of switching or substitution of transport modes, (e.g. % modal split for the journey to work) reaching, finally, data which provides information on travel reduction per se. e.g. the reduction in vehicle-km per person.

![Figure 3.0 - Hierarchy of data for evaluating success in travel reduction, (Bannister and Marshall 2000).](image-url)
Inevitably, because of the nature of the quality of data required further up the pyramid the more difficult it is that this type of data will be available. Very few measures that are implemented provide for a wide enough range of data to be obtained to make useful assumptions on travel reduction, e.g. that the measures might provide information on the growth in non-car travel as well as the reduction in car travel – thereby allowing a total view of the overall change in travel to be detected, (Banister and Marshall 2000).

2.4 Measurement of travel reduction

A project co-ordinated by Banister and Marshall for the European Commission in 1988 (titled DANTE - Designs to Avoid the Need to Travel in Europe) provides the most coherent explanation for the measurement of travel reduction. The explanation for travel reduction is reproduced in Box 2.

**Box 2 - The measurement of travel reduction (DANTE consortium, 1998)**

Banister and Marshall (DANTE consortium, 1998) define travel reduction in its simplest form as an assessment of whether travel at point t+1 is less that at point t (Y+D). From this logic, there has been an increase in travel at points A and B, whilst C represents a stabilisation in travel. However due to the unlikely event that changes of this order will ever be found to use them as definitions of travel reduction no travel reduction will ever be found.

However if three points are used, then the historic trend from X (t-1) through Y (t) to the future (t+1) can be presented as variations around the trend or predicted position (Z). This is a consequence of the do-nothing situation and B now represents a reduction in the growth of travel. This could be interpreted as achieving the aims of travel reduction.

<table>
<thead>
<tr>
<th>A</th>
<th>Acceleration of growth in travel</th>
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<tbody>
<tr>
<td>Z</td>
<td>Trend</td>
</tr>
<tr>
<td>B</td>
<td>Reduction in growth of travel</td>
</tr>
<tr>
<td>C</td>
<td>Stabilisation of travel</td>
</tr>
<tr>
<td>D</td>
<td>Reduction in travel</td>
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(DANTE consortium, 1998)
2.5 Travel reduction strategies

The underlying aim of all travel reduction strategies is to reduce vehicle kilometres, particularly by car, (DANTE consortium, 1998; Marshall and Banister, 2000). The UK government White Paper, A New Deal for Transport: Better for Everyone, (DETR, 1998a pp.14), promotes the adoption of a number of these strategies with the aim of “creating a better, more integrated transport system to tackle the problems of congestion and pollution”. Examples of such strategies include those which reduce travel through organisational and planning measures so as to fundamentally change a person’s behaviour, where they choose to live etc.

In an attempt to learn more about the nature of travel reduction strategies Marshall and Banister (2000) comprehensively reviewed a range of strategies and identified 10 broad categories reflecting the “general scope of application” of some of the most popular, (DANTE consortium, 1998; Banister and Marshall, 2000).

The ten categories identified were:

- capacity management and restraint
- pricing, charging and taxation
- land-use planning; location and access
- communications and technology
- city and company travel policies
- physical measures
- subsidies and spending (for more sustainable modes)
- restrictions on access and parking
- deliveries of goods and services
- public awareness

The diverse nature of these strategies is immediately evident, ranging from economic constraints such as pricing and taxation to less aggressive approaches such as developing an ‘increased public awareness’. Nevertheless Banister and Marshall (2000) were able to synthesise six characterising mechanisms which underpin these 10 broad categories. The mechanisms identified were: mode switching; destination
switching; time switching; substitution by linking trips; substitution by technology and substitution by trip modification.

One of the most widely applied of the travel-reduction strategies involves those that address company travel policies or as they are more commonly referred to the Workplace Travel Plan (WTP\textsuperscript{2}). Workplace Travel Plans form a pivotal role within transportation strategies, (DETR, 1998a), and as a result, local authorities in areas of high economic growth will often call for WTP strategies to be implemented as ‘conditions of planning’ when approving new developments, (Rye and McGuigan, 2000).

2.5.1 Workplace travel plans (WTPs)

The WTP is “a package of measures tailored to meet the needs of individual sites and promote greener, cleaner travel choices thus reducing reliance on the car to and at work”, (DfT, 2002b, pp.3). The aim of WTPs is to develop a set of initiatives, mechanisms, and targets that together enable an organisation to reduce the impact of travel and transport on the environment, (Energy Efficiency Best Practice Programme, 2000; Banister and Marshall, 2000; DfT, 2002b). Typical components of WTP strategies and the mechanisms which underlying them are summarised in Table 1.0 below, adapted from DANTE consortium, (1998) and Energy Efficiency Best Practice Programme, (2000).

Table 1.0 - Typical WTP measures and their underlying mechanisms

<table>
<thead>
<tr>
<th>Type of measure</th>
<th>Switching</th>
<th>Substitution</th>
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<tr>
<td></td>
<td>Mode</td>
<td>Destination</td>
</tr>
<tr>
<td>Walking</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Cycling</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mileage allowance</td>
<td>x</td>
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\textsuperscript{2} Also known as Green Commuter Plans
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<thead>
<tr>
<th>Type of measure</th>
<th>Switching</th>
<th>Substitution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mode</td>
<td>Destination</td>
</tr>
<tr>
<td>Reducing parking capacity</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Car Pooling</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Personalised journey planners</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Financial incentives</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Teleworking</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Compressed working week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teleconferencing</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

Table 1.0 cont. - Typical WTP measures and their underlying mechanisms

All of these measures and mechanisms have different implications for overall travel-reduction and subsequently issues of congestion and pollution. It is accepted that the majority of the measures facilitate modal-shift, however it is also recognised that modal-shift inevitably has the potential to release travel elsewhere, (DANTE consortium, 1988). In the majority of cases, destination switching is not an option to reducing vehicle kilometres for companies adopting travel plans. Time switching also has limited applicability, because of the fixed nature of usual working hours. In most companies applying measures that can reduce the time spent travelling (e.g. by reducing the length of the working week) are also not an option. Linking trips is often outside the scope of WTP strategies, as it involves thinking about how people plan their journeys both connected and unconnected with the journey to work in order to get the most efficient use out of a person's travel commitments. The importance of linking trips is recognised by the increasing trend for travel strategies to concentrate on developing personalised travel plans, however, the impetus for personalised travel plans is rarely initiated by company developed strategies, (DETR, 2001). Companies are increasingly taking advantage of technological innovations to reduce the amount
of travel necessary e.g. by video conferencing and home working. However, in terms of its potential to impact on travel volumes significantly, its applicability is in most cases severely constrained, (ECMT, 1997). Trip modification also has a limited role because of the difficulty for companies to influence trips outside the journey to work.

2.6 Evaluation of travel reduction – the issues

Evaluation of ‘real’ travel reduction requires a considerable amount of data. There has to be consideration of different modes, destinations and the tracing of individual’s journeys and purposes over historical, actual and predicted scenarios, (Banister and Marshall, 2000). Inevitably this is regarded as both unfeasible and time consuming. In addition, data sets alone are generally not in themselves sufficient in helping decision makers, unless they can be modelled to reveal something of the way the system functions and how it responds to different factors, (Cameron et al., 2003).

The following observations by Marshall and Banister (2000) highlight some further difficulties commonly faced when evaluating travel reduction:

1) In some cases the observed reduction in travel, while promising in itself, reflects only a small proportion of traffic. It is probable that such minor improvements may be overtaken in the medium to long term by general increases in traffic.

2) It is possible that any shifts away from car travel and consequent reductions in congestion will simply act to release capacity, which may then be filled by newly generated traffic.

3) Similarly, obstacles to car travel such as exclusion or indirect routing may shift problems elsewhere or at worse increase total distance travelled by car.

4) The targeting of particular segments of demand (e.g. tele-workers) may reduce travel for that segment but may be accompanied by more travel by other persons or for other purposes.

5) Most of the mechanisms studied involve mode switching, and although there is some mode switching away from car, there is also a degree of switching between bus and cycle (any shift from walk or cycle to bus must be seen as environmentally detrimental).
6) Most of the measures studied seem in some way to be encouraging travel, albeit that this is travel by modes that are environmentally preferable to the car. Cities are encouraging more travel by bus, more by cycle etc. possible generating extra trips.

Banister and Marshall (2000), concluded that whilst strategies may be successful in terms of meeting specific objectives, such as reducing the number of vehicles which travel to a certain place, they do not necessarily contribute to overall travel reduction, (Marshall and Banister 2000).

Exactly the influence of WTPs on travel is an important issue and monitoring and evaluation forms an important role in the development of any scheme towards determining this. Numerous evaluation methodologies have been developed along with corresponding indicators to help in quantification of WTP objectives. Typical indicators of evaluation surveys whilst they may be adequate in theory as suitable indicators of travel reduction, there are a number of issues that could reduce this. Typical indicators include the following, (Banister and Marshall, 2000 pp.92):

- Reduction in car trips
- Reduction in car kms
- Reduction in vehicle kms per passenger km
- Reduction in vehicle kms per trip
- Reduction in vehicle hours spent travelling
- Reduction in total number of trips
- Reduction in passenger kms

Present evaluation methodologies typically adopt a simple format involving before and after surveys, quantified by one or more of the above indicators. Whilst these studies are useful for demonstrating net impacts at the workplace, they do little else, (Marshall and Banister 2000). They are undermined because they are not applied widely enough; typically they are applied to the journey to or from work only. As such, outputs are not as relevant in determining travel reduction as perhaps they could be, or are perceived to be. In addition the individual indicator selected to quantify travel behaviour can have a significant implication on the outcome. The implication of different indicators and the potential manipulation of results are illustrated by the following scenario. Evaluation of WTP using the indicator ‘reduction in number of
car trips to work’ generates one particular set of results. Evaluation using the indicator ‘reduction in total number of trips’, will generate a different set of results. In the second scenario it is likely that a multi-purpose trip, which formally included the journey to work and the weekly shopping trip, will become two separate trips, resulting in no overall reduction in the total number of trips.

The complexity surrounding the evaluation of WTPs is further compounded by the unpredictability of the car user and the likelihood that their journeys will be varied and complex. A study by Lee and McNally (2003) that addressed the sequence by which various activities enters one's daily activity-scheduling process indicated that “activities of shorter duration are more likely to be opportunistically inserted into a schedule already anchored by their longer duration counterparts, such as the journey to work”, (Lee and McNally, 2003 pp.838). They concluded that instead of “contemplating the optimal choices before action, individuals are often improvising in an environment with certain spatial and temporal constraints imposed by necessary journeys like the commute to work”, (Lee and McNally, 2003 pp.838).

Unsurprisingly, one of the reasons for the popularity of the car is the flexibility it offers, and it is this “ability to be flexible that has conditioned our inefficient planning of daily routines”, (Lee and McNally, 2003 pp.835), which in turn undermines the effectiveness of WTPs. Essentially, this research by Lee and McNally, (2003) implies that if the journey to work is replaced with a mode that restricts flexibility, such as public transport, then the opportunity to carry out these opportunistic events is also being removed. These events will presumably still need to be acted out, and as such additional journeys may have to be made to compensate. This work by Lee and McNally (2003) goes some way towards verifying the statement made by Banister and Marshall (2000) (refer back to section 2.6 point 2 and 4) that “whilst it (travel-reduction measures) may reduce immediate congestion, trips which were previously part of the journey to work still have to be acted out. It is not unreasonable to suggest that our unpredictability and inefficiency in planning trips makes the contribution of WTP to overall travel reduction increasingly tenuous.

It is recognised however, that the main objective of such plans is primarily to reduce traffic congestion in the city-centre or on particular routes - overall travel reduction is
not the primary driver. External motivating factors driving the implementation of travel plans are typically counterproductive in the drive towards achieving travel reduction, (Ison and Rye, 2003). It is not unusual that WTP are typically implemented by companies with city centre locations and therefore subject to forced constraints from parking and congestion, recruitment and planning conditions. Indeed planning pressures were identified as the primary motivating factor for implementing WTP in most cases, (Rye and McGuigan, 2000; Ison and Rye, 2003). Consequently, it is perhaps not surprising that travel reduction is inadequately addressed by WTP and therefore not evaluated as an expected outcome of the schemes. There is in-fact some contention as to whether sustainable commuting is actually achievable or is in-fact nothing more than a contradiction in terms, (Banister and Gallent 2002). Whilst the Government White paper “A New Deal for Transport” (DETR, 1998a pp. 13) defined sustainable transport as, “a transport system that supports our policies for more jobs and a strong economy, which helps increase prosperity and tackles social exclusion ………… that doesn’t change our health and provides a better quality of life now-for everyone-without passing onto future generations a poorer world" others have recognised that it is extremely difficult to reconcile commuting, "one of the more detrimental elements of current transport usage, with this vision of sustainable travel", (Banister and Gallent, 2002, pp.274). Yet, to aim to evaluate WTPs against factors not only like ‘modal shift’ or ‘number of cars in the car park’, but also against their social, economic and environmental implications, would be a significant step forward in terms of addressing the overall impact of transport, (Curtis, 2003).

Perhaps WTP measures should only be regarded as solutions to localised problems. The problem with accepting the potential deficiencies of WTP as they are at present in achieving overall travel reduction and adequately addressing the more global issues of transport, (Loukoupoulos et al., 2004), is that transport and the journey to work have become headline indicators in the government’s strategy for sustainable development, (DETR, 1999b). As such, it is in everyone’s best interests to assess the potential of WTPs in achieving or revealing travel reduction. If this does not occur and the wider consequences of travel, namely climate change, rather than localised concerns such as congestion are not addressed by WTP, then a lot of energy is being spent which could be better targeted elsewhere.
2.7 Aim and Objectives

2.7.1 Aim

To investigate the contribution of workplace travel plans to overall travel reduction, and to evaluate and suggest directions for advancement of present evaluation methodologies, within the context of sustainable frameworks and global transport impacts.

2.7.2 Objectives

1) To provide an insight into the difficulties related to evaluation of WTP for travel reduction and the limitations of present travel reduction evaluation data in terms of providing information relevant to sustainable indicators for travel and climate change.

2) To collect empirical evidence and establish a developed and more complete understanding about the range and nature of actual behavioural responses resulting from the implementation of workplace travel plan measures.

3) To suggest and develop appropriate monitoring and evaluation of schemes to advance the evaluation of workplace travel plans in relation to determining their contribution to travel reduction within sustainable and integrated policy objectives.

The subsequent chapters address these objectives.
CHAPTER 3     Evaluation of WTP - Methods and Analysis

3.1 Introduction

The basic strategy for assessing the outlined objectives in section 2.7.2 centred on recognising firstly, the current situation in terms of the actual role of WTPs within transportation strategies, secondly the ideal role for WTPs in contributing and increasing knowledge about travel reduction and thirdly, the practical drivers and barriers to achieving an improved evaluation methodology. To do this required an understanding of current evaluation methodologies and current relationships between travel strategies and their impact on a person's travel habits. Specifically it was necessary to assess the contribution of WTPs to travel reduction by understanding the objectives and outcomes of present evaluation methodologies, and by recognising and exploring the fact that different transport alternatives (car, bus, walk, etc.) have different implications for overall travel reduction, (Andersen et al., 2004). It is also necessary to discuss how WTPs should be represented in order to become a more useful indicator of travel reduction.

The research explored these key strands and drew on the information provided to provide practical suggestions for effective and user-friendly evaluation methodologies. By highlighting the limitations of present evaluation methodologies it was possible to ensure that the relevance of WTPs to travel reduction is not misinterpreted and the importance of WTPs not misdirected as a result of poorly educated deductions about observed changes in travel patterns, (DANTE consortium, 1988).

3.2 Framework for strategy development

The outline strategy consisted of three basic stages. At each stage information from the literature and practical observations was explored to demonstrate the applicability of WTPs to travel reduction evaluation in detail. The three stages can be simply defined as follows:

**Stage 1** - Where we are now - practical implementation of WTP
**Stage 2** - Where we want to be – ideal role for WTP

**Stage 3** - How to get there – changes and recommendations

Stage 1 included analysis of current WTP evaluation methodologies, to reveal their exact contribution to current data on travel reduction. It also looked at the elements necessary to successfully monitor and evaluate travel reduction related to WTPs. By using travel diaries, the relationship between modal choice and subsequent travel habits was explored; the information acquired at this stage confirming or challenging what is already known or suspected about in-direct relationships between WTPs and travel habits.

In stage 2 the discussion centred upon what evaluation methodologies should be aiming to evaluate if they are to provide useful information on their contribution to travel reduction. This allowed observations and suggestions to be made on how evaluation methodologies can progress. To complement this, types of indicators and suggestions for application are explored in order to provide meaningful data sets for future evaluation.

Stage 3 draws on all this information to provide some realistic conclusions about how and whether WTP implementation and subsequent evaluation has the potential to enhance integrated and sustainable transportation strategies. This is of particular significance to ensure that efforts are not misguided, and the weight given to the achievements of WTPs, in contributing to travel reduction, are not over-stated. The main structure of the methodology for this analysis is illustrated in Figure 4.0 below.
Figure 4.0 - Framework for strategy development

To assess the contribution of WTP to overall travel reduction

Stage 1
Where we are now?

1) Current evaluation methodologies
2) Current relationship between WTP and travel habits

Stage 2
Where we want to be?

1) Ideal frameworks for evaluation

Stage 3 - Development
Understanding of WTP contribution to travel-reduction
Understanding of how and what WTP are evaluated against

Suggest future framework and indicators for evaluating WTP for travel-reduction.
3.3 Current evaluation of workplace travel plans

Evaluation of WTP has been approached in a number of different ways, (DfT 2002b). A number of surveys have been carried out to assess the effectiveness of travel plan measures in terms of looking at the process which enables travel plans to move through various stages to a favourable outcome, and in terms of measuring effectiveness of the outcomes themselves using suitable/measurable indicators, (Marshall and Banister, 2000; DETR, 2001; Cairns et al., 2002). There is also the notion that the effectiveness of the travel plan should be measured by monitoring progress in reducing car use for example reduction in car use and reduction in the number of employees travelling to work alone by car, and increases in bus/train use, cycling and walking, (DfT, 2002b).

Currently there are two overarching frameworks that have been identified against which evaluation methodologies can be seen to fit: (Rye and McGuigan, 2000; DfT, 2002b).

1) Stages of Change model (Trans-theoretical model of behavioural change by Prochaska and Di Clemente 1984 and 1986) - helps to identify whether evaluation frameworks have addressed the process elements of WTP development as defined by the headings within the model, (DfT, 2002b).

2) EU Mosaic framework developed by Schreffler in 1998, (DfT, 2002b).

The ‘Stages of Change’ model identifies that individuals pass through a series of changes when altering their behaviour. The changes progress through the following stages:

Pre-contemplation: People are not seriously thinking about changing their behaviour;

Contemplation: People are aware of the consequences of their actions;

Preparation: People have made a commitment to changing their behaviour;

Action: This is the stage where people modify their behaviour to overcome the problem. Action involves the most overt behavioural changes and requires the most commitment in terms of time and energy;
Maintenance: Organisations will need to monitor impacts and manage the evolutionary process of WTP implementation; and

Relapse: This can occur at any stage and may be the result of a number of different factors.

The EU Mosaic framework (1988) directs evaluation methodologies into looking at a number of factors, not only the impact on modal shift, (DfT, 2002b). These factors include:

- **Awareness level:** whether people know about the travel plan and if so what aspects are best known,
- **Usage level:** whether people use travel plan services and if so how much,
- **Acceptance level:** whether people follow travel plan services and if so how much,
- **Individual behaviour level:** whether people changed their behaviour; and
- **System impact level:** what is the impact on the overall transport system?

A comparison of these overarching frameworks against the three steps to travel reduction, as identified by Banister and Marshall (2000), provide an insight into the quality of data these frameworks encourage in relation to the provision of data on travel reduction. Figure 5.0 illustrates how the elements of the ‘stages of change’ (highlighted in blue) and ‘Mosaic’ frameworks (highlighted in yellow) contribute to providing information on travel reduction. It suggests that those factors outlined by the ‘Mosaic’ framework are perhaps more relevant to the evaluation of travel reduction, yet they are by no means adequate. Typically the ‘stages of change’ model upon which the majority of evaluation methodologies are based addresses only the first two steps in the path towards providing evaluation data relevant to travel reduction, (DfT, 2002b). The Mosaic framework emphasises the behavioural aspects deemed necessary for promoting real travel reduction. However, there is no indication, or method of determining whether those behavioural characteristics are transposed into a person’s every day travel habits. The most important factor in evaluating for travel reduction as introduced by the ‘Mosaic’ framework would seem to be evaluation of ‘system impacts’. The definition of the system is an important element of this research, (DfT, 2002b). If impacts on the ‘system’ as a whole can be
evaluated then this might give rise to more informative insights on overall reductions in travel.

Figure 5.0 – Comparison of the evaluation frameworks currently employed and their relationship to the assessment of travel reduction.

The approach to evaluation typified by the ‘stages of change’ framework, which concentrates on looking at the elements necessary to bring about change, is
epitomised by results from a study by Gunn in 1978 that set out 10 conditions that would need to be considered if perfect implementation of travel strategies were to be achievable, (Ison and Rye, 2003). The conditions are as follows:

1. The circumstances external to the implementing agency do not impose crippling constraints
2. That adequate time and sufficient resources are made available to the programme
3. That the required combination of resources is actually available
4. That the policy to be implemented is based upon a valid theory of cause and effect
5. That the relationship between cause and effect is direct and that there are few.
6. That there is a single implementing agency
7. That there is complete understanding of and agreement upon, the objectives to be achieved; and that these conditions persist throughout the implementation process.
8. That tasks are fully specified in the correct sequence.
9. That there is perfect co-ordination and communication
10. That those in authority can demand and obtain perfect compliance.

Not one of the points (1-10) provides data of a high enough quality to provide information on travel reduction as defined by Banister and Marshall (2000). Travel evaluation based on these ten points is firmly rooted in the assessment of process characteristics conducive to modal shift not travel reduction per se. To demonstrate this, two methodologies currently in use in the United Kingdom (UK) were reviewed for their contribution to travel reduction data by categorising the information they seek to gather against the outcome they actually provide. What this review confirmed was that, the majority of methodologies in use today are indeed based upon the ‘stages of change’ framework, and as such provide inappropriate data upon which to determine potential future travel reduction. The methodologies reviewed were:

An Assessment table developed by Norfolk County Council (NCC) in conjunction with Travelwise® (NCC, no year); and the Travel Plan Evaluation Software (version 2.5) developed by the Department for Transport (DfT), (DfT, 2002b).

The Norfolk County Council Assessment table acts as a checklist to ensure that basic requirements have been included in the plans to generate a quantifiable value indicating likely success. The table functions by assessing a number of input
variables and applying different weighting's to them. There are 12 main categories that represent elements deemed necessary for success in achieving modal shift. It primarily focuses on evaluating how the different input variables fair in achieving movement through the stages outlined by the 'stages of change' model.

The DfT Evaluation software, (DfT, 2002b) - considers that the following objectives are key to a methodology for evaluating travel plans:
1. It should be comprehensible,
2. It should be robust yet quite simple to use,
3. It should be capable of application to WTPs in a wide range of situations,
4. It should take cognisance of what a WTP is likely to be able to achieve in a given context and physical situation,
5. It should be capable of application to WTPs both existing and planned; and
6. It should assess process as well as outcomes since the latter is related to the former.

As with the NCC methodology this evaluation software consists of a comprehensive spreadsheet checklist, which measures a total possible score. The main headings and their weightings are shown in Figure 6.0.

![Figure 6.0 - Heading weights in DfT (2002b) evaluation software.](image)

Clearly these points (1-6), and the headings in the software tool address the evaluation of process only, doing little to further increase knowledge on likely travel reduction. This is despite recognition in point six the importance of evaluating outcomes as well
as process. This brief review of two evaluation methodologies illustrated the preoccupation with process that is at the heart of WTP evaluation at present. A report titled the 'Evaluation of Government Department' Travel Plans' by Napier University Transport Institute in 2001, concluded that the implicit intention of the DfT (2002b) evaluation software, was to "assess the potential effects of the travel plans before their implementation - i.e. it intentionally focused on issues of process, (Cairns et al., 2002 pp.25).
CHAPTER 4 Influence of modal choice on travel-habits - methods and case-study development

4.1 Introduction

This section explores and aims to understand further the relationship between the mode of transport adopted for the journey to work and its subsequent influence on overall travel habits. The research into this essentially employs the following hypothesis.

‘WTPs effectiveness in contributing to overall travel reduction is diminished due to the relationship between the journey to work and other travel commitments. Either people don't change their travel habits because of the external commitments, or they do change, but increase their overall trip rate because of a loss in flexibility, thus counteracting the overall contribution of WTP measures to travel reduction’. (adapted from Banister and Marshall, 2000).

Case study analysis was selected to complement the literature analysis in order to provide empirical data on employee travel habits from which further discussion could evolve. Empirical data was sought because it had become increasingly obvious from the review of the literature that, whilst numerous assumptions had been made about the relationship between various modes of travel and subsequent travel dynamics, little factual research into this dynamic had been done. By generating factual information as the foundation for this research, it provided a context for the discussion issues which would later be raised, (May, 2001). It is recognised that to adopt this approach raises issues about the influence of the case study on conclusions drawn as a result of criteria developed when choosing the case study, it may be the case that patterns which are observed are only applicable to companies of a similar profile.

4.2 Case study methodology

- Identify the case study
• Apply initial screening questionnaire to the case study population to identify present modes of travel and associated behavioural attitudes necessary for assigning the sub-groups for further analysis. This also sought to gauge willingness to participate in further study

• Implement selected in-depth travel analysis of travel habits through the use of travel diaries.

• Comparable analysis of the travel behaviour of these groups through the use of travel diaries

• Analysis of results

• Discussion of implications

4.2.1 Case study selection

In order to test this hypothesis a case study was needed which met the following criteria. These criteria were based upon previous travel studies where comparable analysis was the end-point objective, (DANTE consortium, 1998; Ison and Rye, 2003; SESR, 2003).

• A travel plan in place for more than 2 years - previous work indicates that two years is a suitable period over which the impact of measures introduced by WTP will noticeably begin to take effect, or not, (DANTE consortium, 1998).

• City centre location - diminishes the constraints placed on travel choices by the lack of available alternatives, (SESR, 2003).

• Cross section of occupants at the site – contributes to comparable analysis to take note of external factors which may influence modal choice such as job description, income, age etc, (SESR, 2003).

• Widespread selection of measures in place - ensures that obstacles faced because of lack of facilities conducive to modal change are not present.

A suitable case study became apparent through connections developed by the University of East Anglia (UEA) programme dedicated to promoting carbon reduction 'Cred'. Jarrold & Sons Ltd, which manages the Whitefriars Office Development (WOD) in Norwich city centre, satisfied the above criteria and agreed to take part. A detailed breakdown of the case study site is presented in Table 2.0. The initial survey
population was restricted to those companies located at the WOD whose parking and travel to work obligations fell under the control of Jarrold & Sons Ltd. as their landlords.

Table 2.0 - Breakdown of case study demographics

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jarrold &amp; Sons Ltd. (Publishing, training, property, retail, IT)</td>
<td>Mill</td>
<td>160</td>
</tr>
<tr>
<td>CPS</td>
<td>St. James</td>
<td>98</td>
</tr>
<tr>
<td>Police</td>
<td>St. James</td>
<td>40</td>
</tr>
<tr>
<td>Norfolk Probation</td>
<td>Mill</td>
<td>50</td>
</tr>
<tr>
<td>Soup Ltd</td>
<td>St. James</td>
<td>20</td>
</tr>
<tr>
<td>Mills and Reeves</td>
<td>M&amp;R building</td>
<td>200</td>
</tr>
<tr>
<td>Lucas Fettes</td>
<td>M&amp;R building</td>
<td>20</td>
</tr>
<tr>
<td>Virgin Wines</td>
<td>Mill</td>
<td>60</td>
</tr>
<tr>
<td>NJP</td>
<td>Print Works</td>
<td>323</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>931</strong></td>
</tr>
</tbody>
</table>

4.2.2 Questionnaire survey

Guidance was sought from a number of sources, which included generic guidance books and documents on travel plan data collection questionnaire design (Peterson, 2000; Energy Efficiency Best Practice Programme, 2000). The framework outlined in Figure 6.0 provided the outline methodology for constructing the questionnaire, (Peterson, 2000).
4.2.3 Review of information requirements - specification

The aim of the initial questionnaire was to act as a screening exercise to gather information on present modal splits, primarily to distinguish between car-users and non car-users. Comparable analysis of these main groups would then form the focus of the next stage of study. Data on car-users attitudes to non-car options was also sought in order to allow this sub-group to be further divided at a later date if necessary. It was deemed appropriate that this information was supplemented by information on an employee’s practical potential to change, as governed by the distance between home and office, and the public transport modes realistically at their disposal. Individual’s knowledge about potential alternatives or occasionally used alternatives was also required, to assist in later allocation of sub-groups. Attitudinal data was gathered to provide background information when selecting persons for the next stage.
4.2.4 Questionnaire design and structure

The questionnaires sent out to the employees were identical in every way except the wording of the introduction. It was felt that in order to initiate a good response rate, the adoption of a slightly different angle in relation to the reason for the study should be adopted, (see appendix, section A.4). The importance of the questionnaire was highlighted in a way most relevant and familiar to the receiving group. As a final insurance against people declining to participate, employees were enticed with the chance to win a bottle of champagne.

In order to make people aware of the survey prior to its distribution an article in the WOD newsletter was published with the endorsement of the Director, this further served to raise awareness and initiate a high response rate.

The nature of the work carried out by the companies sited at the WOD meant that the majority had access to a computer. Of a total of 931 employees at the site only 323 were not contactable by e-mail. As such, a self administered e-mail questionnaire was deemed the most appropriate for the majority, whilst the remainder were issued with hard copies to be returned to a point on-site for collection. It was however also recognised that certain people prefer to answer questionnaires in hard copy format rather than in an electronic format. To cater for this preference a central collection point was set up for those employees, although the questionnaire was still issued by e-mail, (Peterson, 2000). In addition, a previous study indicated an 80% response rate, (WSP Development, 2002) using this electronic approach, therefore despite the risks associated with sending out attachments via e-mail it was settled on as being the most efficient option.

The aim of this questionnaire was to act as a screening process for more detailed and directed surveying to follow. As such it was designed to be as brief, relevant, unambiguous, specific and objective as possible, (Peterson, 2000). Closed-end questions were adopted, with room for those being surveyed to expand on their answers if they wished. By using closed-end questions, as opposed to open-ended questions, it would allow groups to be more quickly and clearly defined for the next
stage, this was especially important in light of the potentially large sample size. Where there was more than one possible answer to choose from, participants were asked to restrict themselves to no more than two options. Closed–end questions were further deemed the best approach because they required the least physical and mental effort, (Peterson, 2000). It was important to ensure that the potential travel diary sample population would not be scared off by overly time-consuming and mentally challenging questions. A certain amount of demographic information was requested to allow inferences to be made when allocating the sub-groups with respect to characterising potential external\(^3\) travel commitments. No information being gathered was of a controversial or personal nature, and it was deemed unlikely that there would be any objections from a confidentiality or intrusive point of view. However, in order to give people the option of revealing personal information, these questions were restricted to those who indicated their willingness to participate in further study.

The role of the questionnaire as a precursor to the main research exercise (travel diaries) prompted the decision to forego rigorous pre-testing. Questionnaires of this nature are regularly detailed in workplace travel plan guidance documents, and thus provide a tried and tested design, structure and content upon which to base the questionnaire, (Energy Efficiency Best Practice Guidelines, 2000; DANTE consortium, 1988; DfT, 2002b). It was recognised that the results of the questionnaire did not form the primary data set, so as long as answers served to adequately provide the information needed to identify the subsequent sub-groups, the questionnaire would be judged as having fulfilled its purpose. Nevertheless, the questionnaire was reviewed for readability and grammatical errors, and then specifically by members of the Jarrolds staff, to ensure the options presented (see question number 3 and 4 of the questionnaire in the appendix, section A.1) were consistent with those actually available at the Whitefriars Office Development site.

Table 3.0 briefly outlines the final questions and summarises how the information requirements were met and most appropriately structured. A full copy of the questionnaire can be found in the appendix, section A.1.

\(^3\) External travel commitments relate to those made other than the journey to or from work.
Table 3.0 - The intricacies of the questionnaire design

<table>
<thead>
<tr>
<th>Question number</th>
<th>Question</th>
<th>Options</th>
<th>Purpose of the question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>At what time do you normally arrive at work?</td>
<td>Factual</td>
<td>To assist in assessment of potential alternative options</td>
</tr>
<tr>
<td>2.</td>
<td>At what time do you normally leave work?</td>
<td>Factual</td>
<td>To assist in assessment of potential alternative options</td>
</tr>
<tr>
<td>3.</td>
<td>How do you travel to and from work?</td>
<td>Multi-categorical (see appendix)</td>
<td>Determine present modal split</td>
</tr>
<tr>
<td>4.</td>
<td>How far do you travel to work?</td>
<td>Factual</td>
<td>To assist in assessment of potential alternative options</td>
</tr>
<tr>
<td>5.</td>
<td>How long does it usually take you?</td>
<td>Factual</td>
<td>Length of the journey influences potential for multi trips and opportunistically inserted events (Lee &amp; McNally 2003)</td>
</tr>
<tr>
<td>6.</td>
<td>Which of the following do you occasionally use to get to work instead of your predominant form of transport as stated in Q.3? (please tick no more than two and give a reason e.g. seasonal variations in weather)</td>
<td>Closed Multi-categorical</td>
<td>To assist in assessment of potential alternative options.</td>
</tr>
<tr>
<td>7.</td>
<td>What is the main reason for using a car to get to and from work? (Please tick no more than two)</td>
<td>Closed multi-categorical</td>
<td>To assist in subdividing car users based on potential for change.</td>
</tr>
<tr>
<td>8.</td>
<td>Which of the following changes would most encourage you to use public transport? (please tick no more than two)</td>
<td>Closed multi-categorical</td>
<td>Gauge attitude to public transport.</td>
</tr>
<tr>
<td>9.</td>
<td>Which of the following would encourage you to walk, cycle or car share to work? (please tick no more than two)</td>
<td>Closed multi-categorical</td>
<td>To gauge attitude to walking, cycling and car share.</td>
</tr>
<tr>
<td>10.</td>
<td>If you were given specific advice on options available to you for your journey to work would you consider implementing the suggestions made? (please tick)</td>
<td>Closed multi-categorical</td>
<td>To gauge willingness to change travel habits for the journey to work within the context of other journeys.</td>
</tr>
<tr>
<td>11.</td>
<td>Have you changed the mode of transport by which you travel to work since moving to Whitefriars (please tick)</td>
<td>Closed multi-categorical</td>
<td>To gauge whether people have, since the introduction of the TP measures, changed their travel habits.</td>
</tr>
<tr>
<td>12.</td>
<td>If Yes, was this as a direct result of? (please tick no more than two)</td>
<td>Closed multi-categorical</td>
<td>Reasons for their change in travel habits.</td>
</tr>
</tbody>
</table>

If you drive a car or motorcycle to work regularly, (more than once a week), please complete all the following questions. If you use an alternate mode – please skip to Q. 11
4.3 Questionnaire Analysis – towards travel diary design

4.3.1 Summary of results

The questionnaire was completed by 125 people giving a total response rate of 13.4%. Respondents were 46.5% male and 53.5% female. As expected the majority of respondents travelled to work by car (63.2%), 15% walked and only 4.8% cycled as their usual form of transport. Use of public transport, especially the train, was low. Table 4.0 summarises the modal split by which the sample population usually travelled to work. The primary reasons cited by employees to account for the use of their car was that it was the most flexible, cheap and least time consuming option, with little incentive to find an alternative mode as there was plenty of parking options at reasonable rates on-site or nearby. Of those who had contemplated travelling to work by bicycle, they cited the lack of shower facilities as a major obstacle. A detailed summary of the responses relating to attitudes, travel patterns and perceptions, and options to improve public transport use, can be found in the appendix, section A.2.

Table 4.0 - Summary of modal split at WOD in July 2004

<table>
<thead>
<tr>
<th>Mode</th>
<th>% modal split</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car users</td>
<td>63.2</td>
</tr>
<tr>
<td>Motorbike</td>
<td>0.8</td>
</tr>
<tr>
<td>Car share</td>
<td>2.4</td>
</tr>
<tr>
<td>Car drop off</td>
<td>4.8</td>
</tr>
<tr>
<td>Walk</td>
<td>15.2</td>
</tr>
<tr>
<td>Bus</td>
<td>4</td>
</tr>
<tr>
<td>Park and ride</td>
<td>4</td>
</tr>
<tr>
<td>Train</td>
<td>0.8</td>
</tr>
<tr>
<td>Cycle</td>
<td>4.8</td>
</tr>
</tbody>
</table>

4.3.2 Assigning the sub-groups

An important part of the next stage, the travel-diary exercise, was to precisely define the target populations for analysis. This would increase the ease of comparable observations in the future, and ensure observations were both replicable and valid, (Fink, 1995). The study population was initially narrowed down by removing all those
who had no desire to participate further; to pursue their involvement would be a waste of time and resources at this stage, despite their possible applicability to the study. From the remaining willing participants it was first necessary to distinguish between car-uses and non car-users. From these two main-groups, sub-groups for comparable analysis, were then determined.

The rationale behind the allocation of the stated sub-groups was based on the assumption that the population within these groups would face the same pressures and constraints on their travel behaviour. These constraints were defined in terms of the flexibility offered by the different transport options to carry out multi-trips, and unplanned stops. It is typically recognised that once you board any form of public transport, or indeed you are a passenger travelling with others to a particular destination, it is less likely that opportunistic stops can be acted out at your convenience, (Ison and Rye, 2003). Following on, it was deemed equally as easy for those who walk or cycle to stop, alter their route, or carry out multi-trips as their convenience. It was also supposed, that in relation to carrying out an activity such as the weekly shopping, the way in which it is incorporated into the week is often dictated by the mode of transport used. It is unlikely, due to the difficulty in carrying large quantities of shopping, that someone who travelled to work primarily by public transport would stop off and do a weekly shop on the way home. It is more likely that he/she would carry out a number of small shopping errands during the week, or dedicate a single trip by car in the evening. Division of the car-users was based on the actual or perceived flexibility afforded to them by their preferred mode of transport in relation to work commitments, and options to change. The sub-groups are tabulated in Table 5.0, and Figure 8.0 illustrates the process of assigning the sub-groups from start to finish.

<table>
<thead>
<tr>
<th>Table 5.0 - Sub groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>No further participation</td>
</tr>
<tr>
<td>SG1 (public transport/passengers)</td>
</tr>
<tr>
<td>SG2 (walk/cycle)</td>
</tr>
<tr>
<td>SG3 (car essential)</td>
</tr>
<tr>
<td>SG4 (car with options)</td>
</tr>
<tr>
<td>SG5 (car with no options)</td>
</tr>
<tr>
<td>SG6 (car drop off)</td>
</tr>
</tbody>
</table>
Figure 8.0 - Flowchart summarising how the sample population was divided.
4.4 Travel diary survey

4.4.1 Introduction

Any research addressing the concerns and trends associated with the impact of travel should be based on a solid understanding of the activities giving rise to them, (Wolf et al., 2001). “The travel diary is a survey instrument designed to record all the movements during the course of one or more days including their relevant details”, (Axhausen, 1996 pp. 275).

4.4.2 Review of the information requirements

A review of the literature, (Banister and Gallent, 2002; Ison and Rye, 2003) emphasised the importance of ensuring that the travel diary, whilst being concise, still provided enough information for observations to be made. It was evident that to gain a real insight into a persons travel habits, that the travel diary would need to provide information on dimensions of their journeys other than the start point and end point. Data relating to trip length was deemed necessary, as work carried out by Bannister and Gallent, (2002) had previously suggested that “more sustainable commuting patterns must be viewed as a function of trip length and modal usage”. In order to make observations about the influence of modal choice on multi-tripping it was therefore deemed necessary to further breakdown the individual trips to identify and distinguish between the nature and length of the various stages of the trips carried out. To this end, the sample population were asked to distinguish between mileage carried out as part of the journey to work and mileage clocked up independently of the journey to work. This would complement information gathered about which subgroup acted out the greater number of independent trips. From the work carried out by Ison and Rye, (2003), the relevance of the reason for the trip – its activity categorisation – was also recognised and as such the sample were asked to record this information using the categorisation developed by Ison and Rye, (2003). An overview of the categories can be found in the appendix, section A.3. In addition to the factual diary entries, it was also thought useful to gauge how the sample felt about their ability, or not, to insert an independent activity into the journey to work, or how this activity might be affected by a change in the mode used to travel to work. The
following section details how these information requirements were incorporated into a travel diary.

4.4.3 Travel diary design

The basic requirements were that the diary exercise would be as self explanatory, concise, easy and as quick as possible to complete, (Peterson, 2003). The participants were asked to complete the diary daily, for a period of one week, Monday to Sunday inclusive. The diary approach was preferred over the recalled approach, because of the need to review participants travel habits over a whole week and as such details would less likely be forgotten, (Axhausen, 1996). It was decided to request detail over one whole week as typical travel patterns often occur in weekly cycles, (Ison and Rye, 2003). A copy of a completed sample travel diary and the corresponding instructions issued to the participants can be found in the appendix, section A.3.

4.4.4 Sample population

All respondents who indicated that they would be willing to participate in further study were initially contacted with details of the travel diary exercise. From the sixty-seven people contacted only seventeen were willing to actually partake further. Those who declined to participate cited reasons that ranged from lack of time, to being on holiday. As such, all those who responded positively were asked to participate in the travel diary exercise. Table 6.0 summarises the demographics of the sample population. As is evident from reviewing table 6.0, participants ranged across all the sub-groups identified and a cross-section of ages and commitments was evident despite the small sample population. The sample population was of sufficient diversity to allow comparable analysis not only between the sub-groups, but also within the groups, specifically between those of different ages and different distances from work.
Table 6.0 – Summary of group demographics for travel diary survey

<table>
<thead>
<tr>
<th>Reference</th>
<th>Sex</th>
<th>Age</th>
<th>Mode</th>
<th>Dependents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non car-users</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG1a</td>
<td>F</td>
<td></td>
<td>Bus</td>
<td>0</td>
</tr>
<tr>
<td>SG1b</td>
<td>M</td>
<td>44</td>
<td>Train</td>
<td>0</td>
</tr>
<tr>
<td>SG2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG2a</td>
<td>F</td>
<td>28</td>
<td>Walk</td>
<td>0</td>
</tr>
<tr>
<td>SG2b</td>
<td>F</td>
<td>46</td>
<td>Walk</td>
<td>0</td>
</tr>
<tr>
<td>SG2c</td>
<td>F</td>
<td>37</td>
<td>Walk</td>
<td>0</td>
</tr>
<tr>
<td>SG2d</td>
<td>F</td>
<td>29</td>
<td>Walk</td>
<td>0</td>
</tr>
<tr>
<td>Car Users</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG3a</td>
<td>M</td>
<td>48</td>
<td>Car</td>
<td>0</td>
</tr>
<tr>
<td>SG3b</td>
<td>M</td>
<td>51</td>
<td>Car</td>
<td>3</td>
</tr>
<tr>
<td>SG3c</td>
<td>F</td>
<td>24</td>
<td>Car</td>
<td>0</td>
</tr>
<tr>
<td>SG4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG4a</td>
<td>F</td>
<td>32</td>
<td>Car</td>
<td>0</td>
</tr>
<tr>
<td>SG4b</td>
<td>F</td>
<td>44</td>
<td>Car</td>
<td>2</td>
</tr>
<tr>
<td>SG4c</td>
<td>F</td>
<td>26</td>
<td>Car</td>
<td>0</td>
</tr>
<tr>
<td>SG5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG5a</td>
<td>M</td>
<td>19</td>
<td>Car</td>
<td>0</td>
</tr>
<tr>
<td>SG5b</td>
<td>F</td>
<td>27</td>
<td>Car</td>
<td>0</td>
</tr>
<tr>
<td>SG5c</td>
<td>F</td>
<td>25</td>
<td>Car</td>
<td>0</td>
</tr>
<tr>
<td>SG6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG6a</td>
<td>F</td>
<td>31</td>
<td>Drop off</td>
<td>0</td>
</tr>
<tr>
<td>SG6b</td>
<td>M</td>
<td>40</td>
<td>Drop off</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 6.0 cont. – Summary of group demographics for travel diary survey.
CHAPTER 5  Results and Analysis of travel diaries and future direction

5.1 Results

The results presented in the following sections are restricted to comparable analysis between and within the boundaries of the sub-groups identified in section 4.3.2. The analysis considers differences between the travel habits of employees that arose as a result of using a particular mode to get to and from work. Travel habits are expressed by the number of activities acted out and their position within the daily routine.

5.1.1 Descriptive analysis

There were a total of seventeen valid returns in the analysis of the travel diaries. Table 7.0 provides an enhanced descriptive summary of the demographic, behavioural and attitudinal context for each employee sampled. The content detailed in Table 7.0 was summarised from the initial questionnaires. This type of information provides a contextual awareness that helps to inform and explain employees actions when identifying patterns and interpreting the data, (Banister and Marshall, 2000). The diversity of the case-study population sampled will give a clear perspective of the impact of modal choice under different lifestyle and work-demand contexts, so as to qualify generalisations. Table 8.0 provides a descriptive summary of the actual travel habits of the employees, as recorded in their respective travel diaries.
Table 7.0 - Summary of relevant demographic information with potential influence on travel dynamics

<table>
<thead>
<tr>
<th>Sample</th>
<th>Background information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SG1 - Public transport (p/t)</strong></td>
<td></td>
</tr>
<tr>
<td>SG1a</td>
<td>Female, age 25, no dependants. Journey to work – 4 miles each way, travel by bus.</td>
</tr>
<tr>
<td>SG1b</td>
<td>Male, age 44, no dependants. Journey to work – 50 miles, travel by train</td>
</tr>
<tr>
<td><strong>SG2 - walk/cycle</strong></td>
<td></td>
</tr>
<tr>
<td>SG2a</td>
<td>Female, age 28, no dependants. Journey to work – 2 miles, walks</td>
</tr>
<tr>
<td>SG2b</td>
<td>Female, age 46, no dependants. Journey to work – 2.5 miles, walks</td>
</tr>
<tr>
<td>SG2c</td>
<td>Female, age 37, no dependants. Journey to work – 0.5 miles, cycles.</td>
</tr>
<tr>
<td>SG2d</td>
<td>Female, age 29, no dependants. Journey to work – 1.5 miles, walks</td>
</tr>
<tr>
<td><strong>SG3 - Car essential</strong></td>
<td></td>
</tr>
<tr>
<td>SG3a</td>
<td>Male, age 48, no dependants. Journey to work - 7 miles each way car driver – could use the bus but needs the car for his job and it’s flexible. Would consider changing mode if there were more direct bus routes or parking charges were introduced.</td>
</tr>
<tr>
<td>SG3b</td>
<td>Male, age 51, 3 dependants. Journey to work - 8 miles each way. Uses car for work, no alternative ever used – because car is essential for job. Nothing would persuade him to use P/T, and he lives too far away to walk or cycle.</td>
</tr>
<tr>
<td>SG3c</td>
<td>Female, age 24, no dependants. Journey to work – 8 miles. Occasionally uses the P&amp;R., prefers the car because of the flexibility and its cheap and easy to park near work.</td>
</tr>
<tr>
<td><strong>SG4 - Car with options</strong></td>
<td></td>
</tr>
<tr>
<td>SG4a</td>
<td>Female, age 32, no dependants. Journey to work - 3.5 miles each way, sometimes takes the bus, main reasons for taking the car is that it is cheap and easy to park nears work, and it’s flexible. Would use the bus more if it was flexible and more reliable and also better access to the site for walking or cycling.</td>
</tr>
<tr>
<td>SG4b</td>
<td>Female, age 44, 2 dependants. Journey to work – 40 miles each way. Occasionally uses the train, but prefers the car because it is cheap and easy to park near to work. More frequent train services would encourage more use.</td>
</tr>
<tr>
<td>SG4c</td>
<td>Female, age 26, no dependants. Journey to work, 9 miles - drives car, sometimes gets dropped off. Main reasons for using car cheap and flexible. Nothing would encourage her to walk or use public transport.</td>
</tr>
<tr>
<td><strong>SG5 - Car no options</strong></td>
<td></td>
</tr>
<tr>
<td>SG5a</td>
<td>Male, age 19, no dependants. Journey to work - 25 miles. Main reason for using the car is that there is a lack of alternative. He'd like to see more direct bus route and better connections, although he perceives that he lives too far away from P/T connections- he is open to suggestions though.</td>
</tr>
<tr>
<td>SG5b</td>
<td>Female, age 27, no dependants. Journey to work - 15 miles. Uses car because lack of alternative, although would consider using P/T if connections were closer. Likes using the car because it’s cheap and easy to park near work.</td>
</tr>
<tr>
<td>SG5c</td>
<td>Male, age 25, no dependants. Journey to work – 60 miles. Uses car because no alternatives.</td>
</tr>
<tr>
<td><strong>SG6 - Car drop-off/passenger</strong></td>
<td></td>
</tr>
<tr>
<td>SG6a</td>
<td>Female, age 31, no dependants. Journey to work, 4 miles – dropped off. Occasionally uses the bus.</td>
</tr>
<tr>
<td>SG6b</td>
<td>Male, age 40, no dependants. Journey to work – 8 miles – dropped off. Would consider alternative e.g. cycle if there were shower facilities on-site.</td>
</tr>
</tbody>
</table>
Table 8.0 - Summary of the sample populations' travel habits

<table>
<thead>
<tr>
<th>Sample</th>
<th>Summary of travel habits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SG1 - public transport (p/t)</strong></td>
<td></td>
</tr>
<tr>
<td>SG1a</td>
<td>No stops for any activities on the way to/from work. Activities are primarily incorporated into the lunch hour and done so on foot, and are categorised as shopping or services. The proportion of activities carried out at the weekend, half of all activities, are connected with socialising.</td>
</tr>
<tr>
<td>SG1b</td>
<td>No stops for any activities on the way to/from work. A minimal amount of activities carried out during the week, most acted out at the weekend and connected with socialising.</td>
</tr>
<tr>
<td><strong>SG2 - walk/cycle</strong></td>
<td></td>
</tr>
<tr>
<td>SG2a</td>
<td>From the 10 journeys to/from work no activities were carried out as part of those journeys. 15 miles a week by foot. Goes into own every lunch time to do shopping. 5 separate shopping trips a week plus weekly shop is done as a separate trip after work (6 miles). 6 trips over a period of 1 week attributed to shopping.</td>
</tr>
<tr>
<td>SG2b</td>
<td>From the 10 journeys to/from work, 4 activities incorporated, primarily categorised as shopping. The remainder of activities categorised as shopping or service are acted out as part of the lunch hour. No activities carried out in the evenings. Weekend activities are usually of a social nature.</td>
</tr>
<tr>
<td>SG2c</td>
<td>Cycles to work – only 3 activities incorporated into the journey to work, categorised as recreational (gym). All Shopping is carried out after work in the car – 8 separate independent journey per week, activities carried out during the lunch hour make up only 1 journey.</td>
</tr>
<tr>
<td>SG2d</td>
<td>Very low proportion of activities incorporated into the journey to work 2 of 10 trips). Remainder incorporated into the evening period. 4 trips at lunchtime - on foot. Weekly shop done at weekend.</td>
</tr>
<tr>
<td><strong>SG3 - Car essential</strong></td>
<td></td>
</tr>
<tr>
<td>SG3a</td>
<td>Of the 10 journeys to work – 8 activities are carried out as part of this journey. All his shopping is done on the way home from work, and he says that all of these journeys would still need to be carried out if he couldn’t take the car.</td>
</tr>
<tr>
<td>SG3b</td>
<td>3 activities incorporated into the journey to work from a total of 5 activities from the working week and 24 for the whole week. Activites carried out during the lunch hour correspond with days when the he is out and about in the car. the majority of activities are acted out over the weekend period and are primarily social and recreational in their nature.</td>
</tr>
<tr>
<td>SG3c</td>
<td>All journeys during the week are either carried out on the journey to/from work or at lunchtime (on foot). These are primarily connected with shopping and service activities. Socialising activities carried out at the weekend only.</td>
</tr>
<tr>
<td><strong>SG4 - Car with options</strong></td>
<td></td>
</tr>
<tr>
<td>SG4a</td>
<td>Carries our all her social and recreational activities on the way home from work. Activities connected with shopping and services split between the journey to work and lunchtime. Lunch time activities carried out on foot.</td>
</tr>
<tr>
<td>SG4b</td>
<td>Limited incorporation of activities onto the journey to work, (NB distance). Most carried out during the week, in the evenings, any lunch -time activity carried out on foot, but dependant on work commitments</td>
</tr>
<tr>
<td>SG4c</td>
<td>Incorporates her activities into the journey to work – i.e. gym, shopping. Activities at the weekend restricted to socialising.</td>
</tr>
<tr>
<td><strong>SG5 - Car no options</strong></td>
<td></td>
</tr>
<tr>
<td>SG5a</td>
<td>No activities carried out on the way to or from work. Uses most evenings for socialising and shopping once a week. No lunch time activities recorded.</td>
</tr>
<tr>
<td>SG5b</td>
<td>Carries out shopping and services on three separate occasions during the week. All her activities during the working week are carried out as part of</td>
</tr>
</tbody>
</table>
Sample | Summary of travel habits
--- | ---
| | the journey to/from work.
| SG5c | 2 of 6 activities carried out on the journey to/from work (NB distance). No lunchtime activities incorporated into schedule. Activities at the weekend limited to socialising.

**SG6 – Car (drop-off/passenger)**

| | |
| SG6a | 1 of 10 activities acted out as part of the journey to work, no lunch time activities.
| SG6b | 1 of 3 activities carried out as part of the journey to work. No lunch time activities. Predominantly carries out activities of a social, shopping nature at the weekend.

Table 8.0 cont. - Summary of travel habits of sample population.

The analysis stage consisted of looking for patterns that reappeared among the various groups, with the aim of preparing statements supported by the available evidence, (Krueger, 1988). In preparing the statements which follow, evidence which repeated itself and was common to several participants was sought and noted, although individual experiences or perceptions were not ignored, as they might provide useful information for future analysis, (Krueger 1988). The nature of analysis along with the interesting points thrown up are detailed below.

Figure 9.0 summarises the total number of activities acted out as part of the journey to work for car-users and non car-users. Figure 10.0 illustrates the proportion of activities incorporated into the journey to/from work by each of the sample population relative to the total number of activities acted out during the working week, this provides a percentage figure for the 'multi-trip rate' for Monday to Friday.

![Figure 9.0 - Summary of total number of activities incorporated into the journey to work for car-users and non car-users.](image_url)
Figure 10.0 - Summary the multi-trip rate for each employee sampled for Monday - Friday inclusive.

Figure 9.0 and the more detailed Figure 10.0 demonstrate that there is a significant difference between the non car-users and the car users in relation to the number of activities carried out as part of the journey to and from work. Within the main-group of non car-users it is notable that those who travel by public transport, and those who are dropped off at work exhibit a lower percentage multi-trip rate than those who walk or cycle. For car users, although the total average multi-trip rate is higher across all the sub-groups than for non car-users, it is notable that SG4b and SG5c have a significantly lower multi-trip rate than the remainder. The relative trip distance of these employees may be of relevance, (refer back to Table 8.0). The implication of this will be further discussed in section 5.2.

The proportion of activities acted out during the lunch break, is illustrated in Figure 11.0. Total number of activities acted out over a seven-day period are plotted alongside the number of lunchtime activities for each of the sample population.
This analysis revealed a pattern influenced by modal choice, with non car-users having incorporated more activities into this period. All employees, no matter which mode used to get to work acted out their lunch time activities on foot (refer back to Table 8.0).

The potential influence of gender of the activities acted was also recognised. Figure 12.0 illustrates that relationship. The analysis showed that overall females typically acted out more activities than men, by a ratio of (62:38).

Figure 11.0 – Proportion of activities incorporated into the lunch hour

Figure 12.0 - Percentage proportion of activities acted out by males and females.
Earlier analysis suggested that trip distance may have a possible influence on activities acted out as part of the journey to work. Closer analysis of this is illustrated in Figure 13.0.

![Figure 13.0 - Relationship between distance travelled to work and number of activities acted out.](image)

What this analysis reveals is that there is a slight trend indicating that as the distance travelled to/from work decreases, then number of activities incorporated into the journey to/from work increases. This not a clear cut trend however and there are exceptions, N.B. SG1a, SG3b and SG2d.

Analysis into statements recorded about the perceived ability of the sample of being able, or not, to incorporate activities not connected to the journey to work with that journey revealed that, for the most part, the activities were perceived as not being able to be incorporated into the journey to work anyway. This may be because of habits developed of going to certain shops etc. based on the most convenient option provided by the mode. If the mode changed then it is reasonable to assume that in time the places frequented may change for certain things, this feeling was alluded to by statements in the travel diary replies.
5.2 Discussion

Section 5.1 presented a descriptive analysis of various relationships revealed by the travel diaries. This section aims to present what has been learnt or confirmed by the empirical data and discuss the implications of the trends and relationships observed on overall travel habits.

The assumption from the literature reviewed in chapter two and three was that non car-users would amass travel miles equal to or greater than those displaced by switching from a car to non car mode for the journey to work because of their need to make up for a loss in the flexibility to carry out activities as multi-trips when taking the car to work, (Curtis, 1996; Ison and Rye, 2003; ). The following hypothesis was borne in mind during this discussion of the results.

‘WTP effectiveness in reducing overall travel is diminished due to overall travel commitments - if people change their mode of preference and lose the flexibility they are accustomed to then they will substitute for this with increased travel independently of the journey to work.’

5.2.1 Car-users vs. Non car-users

By comparing the sample population of car-users and non car-users (see Figure 9.0), it became apparent that overall there was a significant difference between the total number of activities acted out as part of the journey to work for these main-groups. At first glance this is in accordance with the literature as it upholds the suggestion that non car-users have a decreased flexibility. However, by comparing this pattern with the analysis of the percentage of activities carried out during the lunch hour we see that non-car-users carry out a significantly higher proportion of activities during this period, and do so on foot. This suggests, that those who walk, cycle or use public transport have adapted their recreational, shopping and social requirements to complement their particular mode. Whilst the journey to work may not as flexible as if carried out by car, it is not reasonable to assume, in this case, that the activities are displaced with car-use during other periods. From this preliminary comparison of travel habits between the main-groups of car users and non-car users it becomes
apparent that the displacement impact of switching from the car to an alternative from of transport, on overall travel reduction, is perhaps less significant than first thought. Further, in response to attempts to gauge how activities might be incorporated into the journey to work by non car-users if they were able to use the car, most indicated that the activity would not be on the car route, therefore not included, however, this was qualified with the statement that alternative facilities would probably be sought. These observations have important implications for the contribution of WTPs to travel reduction, as it suggests that people will adapt their behaviour to complement the mode chosen to make travel as efficient as possible. As such, the objectives of WTPs to switch and substitute car travel for other modes, is a more useful tool in the drive towards travel reduction than may have been first thought.

5.2.2 Non car-users

On closer analysis of the non car-user, it becomes apparent that those who opt for public transport are less likely to incorporate activities into their journey to work than those who walk or cycle. In the case of SG1b (an older man with no dependants) this lack of activity led multi-trips could be a gender or age related pattern, rather than being related to the fact travel is carried out by public transport. However, this pattern was mirrored by SG1a, who acted out a comparable number of activities over the week as the walkers and the cyclists of a comparable age and gender type, (refer back to table. 8.0). On its own, this would suggest that persons who switch to public transport are not likely to see as straight-forward a reduction in overall travel as those who switch to walking or cycling. This is more than just the fact bus travel still constitutes travel in the sense it contributes to pollution emissions. The significance of this observation becomes clear when analysed alongside data about relative trip lengths of the journey to work. What becomes apparent is that the percentage proportion of travel by car in miles displaced by using public transport compared to the proportion of extra travel incurred by car in miles, greatly increases the greater the trip from the workplace. This has consequences for those who travel a short distance, e.g. by bus as the overall reduction in the number of miles travelled when corrected for any additional independent trips, is less than for those who use public transport over longer distances, e.g. by train. It is therefore possible that the benefits of switching to public transport in terms of overall travel reduction are only significant
for long journeys conversely the impact of not multi-tripping is less the further you live from work.

### 5.2.3 Cyclists vs. walkers vs. public transport users.

Figure 10.0 illustrated the comparable ease with which activities are incorporated into the journey to/from work for cyclists, walkers and those who opt for public transport. The results show, that for the sample population, the cycle option is less flexible than for those who walk, although more flexible than those who travel by public transport trips over short distances. This suggests that over mid-range distances, for those employees with similar demographics and outside commitments, a switch to cycling would be preferable to public transport, and for short distances, walking is preferable to cycling. This has implications for present evaluation because switching to cycling is often seen as being on a par with switching to walking in terms of their resulting contribution to travel reduction. Further, by considering the relative trip distances of the journey to work and independent journeys it is evident the benefits of cycling, walking or using public transport to get to work more easily be counteracted by a single independent trip, such as one to the supermarket, a fact which is crucial to travel reduction evaluation, and further illustrates the benefits of a broadened evaluation approach.

### 5.2.4 Car-users

For car-users, those with and without options this distinction is defined according to the distance of their journey to the workplace, and the subsequent reduction in public transport options available to them. From the previous discussion the different implications on travel reduction should they switch from the car would mean that the impact on travel reduction will be less than for those who live far away because of the relative trip distance involved of independent trips and the journey to work.

Those without options have a lower multi-trip rate, i.e. a greater proportion of journeys are carried out independently, but in terms of those independent journeys contribution to their overall travel per car miles, the proportion is significantly less than those with options, because of they average distance for work. This suggests that
if car users with options were to change their mode of travel then their contribution to travel reduction would be minimal, because of the complicated relationship with regard to their contribution to overall travel reduction

No option car users, who generally tend to live further away from the workplace, if they could find a way to switch their journey to work away from the car despite the fact that they may not multi-trip and carry out more independent journeys, because of the relative trip distances involved, their impact on travel reduction would be significant. This has implications for travel reduction evaluation in the sense that, historically the goal has been to get people out of car and the people who live nearby (i.e. with options) are seen as the easier targets for change at the outset, (Energy Efficiency Best Practice guidelines, 2000). This analysis shows that whilst WTP may be successful in removing cars from the car park, it is this group that has the greatest potential to counteract overall travel reduction by independent travel.

Despite this complex relationship between the mode with which travel to work is acted out, the positive contributions of WTP measures are still evident. The complexity however, brings to the forefront the necessity to evaluate for travel reduction over all travel. Evaluation would certainly benefit from being able to provide better quality data about this contribution to vindicate its role in transportation strategies. The research confirms that evaluation of travel reduction cannot be compartmentalised within the boundaries of the workplace but the implications of measures implemented need to be evaluated within the context of travel as a whole, (Curtis, 1996).

5.3 Future Evaluation

5.3.1 Introduction

The previous section provided empirical evidence to support the positive contribution of WTP to travel reduction. It also demonstrated the complex nature and inter-relationship between modal choice and travel habit. This has gone some way to wards justifying the need to evaluate WTP using indicators which promote outcomes about
overall travel reduction. This section outlines suggestions against which evaluation could be measured in future in order achieve higher quality data.

5.3.2 Suggestions for an alternative framework

It is important to point out that despite the inadequacies detailed relating to current evaluation methodologies, and their ability to provide data of a sufficient quality to inform travel reduction evaluation, there are a number of elements in the present methodologies that are still fundamentally appropriate. Specifically these include the "recognition of the necessity for a baseline measure of staff travel behaviour prior to travel plan implementation by carrying out a full or sample travel survey of employees", (DfT, 2002b pp.7). It is also considered necessary to incorporate a "comparable measure of staff travel behaviour collected some time, normally a year after the plan implementation, and repeated periodically thereafter", (DfT 2002b pp.7). Data that is collected within the context of not just present and historical data trends, but also predicted data trends is also worthwhile, (DANTE consortium, 1998, DfT, 2002b). This leads to the conclusion that the actual process framework for evaluating travel plans is adequate, it is the choice of indicators and how they are applied to achieve the desired outcomes that needs to be developed. In order to progress the evaluation of WTP to measure travel reduction, it is necessary to develop aspirations which encompass more rigorous specifications against which to evaluate.

From the earlier analysis it was recognised that the broader scope of the 'Mosaic' framework had the elements necessary to provide data on travel reduction, however it was rarely applied, (DfT, 2002b). In particular, it recognised the need to evaluate the impacts of the system as a whole. What this research has shown is that, in the context of travel reduction evaluation, the ‘system’ should be defined as ‘more than just the journey to work’ and as having ‘global environmental impacts which need to be measured, not just local pollutions and congestion impacts’.

This desire to evaluate impacts on the system as a whole draws parallels with the objectives of sustainable development. The National Sustainable Objectives state that for development to be sustainable then consideration needs to be made of:
Social progress which recognises the needs of the environment,
Effective protection of the environment,
Prudent use of natural resources, and
Maintenance of high and stable levels of economic growth

(DETR, 1999c)

As sustainable objectives become increasingly synonymous with transport planning (DETR, 1998a; Docherty and Shaw, 2003), to be able to adapt evaluation methodologies to encompass measures against one or more of these sustainable objectives, using appropriate indicators lends itself favourably to simultaneously providing information on travel reduction and sustainable development. A study by Andersen et al., (2004) touched upon this by adopting indicators for assessing travel reduction based on the realisation that "different transport alternatives have different consequences in the elements considered relevant to evaluation of sustainable development, namely the environment, social and economic aspects", (Anderson et al., 2004 pp.45). By virtue of their nature, the four sustainable objectives outlined above would serve to satisfy as a coherent, guiding framework fostering evaluation which would incorporate the elements of the 'system' that need to be monitored to provide data on travel reduction. This parallelism between evaluating for travel reduction and evaluating against the National Sustainable Objectives is illustrated by Figure 14.0, which compares the National Sustainable Development objectives (DETR, 1998c), with the three steps to travel reduction outlined by Banister and Marshall (2000). Potential indicators have been incorporated in Figure 14.0, drawn from the study by Andersen et al., (2004), and the applicability of these indicators is discussed below.
Figure 14.0 - Applicability of the sustainable objectives to act as a guiding framework against which travel reduction may be evaluated.
5.3.3 Evaluation - development of alternative indicators

The development of indicators is a difficult issue because of the danger that the indicators can distort priorities and distort actions, (DETR, 1999b). Typically, “those things which are being measured and reported are viewed as more important, while things which are less readily measured, are omitted and given lower priority” and further, “people can find ingenious ways of improving the measure, without improving the actual performance, (DETR, 1999b).

Current WTP evaluation indicators position themselves solely within the boundaries of journeys connected to the workplace, thus distorting or only reflecting success in terms of the journey to work, and ignoring secondary implications shown as being wholly relevant. Of particular interest to this research and particularly the question of whether improved information on travel reduction and simultaneous data on the quality of the environment is achievable, is using indicators suggested by Anderson et al., (2004). Andersen et al., (2004) developed indicators that addressed the evaluation of environmental, economic and social consequences of different transport scenarios in quite some detail for a city under 3 different scenarios - no change, improved public transport and a sustainability strategy. Andersen et al., (2004) supposed that each transport alternative can be measured using an indicator like ‘accumulated transport per person/km/year’ which in turn can be related to indicators representing the environment, time-use and land-use which in turn represent sustainable development. See Figure 15.0. below. Of particular relevance to providing data on travel reduction within a global context, the conversion of accumulated overall transport movements by employees into a CO₂ equivalent figure is most applicable. This data on equivalent CO₂ could be deduced by making assumptions based on yearly estimates from data on travel habits collated over a representative period. It is satisfactory to do this over a period of seven days, (Litwin, 1995). In time WTP evaluation could then progress to include conversion of time use and land use into equivalent indicators for the social and economic strands of sustainable development.
A primary difficulty to any evaluation programme is lack of monitoring data. The Steer Davies Gleave, (2001), study found that of 63% of businesses that have a travel plan had not started monitoring. Of those that had, there was a wide variation in what they were doing to monitor plans. The implications for an increasingly elaborate monitoring approach is not favourable, but this research has shown that the benefits and the outcomes which would be provided would make the time and effort expended worthwhile.

TRANSPORT ALTERNATIVE

e.g. car, bus, train, motorbike

can be measured using the indicator: ‘accumulated transport performed (person km/year)’ for all travel

CONSEQUENCES:

1) Environment as defined by indicators such as e.g Energy use (direct/indirect); Carbon Dioxide emissions, NOx emissions and PM emissions

2) Land use – direct and indirect use.

3) Time Use – total time that makes individual movements possible.

Figure 15.0 – Possible application of indicators (adapted from Andersen et al., (2004).
The aim of this research was to investigate workplace travel plans' contribution to overall travel reduction, and raise and answer questions as to whether evaluation methodologies provide the necessary information to determine travel reduction, and secondly whether WTP focused measures impact on travel habits a whole. This was initiated through evaluation of current evaluation methodologies and analysis of travel habits associated with various modes of transport used for the journey to/from work. Possible directions for advancement of current evaluation methodologies were suggested within the context of addressing global impacts. This was discussed both in terms of evaluating for overall travel reduction, but also in terms of future evaluation in conjunction with sustainable objectives.

WTPs are one of many measures currently adopted to tackle the impact of travel. Whilst not directly aimed at reducing overall travel, rather localised congestion and pollution, a lot of energy is expended in developing, monitoring and evaluating the measures implemented which with little adjustment could also provide quality data on overall travel reduction. Since their guiding frameworks are not aligned with the present day objectives laid down by transportation and sustainable strategies, the contribution of their measures and the impact of modal shift on overall travel reduction is relatively unknown. It is a commonly held that they to little to contribute to overall travel reduction because of the associated displacement of travel they foster, as such, they are often are perceived as doing little to enhance travel reduction.

One of the main problems at present is that in order for WTPs to find a role within current transportation strategies tailored towards travel reduction, their evaluation methodologies need to be able to provide a better quality of information. From the literature it became obvious that one of the main conclusions about current evaluation methodologies was that they neither had the scope or the inclination to address travel reduction per se., specifically with a bias towards evaluating the success of process outcomes rather than actual outcomes.
Further, the actual capacity for WTP measures to contribute positively to travel reduction as well as local congestion and pollution issues was not well documented. The relationship between modes of transport and their influence, if any, on subsequent journeys was unsure. People recognised the likelihood that journeys may be displaced thus negating the benefits of modal switching, (Banister and Marshall, 2000) and therefore their apparent inadequacy as solutions to global transport issues. Case study evaluation, did not uphold this and indicated that despite the fact that journeys may be switched there would still be some benefit to be gained from these measures in contributing to travel reduction, in particular the longer the journey the less the counteracting effect of the displaced journeys on overall travel reduction. Whilst it is recognised that the benefits of switching transportation mode for the journey to work are variable, dependant mainly on the journey length, the case study showed that there is a significant relationship between independent journeys and the journey to work. The implications were clear, in order for WTP evaluation to contribute meaningful data to travel evaluation the implications of travel on the system as a whole needed to be evaluated. The recommended evaluation direction which was discussed, based on the objectives of the National Sustainable Development objectives, provided a more applicable direction which could work alongside and enhance the current Mosaic evaluation framework. A possible evaluation methodology and corresponding indicators were presented which embraced the elements discussed, and provided a more coherent integration of WTP into wider issues by having a more focused integrated and cohesive evaluation at its centre.

As yet, the understanding of this subject is limited: the research reported here takes a step towards understanding the complex relationship between modal choice and travel behaviour, but its lack of applicability to circumstances other than city-centre locations is understood. The need to examine the relationship further, and to expand the knowledge about the true impact of WTP measures through the gathering and evaluation of higher quality information has been demonstrated as worthwhile.
References


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ECMT, (1997), CO₂ Emissions from Transport. European Conference of Ministers of Transport. OECD.


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WSP Development, (2002). Whitefriars Office Development Plan - Travel Plan Jarrold and Sons Ltd.
Appendices

A.1 Travel Questionnaire
A.2 Questionnaire Results
A.3 Travel Diary
A.4 Introductions
Appendix A.1 - Sample Travel Questionnaire

Travel Questionnaire

As part of a research project looking into the contribution of workplace travel plans to overall travel reduction, and the requirement for Jarrolds Properties to monitor travel to the St. James Court development annually, this questionnaire aims to provide information on the split between different means of transport and attitudes to transport alternatives.

The survey offers you the opportunity to comment on any issues relevant to your journey to work and to influence future developments. Additionally, information gathered will contribute to advancing present knowledge on the evaluation of workplace travel plans and their subsequent influence on personal travel patterns.

Survey data will be treated in strict confidence and we would be grateful if as many people as possible return the completed questionnaire by the 1st July 2004. The questionnaire should take no longer than 5 minutes and completed questionnaires will be entered into a draw for a bottle of champagne.

1. At what time do you normally arrive at work? 09.00am
2. At what time do you normally leave work? 05.00pm

3. How do you travel to and from work? (Please tick one option only)

   N.B This question relates to the method by which you most often use e.g. 4 out of 5 days a week. Where a journey may involve more than one form e.g. cycle/train/walk, please place a tick against the form of transport which represents the greatest proportion in terms of time e.g. train.

<table>
<thead>
<tr>
<th>To</th>
<th>From</th>
<th>Number:</th>
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<tbody>
<tr>
<td>Bus</td>
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<tr>
<td>Bicycle</td>
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<td></td>
</tr>
<tr>
<td>'Park and Ride'</td>
<td></td>
<td>P&amp;R route:</td>
</tr>
<tr>
<td>Car (as driver)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car (as a passenger with another site employee)</td>
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</tr>
<tr>
<td>Car (dropped off)</td>
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<tr>
<td>On foot</td>
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<tr>
<td>Motorbike</td>
<td></td>
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<tr>
<td>Train</td>
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<tr>
<td>Other (please state)</td>
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</tr>
</tbody>
</table>

4. How far do you travel to work? miles
5. How long does it usually take you? minutes
6. Which of the following do you occasionally use to get to work instead of your predominant form of transport as stated in Q.3? (please tick no more than two and give a reason e.g. seasonal variations in weather)

   N.B This question relates to an alternate form being used for the portion of your journey which takes the longest. e.g. 1 day a week you may take the bus, this would involve using the following forms of transport - walk/bus/walk – in this case place a tick against bus.

<table>
<thead>
<tr>
<th>To</th>
<th>From</th>
<th>Reason:</th>
</tr>
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<tbody>
<tr>
<td>Bus</td>
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<tr>
<td>Bicycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'Park and Ride'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car (as driver)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car (as a passenger with another site employee)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car (dropped off)</td>
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<tr>
<td>On foot</td>
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<tr>
<td>Motorbike</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please state below)</td>
<td></td>
<td></td>
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</tbody>
</table>
If you drive a car or motorcycle to work regularly (more than once a week) please complete all the following questions. If you use an alternate mode – please skip to Q. 11

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. What is the main reason for using a car to get to and from work?</td>
<td>Car essential to perform job \nNeed to go out on personal business during the day \nDropping off/collecting children \nHealth/ mobility reasons \nLack of alternative \nIt is easy to park at or close to work \nIt is cheap \nIt is quick \nFlexible \nHabit \nDon’t like public transport \nOther (please state below)</td>
</tr>
<tr>
<td>8. Which of the following changes would most encourage you to use public transport?</td>
<td>More direct bus routes \nMore frequent reliable bus route \nDiscounted passes/tickets \nMore frequent train service \nBetter bus and train connections between home/work \nImproved public transport information \nCleaner buses and trains \nIncreased or introduction of parking/congestion charges either at work or nearby car parks \nEnvironmental concerns \nNothing would encourage me to travel to work by public transport \nOther (please state below)</td>
</tr>
<tr>
<td>9. Which of the following would encourage you to walk, cycle or car share to work?</td>
<td>Not an option – live too far away \nBetter lighting \nBetter information alternatives \nBetter lock up facilities for cycles \nShower facilities on site \nIncreased parking charges \nBetter access to the site by foot and cycle \nPreferential parking for car sharing \nOther (please state below)</td>
</tr>
</tbody>
</table>
10. If you were given specific advice on options available to you for your journey to work, would you consider implementing the suggestions made? (please tick)
   - Yes
   - No (if No please state why below)

11. Have you changed the mode of transport by which you travel to work since moving to Whitefriars (please tick)
   - Yes
   - No

12. If Yes, was this as a direct result of? (please tick no more than two)
   - Measures introduced at the site (e.g. showers)
   - Public transport option improved
   - Change in home location closer to work
   - Change in job requirements
   - Parking place made available (please state where)
   - Parking place made unavailable
   - Acquisition of personal car
   - Disposal of personal car
   - Changes in travel time
   - Changes to travel cost
   - Environmental concerns
   - Not applicable
   - Other (please state)

13. How did you travel to work before you changed to your present form of transport?
   - Bus
   - Bicycle
   - 'Park and Ride'
   - Car (as driver)
   - Car (as a passenger with another site employee)
   - Car (dropped off)
   - On foot
   - Motorbike
   - Train
   - Other (please state)

14. Would you be prepared to take part in further travel-related research?
   - Yes (if yes please answer the following questions)
   - No

Name:  Number of dependants:  
Company:  Age:  
E-mail address:  

Please return completed questionnaires either by e-mail to nicola.davies@uea.ac.uk or via St. James Mill reception.  
Thank you for your co-operation.
Appendix A.2 - Detailed results of initial questionnaire

Question 3 - Preferred Mode of Travel

![Pie Chart illustrating preferred mode of travel to work for employees at WOD](image)

Figure A.1 – Pie Chart illustrating preferred mode of travel to work for employees at WOD

Question 4 - Average distance to work per mode

![Pie Chart illustrating average distance to work travelled per mode](image)

Figure A.2 - Average distance to work travelled per mode
Question 7 - What is the main reason for using your car to get to/from work?

![Main reasons for using car](image)

Figure A.3 - Main reasons for using the car to get to work.

Question 8 - Which of the following would encourage you to use public transport to get to work?

![Car Users feedback - What would encourage greater public transport (P/T)](image)

Figure A.4 - Reasons which would encourage greater public transport use.
Question 9 - Which of the following would encourage you to walk, cycle or car-share to work?

![Pie chart showing reasons for preferring to walk, cycle or car-share to work.]

Figure A.5 - Preferred incentives for car-users to walk, cycle or car-share to work.

Question 11- Have you changed the mode of transport by which you travel to work in the last two years?

![Pie chart showing percentage of sample population who've changed their mode of transport.]

Figure A.6 - Percentage of sample population who've changed the mode by which they travel to work in the last two years
Appendix A.3 - Travel Diary Instructions and sample copy

PUBLIC TRANSPORT - Bus, Train, Park and Ride, Car share as passenger/drop off (SG1/SG6)

Thank you for your participation in the travel questionnaire. In addition to the information gained from the travel survey we are also conducting further research into how the method of travel people choose for the journey to work influences overall travel habits.

You indicated on your questionnaire that you would be willing to participate in further study, and as such you’ve been randomly selected to take part in the next stage. Selection was based purely on the way you travel to work and data used will be confidential.

This next stage consists of completing a travel diary for one week, and the purpose of this email is to ascertain whether you are still willing to participate. Your commitment will involve logging your movements for one week (Monday to Sunday) and should include both trips which are connected and unconnected with work.

An example of the type of information and the depth of detail required is shown in the sample diary below. It should take only a few minutes each morning to update the diary from the previous day.

I would be grateful if you could respond to this e-mail confirming whether you are still willing to participate. Please reply by the 9th July as the survey is timed to run from July 12, running through until 18 July. A blank template for you to fill in will be sent subject to confirmation of your participation. Participants will be entered into a draw for a bottle of champagne and some chocolates.

Notes for completion
- Please complete for 1 week – Monday through to Sunday
- Please complete for all trips however small and by whatever means
- Please complete all trips which involve yourself
- The following key outlines the activity headings from which you should select to fill in column 8 of the diary. Some examples of activities which may fall within each heading are also given. Please select an activity heading for each portion of a journey – i.e acknowledge every stop you may make from your ultimate start point to the ultimate end point of the journey

<table>
<thead>
<tr>
<th>Activity Heading</th>
<th>Examples of the types of activities which fall within the heading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td>Work</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Drop off/Pick up children from school</td>
</tr>
</tbody>
</table>
Drop off/Pick up children from an outside school activity

**Shopping /services**
- Major grocery,
- Minor grocery
- Convenience store
- Personal services
- Banking/ ATM
- Video rental store

**Recreation/ Entertainment**
- Fitness centre
- Golf
- Bars
- Movies/Theatres
- Hobbies

**Social**
- Visiting friends at home

- **Planned / Unplanned** (was it a spur of the moment or had you planned to carry out this activity more than 12 hours in advance)
<table>
<thead>
<tr>
<th>Date</th>
<th>Time Start / Stop</th>
<th>Distance (miles)</th>
<th>Date</th>
<th>Time Start / Stop</th>
<th>Distance (miles)</th>
<th>Activity Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/06/04</td>
<td>07:30 08:30</td>
<td>5</td>
<td>12/06/04</td>
<td>16:00 17:00</td>
<td>5</td>
<td>Work Planned N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12/06/04</td>
<td>18:00 18:15</td>
<td>6</td>
<td>Work Planned Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12/06/04</td>
<td>19:00 19:15</td>
<td>6</td>
<td>Shopping Planned Yes</td>
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<tr>
<td>12/06/04</td>
<td>07:30 08:30</td>
<td>5</td>
<td>12/06/04</td>
<td>16:00 17:00</td>
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<td>5</td>
<td>13/06/04</td>
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<td>13/06/04</td>
<td>19:30 19:35</td>
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<tr>
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<tr>
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<td>16:00 17:00</td>
<td>5</td>
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</tbody>
</table>

Continue to fill in diary as above for the duration of the survey (7 days)
Appendix A.4 – Different introductions

**St. James Mill**
Jarrold is supporting the major carbon reduction project (CRed) which has been established at the UEA. As part of this support a survey is being conducted across all the offices on the Whitefriars site to gather information on the split between different means of transport and attitudes to transport alternatives.

The survey offers you the opportunity to comment on any issues relevant to your journey to work and to influence future developments. Additionally, information gathered will contribute to advancing present knowledge on the evaluation of workplace travel plans and their subsequent influence on personal travel patterns.

Survey data will be treated in strict confidence and we would be grateful if as many people as possible return the completed questionnaire by the 1st July 2004. The questionnaire should take no longer than 5 minutes and completed questionnaires will be entered into a draw for a bottle of champagne.

**Jarrolds and NJP**
As detailed in the last Jarrold newsletter the company is participating in a survey to establish the impact of different means of transport on carbon dioxide emissions. This survey is being conducted across all the offices on the Whitefriars site and the questionnaire aims to gather information on the split between different means of transport and attitudes to transport alternatives.

The survey offers you the opportunity to comment on any issues relevant to your journey to work and to influence future developments. Additionally, information gathered will contribute to advancing present knowledge on the evaluation of workplace travel plans and their subsequent influence on personal travel patterns. It will also contribute to our programme of continuous improvement under our Environmental Management System (ISO 14001)

Survey data will be treated in strict confidence and we would be grateful if as many people as possible return the completed questionnaire by the 1st July 2004. The questionnaire should take no longer than 5 minutes and completed questionnaires will be entered into a draw for a bottle of champagne.

**Other**
As part of a research project looking into the contribution of workplace travel plans to overall travel reduction, and the requirement for Jarrolds Properties to monitor travel to the St. James Court development annually, this questionnaire aims to provide information on the split between different means of transport and attitudes to transport alternatives.

The survey offers you the opportunity to comment on any issues relevant to your journey to work and to influence future developments. Additionally, information gathered will contribute to advancing present knowledge on the evaluation of workplace travel plans and their subsequent influence on personal travel patterns.

Survey data will be treated in strict confidence and we would be grateful if as many people as possible return the completed questionnaire by the 26th June 2004. The questionnaire should take no longer than 5 minutes and completed questionnaires will be entered into a draw for a bottle of champagne.