THE DEVELOPMENT AND IMPLEMENTATION PROCESSES OF A TRAVEL PLAN WITHIN THE CONTEXT OF A LARGE ORGANISATION: USING AN EMBEDDED CASE STUDY APPROACH

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A thesis submitted for fulfilment of
the University of Hertfordshire Requirements
for the degree of Doctor of Philosophy

February 2012

The research programme was carried out in the
Division of Geography & Environmental Sciences, Faculty of Life Sciences,
University of Hertfordshire

Dedicated to the memory of
Simon John Copsey
21.05.1975-17.08.2000

Abstract

Transport Policy in the United Kingdom from the 1950s to the early 1990s has been focused on increasing car use at the expense of investment in public transport services and infrastructure. This has culminated in a poorly integrated public transport network that has seen continued decline in use outside of London. The Competition Act (1998) has exacerbated this, as public operators risked prosecution if they were seen to collaborate. A policy shift in 1998 introduced the concept of Local Transport Plans, Organisational Travel Plans and Quality Partnerships as local policy tools for developing and implementing travel solutions using the planning process. Travel Plans today are viewed by the UK Government as a local delivery tool for transport policy, inspired by the successes in Europe and the United States in changing individual travel behaviour, where the Smart Growth Agenda has emerged as a mass transit based planning response to urban sprawl. In the UK, success in delivering significant modal shift away from private car use has seen limited success, hence the rationale for this research.

Using this wider policy context, this research uses the University of Hertfordshire as a case study with the objective to research the development and implementation processes of a Travel Plan. The research conducts a review of travel behaviour within the case study, providing recommendations for implementing alternative interventions to car-based travel. Making use of national policy tools, using insights from both Smarter Travel / Smarter Choice agenda, the research includes the development process of a complex city wide Quality Partnership – a delivery mechanism for travel behaviour change incorporating multiple stakeholders.

This thesis uses an embedded and reflective critical realist approach to researching Travel Plans from the perspective of a Travel Plan Coordinator. Through applying a multi-method dimension to empirical data collection, the use of structured quantitative commuter surveys, semi structured qualitative interviews and supporting secondary data sources are all utilised. Using such an approach provides the research with the flexibility for reporting complex social and empirical data, including the researcher's embedded reflective insights throughout the process.

An evaluative matrix 'lens' has been developed for reporting back the multitude of factors, including identifying Critical Success Factors and Key Performance Indicators that underpin the success or failure of such travel planning approaches. The research culminates in the development of a Travel Plan for the University of Hertfordshire and a voluntary Quality Partnership for the City and District of St Albans.

A conclusion is drawn based on the unique perspective of an embedded reflective researcher as an active practitioner in the field of travel planning. In order to be successful a Travel Plan should feed into the wider quality partnership structures for mutual benefit where multiple stakeholders are able to influence the development of interventions at the local level, which could lead to significant travel behaviour changes. It is argued that this will ultimately help Travel Plans and quality partnerships achieve their key performance objectives and help meet government policy agenda.

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Acknowledgements

First I would like to express my appreciation to my supervisor Dr Richard Southern for his continued support, guidance and friendship throughout this research. In the difficult and challenging times, you were always there and I will always be grateful and thankful of your knowledge and time committed to my research. Without this, I would not have been able to keep going. I would also like to thank Max Wade and Janet Dickinson who supported me in the preliminary stages of the study and to Debbie Pearlman-Hougie for the philosophical discussions.

I would like to thank the University of Hertfordshire, Vauxhall Motors and the Quality Network Partnership 'Network St Albans' for allowing the use of their work to form part of this thesis. I am also most appreciative of the contribution made by all the interviewees who shared their knowledge, experiences and insights into travel planning and formed an important part of data collection. Thanks also go to the many individuals, too numerous to name, who played a part in the completion of this research.

My particular thanks go to Dr Stephen Joseph (Campaign for Better Transport), John Sykes and John Elliott for their professionalism, input and ongoing support. Particular thanks go to Joanna Elvy and Sharon Nandawula for their help and guidance in Geographical Information Systems. A particular thank you goes to Jamie Cecil for his support and advice on GIS analysis, as well as his kindness in helping read through the thesis towards the end of the written stages.

In terms of those I work closely with, particular thanks go to my line manager(s) Stephen Boffey and Nicola Corrigan for them allowing me to complete my studies as part of my role. To Sue Walsh and John Conlon, thank you for the chats, proof reading and much needed coffee breaks.

To my wider family, I am most grateful to my Mum and Dad for their ongoing support throughout this research. To Stephen, Denise and my nieces Samantha, Victoria and Lauren and to Andrew, Vanessa, Harry and Kate, thank you for being there in your own special way.

Finally I wish to thank my beautiful wife Helly for her patience and unwavering support in the writing of this thesis. To James, thank you for the great joy and many smiles you provided along the way. Without you two, I would not have been able to achieve the work I have.

Chapter One - Introduction

1.0   Introduction

This research project is concerned with the development and implementation processes of a Travel Plan (TP) for the University of Hertfordshire using an embedded approach made possible by the appointment of the researcher as the University's TP Coordinator for the duration of the research. Such an approach will be shown to be innovative as it seeks to fill a current gap in research on Travel Plans (TPs), namely a practitioner focused reflective analysis of the development and implementation processes. This, it is believed, will add to the understanding and utility of TPs for the future both in terms of research and application.

The embedded approach allows for the development of an iterative research process to evolve, whilst at the same time, making use of two additional case studies to inform the process. This further allows for a comparative approach to emerge in the development of the TP. The two additional case studies used are a Quality Partnership (Network St Albans) within the City and District of St Albans - a second tier local authority comprising a multi-sector complex transport network, and Vauxhall Motors Ltd - a large commercial firm. Combining these two case studies with a public sector organisation facilitates a wider research framework that will provide a unique, reflective and analytical review of TP development and implementation.

The University of Hertfordshire is located in Hatfield and is a major employer within the county with over 2,400 staff and a turnover of £231 million. As a large Higher Education Institution (HEI) within the UK, the University is a leading business-facing organisation and is regarded as an exemplar of this type (the University won The Times Higher 'Entrpreneurial University' award in 2010). With a community of over 27,700 students including more than 2,900 international students from 85 different countries; the University has a global network of over 170,000 alumni (UH Annual Report, 2011).

Network St Albans is a (Voluntary) Quality Partnership (QP) based in the City and District of St Albans. The researcher acts as the Executive Assistant (EA) to the Chair of the QP. The University has strong historical ties with the area, having had a campus located within the district. The EA role facilitates and manages both the development and implementation of the QPs aims and objectives.

Vauxhall Motors Ltd. is a large private sector manufacturing organisation originally based in the Borough of Luton. At the outset of this research project, the company was actively engaged with the University of Hertfordshire to undertake the development of their TP. The researcher

was employed for this specific task. This had been the original focus of the research, but subsequent events that led to the closure of the company's manufacturing plant in Luton (BBC, 2000), meant that the TP was abandoned in the early stages of the research. However, the initial scoping and development phases, which included qualitative interviews with employees, remain useful tools for informing the development of the TP for the University.

The three case studies were used by the researcher for a comparative analysis, in order to address the robustness of a TP when considering political, economic, sociological, technical, legislative and environmental impacts on their development and implementation. Furthermore, the role that the researcher played in each case study, lends itself to a unique perspective that provides a real and distinctive contribution to knowledge, namely an approach that at once combines a comparative study within a reflective, embedded narrative. The three case studies provide the setting and sources for collection of both primary and secondary data, using both quantitative and qualitative methodologies. This is exemplified by the use of primary qualitative data obtained through the use of semi-structured interviews with representatives from a range of sectors and organisations, including Hertfordshire County Council, Matra British Aerospace Dynamics, the John Lewis Partnership and London Luton Airport Ltd. The location of these primary data collection sources is geographically represented in Figure 1.1.
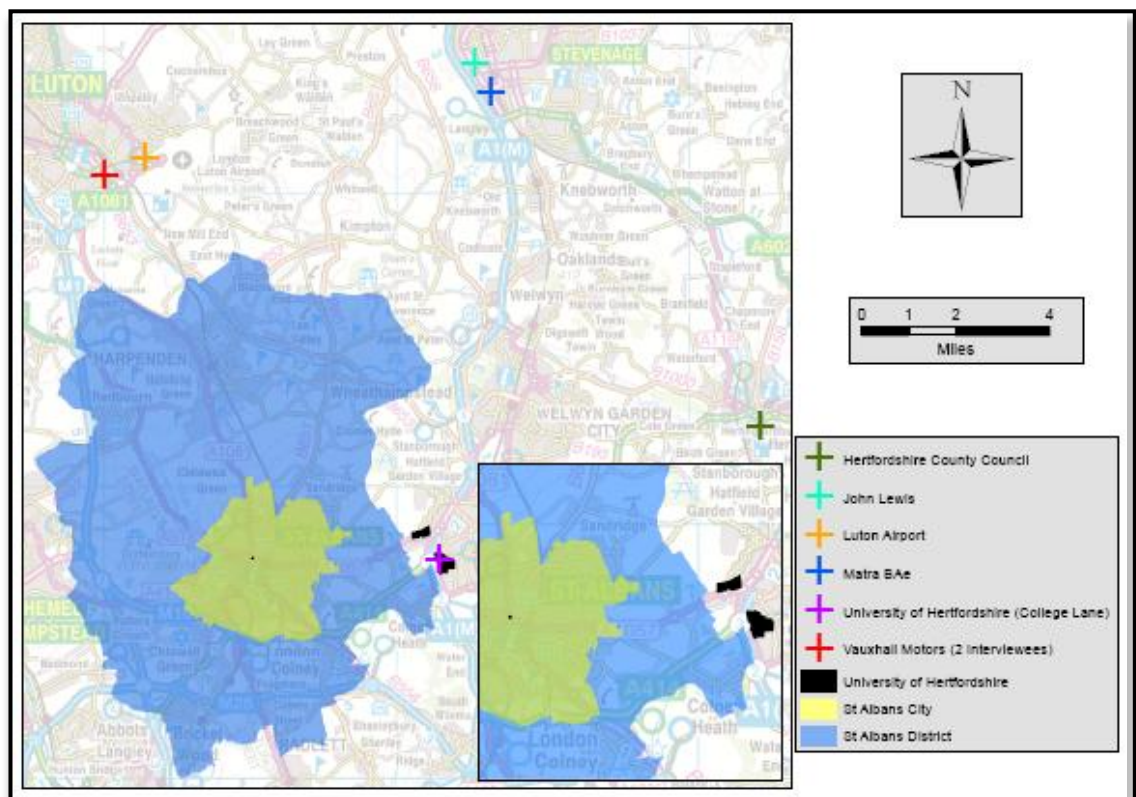
Figure 1.1 Geographical Location of Primary Quantitative and Qualitative Data Sources

An additional reason for approaching external sources, other than the primary case studies, was to identify if commonalities or differences arose from TPs being developed and implemented within different organisations and sectors. Thus, the research aimed to further the existing understanding of the complexity of TPs.

Throughout this thesis, for the purpose of analysis, a critical narrative discussion has been incorporated and the term 'complexity' has been utilised to describe these issues. This embedded narrative aims to provide a critical commentary surrounding the complexity of issues that emerged throughout the research process, and to further the existing understanding and knowledge of TPs, from the perspective of an embedded researcher.

1.1 Background to Research Development

Within initial discussions at the onset of the research, management at Vauxhall Motors recognised their Corporate Social Responsibility (CSR) obligations to their stakeholders[1] when dealing with the company's environmental impacts. This was emphasised in 1996, when the then Chairman, Nick Reilly (1996-2001), issued Vauxhall's (then) Environmental Affairs Department a challenge to:

> *"find a way to publicly demonstrate Vauxhall Motors*
> *concern for the environment"* (Reilly, 1996).

One of the outcomes of this challenge was to implement an Environmental Management System (EMS) to manage the environmental aspects generated by the company and impacts imposed as a result of them. Within this framework, this research project was jointly commissioned to develop and implement a TP in collaboration with the University of Hertfordshire. Broad objectives for the collaboration were for Vauxhall Motors to have a TP strategy developed and where possible implemented. The researcher, through applied investigation would have access to this process, albeit acting as an external 'consultant' for the company, to use as a case study to undertake research. The researcher would not be directly employed, or completely embedded within the organisation. The basis for undertaking this project is an interest in identifying and understanding the 'complexity' of issues involved with first developing, and then introducing a TP within a large organisation, that previously did not have one. This opportunity provided a chance to report a unique insight into the processes and issues that impact on this development and implementation phase of a TP, within the business environment.

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[1] Stakeholders include, staff, shareholders, customers, local authorities, etc.

Through initial project development discussions with representatives from Vauxhall Motors, as the researcher, I proposed that I be directly based within the company. The intention being that I position myself within the 'acting' role of a TP Coordinator. I strongly felt that in order to achieve some meaningful results, I needed to fulfil the role as an employee, for the purposes of undertaking an applied and embedded approach, as proposed by the philosophical underpinning of the research. As the researcher, I felt this to be important in developing, and if possible, to implementing a fully working TP, based from the 'real life' perspective and experiences gained from working directly for an organisation.

However, my organisational supervisor based at Vauxhall stated that I would not have either the position or title of TP Coordinator within the organisation, and that it would be unlikely that such as role would emerge at the end of the research. I would merely have a role as a research advisor to developing possible aspects of a TP, and that implementation of any proposed measures emerging from the process would need to go through the Environmental Affairs office [the department responsible for environmental issues in 2001]. *This arrangement concerned me, as it gave me little opportunity to implement and/or monitor change.*

Reflective Diary Box 1.1 Developing an Embedded Approach

During the initial stages of the research, it was also made clear at subsequent Steering Group meetings that the focus of the work was changing from researching commuter based research into TPs towards that of freight. This emerged without any direction being provided by the research process, but rather by internal political events. As freight was deemed the biggest issue for the company, commuter travel was regarded as less important and should be less of a priority. It was often said at these initial meetings by my work place supervisor:

"freight is what we do, we should concentrate on that" (pers. comm. Galley, 2000)

From the outset, I was concerned that the research focus was shifting away from the intended topic that I was interested in researching. I was aware that instead of being directly engaged and involved in the development and direction that the research was taking, it was instead being led by events. At the time I was not aware of the impact these would have on the final outcomes.

Reflective Diary Box 1.2 Developing a Research Direction

With the closure of the Vauxhall manufacturing plant announced in late 2001, it became clear why it was difficult to become embedded within an organisation that was making half of its workforce redundant. Commuter transport was no longer a major concern for the organisation, and the research project was no longer of great importance to the company.

From my perspective as a researcher, whilst I still wanted to continue research into commuter TPs, I felt despondent and without a case study. My principal supervisor had also just announced she was moving on, and I felt in a difficult position about what to do and that the research was going nowhere. I no longer had an organisation to embed myself in, although I felt this was not being achieved at Vauxhall in any case.

I had to search for another organisation for a case study where I could continue the research. Until such a time I had to suspend the research process and look for part time employment. Fortunately, by undertaking my scoping exercise with other organisations (outlined further in Chapter Four), *I was able to secure a part time role in the University of Hertfordshire's emerging Environment Team, as in 2002 the organisation required a TP outline to be written for planning consent for what would become its new de Havilland campus. This fortuitous opportunity led my research down the path it has since taken and from where the outcomes emerged.*

As a result of writing a TP for the University's planning consent, I was employed in 2004 as the University's TP Coordinator because of the need to implement the plan. This role allowed me to reengage with the research, and ultimately to embed myself within a large organisation. For the purpose of both developing and implementing a TP, the original aim of working within a large organisation and being embedded, whilst undertaking my research was eventually achieved nearly four years after beginning the research process.

Reflective Diary Box 1.3 Research Suspension and Case Study Substitution

Business and political changes occurred that altered the focus of government policy and with it the course of the research. One substantial change occurred with the amendment to the Transport Act in 2008. The Act re-invigorated the concept of Quality Partnerships (QPs) and Quality Contracts (QCs), for the provision of public transport services. This Act outlines, through guidance, the mechanisms by which Local Authorities and public transport operators can work together in partnership. Such QPs or QCs are aimed at improving public transport provision within a defined area or public transport corridor (DfT, 2008). This new legislation

revision has provided this research with the opportunity to position itself within the process of establishing and developing such a QP within a Hertfordshire district (St Albans City and District Council - SADC). Thus, to engage in research that aims to investigate linking individual organisational TPs with the development of city-wide multi sector TP, linking these within the framework of QPs.

This policy development could not be ignored in the context of large companies, such as the University of Hertfordshire developing their TP. As such, the development of the University's TP will be contextualised in the light of recent changes to this legislation, and more specifically, by using a case study of the development (and initial implementation stages) of such a voluntary QP. This aspect of the research begins to bring together, in an applied manner, the model of using TPs, set within an area wide model. This fits in with the proposals set out by the North American SMART Growth Agenda (Reeds, 2011), European models to local transport delivery (as outlined by Whitelegg, 2011; Rye, 2002) as well as the United Kingdom's Smarter Choices (Cairns *et al.,* 2004 & 2008). All these approaches promote possible solutions to solving local transport issues within towns and city environments (Whitelegg, 2011; Sloman, 2006).

This thesis provides a critical narrative on how a major organisation, such as the University of Hertfordshire, fits into the new 'localism' agenda for the 'integrated' delivery of local transport. If successful, this integrated approach to TP development and public transport improvements within QPs, could provide a real and viable alternative to which employee commuter travel could benefit, and thus meet modal spilt targets set within such organisational TP documents. The approach used has wider implications, in that it attempts to provide an exemplar case study for local authorities and central government to learn from. If successful, then future national and local transport policy, with its real or perceived *'Traffic Jam'*, has the potential to achieve real change to travel behaviour and a reduction to its associated carbon emissions (Reeds, 2011; Docherty & Shaw *et al.,* 2008; DfT, 2007; Sloman, 2006; Cairns *et al.*, 2004 & 2008). This can at least begin to be addressed through the implementation of such delivery frameworks and mechanisms, as are proposed from this research.

1.2   Research Framework

In order to understand the issues that surround developing and implementing measures within a TP, a multi methods (triangulation) approach was adopted from the perspective of a Critical Realist. Using a specific case study as a reference point, other supporting case studies were also included as part of the research. The researcher employed an embedded position as Travel Plan Coordinator within a specific HEI case study setting, utilising an iterative and emergent process

for reporting, using a reflective narrative within an applied methodological framework (as outlined in Chapter Three). This triangulated approach to research makes use of both quantitative and qualitative methodological tools (as outlined in Chapter Four).

The impact of researcher positionality within the research process and government policy are also considered and discussed within the context of TPs. Researcher positionality and government policy (Chapter Two) feed into and form the structure for the conceptual framework developed for the whole research process - the aim being to improve understanding and develop greater knowledge of TPs, especially with reference to their limits and validity. This part of the research provides the contextual and philosophical underpinnings for the thesis. Developing from this conceptual framework, the methodology applied then follows an 'outcomes approach' for reporting results obtained from quantitative and qualitative data collection methods. Methods adopted are outlined within Chapter Four, with Figure 4.1 providing a diagrammatic overview of the data sources.

Results are reported back in the analysis sections using 'emergent' themed headings, referred to within the research and conceptual framework as the 'complexity'. This 'complexity' (Chapters Five & Six) provides the framework under which the broad themed headings for data presentation are analysed and discussed. The remaining chapters (Seven & Eight) within the thesis provide the discussion and conclusions. Recommendations for implementing a TP are reported here (Chapter Seven) with conclusions, evaluation and self-reflection completing the final section (Chapter Eight).

1.3   Case Study

A case study focuses on a particular phenomenon, with the researcher aiming to provide an in-depth account of events, relationships and the experiences of processes occurring in a particular instance. The use of a case study allows for the researcher to buy into a set of related ideas and preferences which, when combined, give the approach its distinctive character (as outlined by Denscombe, 2007 – for further detail see Chapter Four). The primary case study for reporting within the framework of the research has been the University of Hertfordshire. However, as the embedded Travel Plan Coordinator role developed for the University, the researcher acted in an external role as Executive Assistant to a developing Quality Partnership in the local City of St Albans (Figure 1.1). This additional case study provided a wider research context setting for the emergent outcome design that the research adopted.

1.3.1 University of Hertfordshire

As a major employer and business in Hertfordshire, the University has a significant impact on the environmental, social and economic aspects for the local Hatfield area. Since becoming a HEI in 1992, the University became a large traffic generator, which has led to a significant impact on the environment, quality of life and economic diversity of the local area. The University has recognised transport is a significant issue and is committed to working in partnership with local authorities and stakeholders, in order to achieve a reduced impact from transport in its surrounding district. This has resulted in the culmination and development of its own bus company, branded UNO (Section 6.4).

In addition, as part of its campus re-development, the University had to secure planning permission through the production of a TP to look at ways of reducing its negative social and environmental aspects. Prior to developing a TP in early 2000, the University employed an Environmental Manager to begin to develop an Environmental Strategy, to include a policy and a mechanism for delivery in the form of an Environmental Management System (EMS). It is this structured system that provides the continual improvement framework for developing a TP and reporting its progress within the University's reporting structure.

Prior to developing a formal TP document, the University set up its bus company (UNO) in 1992 as an intercampus shuttle to meet the need for serving the University's campuses in Hatfield, St Albans, Hertford and Watford. In addition, bus services were created to provide student nurses with attractive and viable alternatives to the private motorcar, for accessing major National Health Service facilities throughout Hertfordshire and into North London. This additional mode of transport also provided the University with an attractive alternative to the private car for travel to the University's campuses for other staff and student groups, whilst also providing the local community with a public transport service (pers. comm., Waters, 2009).

Before setting up the bus company, the University did try to negotiate with private bus operators to provide extra services, but found this to be an expensive option, with companies unwilling to engage in providing the required network. Therefore, in 1992 the University made the decision to establish its own bus service and network. Universitybus (as is was known then) developed a route network to the major towns around Hatfield, including Watford, Welwyn Garden City, St Albans, Luton, Hertford and into North London (*ibid.*) (see Figure 6.4).

In 2005, the bus service was re-branded 'UNO' and has become a major operator in South and Central Hertfordshire, with 97 buses at its disposal to provide Park & Ride/intercampus shuttle services for the University and commercial services over the areas outlined (*ibid.*). UNO is now

the second largest commercial bus operator in Hertfordshire and is probably the largest university bus operation in the world; bigger even than many of the services run by the giant US universities (*ibid.*). In addition, the University, UNO and the researcher have been major partners in the development of the UK's first voluntary Quality Partnership (QP), which was launched in April 2009. This partnership is outlined and discussed in-depth as an emergent multi sector network case study. It is this QP that also forms the basis and direction of this thesis.

With the development of its campuses on the former de Havilland British Aerospace (BAe) re-development site, and latterly the opening of its new Student Forum Building in September 2009, and Law School in 2011, the University has provided the opportunity for this research to undertake a co-ordinated approach to developing and implementing a set of TP initiatives. This opportunity has allowed for the linking of these initiatives with the embedded research undertaken and outlined in this thesis. The overall aims of the University TP are to develop and enhance alternative modes of transport to that of the private motor car, through promotion and provision to its stakeholders, whilst reducing the impact of single occupancy car use in the local community, through changing behaviour and more latterly through reducing carbon emissions. The University's TP has been developed with the intention of outlining how the University can act as an environmental champion within its local community, whilst building on the success it has already achieved in tackling the travel issues related to its campuses, prior to this research.

Detailed methodological approaches for development of the TP are outlined in Chapter Four. Employee and student commuter surveys were conducted between 2002-2011, with results presented and critically analysed within the analysis section (Chapter Six). Qualitative interviews, internal company reports and external consultancy data have also been utilised and reported throughout the thesis (Chapters Five & Six).

1.3.2   St Albans City & District

The study area for this case study partnership is based within the historic Cathedral City of St Albans, which is approximately 10 kilometres North West of the London boundary and 30 kilometres from Central London. St Albans City is one of a series of settlements in South Hertfordshire, all of which have a population of between 20,000 and 100,000. They include the towns of Watford, Hatfield, Hertford, Hemel Hempstead, St Albans and Welwyn Garden City (HCC, 2011).

There is extensive travel between these various towns with the outer London suburbs just to the south (*ibid.*). There is a motorway network including the M25 and radial motorways to the rest

of the country transecting the area, together with variable and widespread traffic congestion (Reeds, 2011). There are also the main line railway lines to the midlands, the north and Scotland, as well as local commuter lines. Apart from the high frequency train services to Central London, Harpenden, Luton and Bedford there is relatively limited public transport. In particular the bus services available have been shaped over recent years by UK legislation that has focussed on how the bus industry operates rather than how services are provided. There are also limited east-west transport connections across the county.

In addition to developing and implementing the University's own TP, a working relationship was developed with the St Albans City and District Local Strategic Partnership (LSP) as part of role of working with the local community. The LSP identified gaps (listed below) for partnership work to be conducted within the city and either takes a lead or delegates this to partners.

i.   Providing accessible facilities and activities for young people
ii.   Helping to build the capacity of the voluntary and community sector to provide preventative and support services
iii. Encouraging and promoting community engagement and participation
iv.   Promoting sustainable local economic development
v.   Meeting the needs of an ageing population
vi.   Reducing environmental impact
vii. Reducing inequalities

After initial discussions were held with the LSP, it was agreed by partners that a Voluntary Quality Network Partnership would be developed (as opposed to a statutory one), to begin to outline a strategy for implementing change to local public transport delivery. It is the process of setting up the partnership, and the researcher's direct involvement in its development and ultimate implementation, that is presented within the framework of this research thesis.

The data provided by the case study are in the form of a commuter survey undertaken in 2007, minutes of partnership board meetings and subsequent working groups, which developed as a result of the partnership. This also provides qualitative data for reporting and analysing the partnership's work in the context of local transport planning.

1.3.3   Vauxhall Motors Ltd.

Vauxhall Motors is owned by the American car manufacturing company General Motors (GM) and is integrated into GM Europe (GME). The company began manufacturing vehicles in

London in 1903 moving to Luton in 1905, where it manufactured vehicles for domestic and international markets (Vauxhall Motors, 1999).

The company owned four sites: two production and assembly facilities, one at Luton, Bedfordshire, which closed in April 2002 and the other at Ellesmere Port in Cheshire. The company has an administration headquarters (Griffin House) situated in South-East Luton, and an Aftersales Centre at Toddington, North Luton, which is responsible for spare part storage and distribution to UK and EU dealerships. In addition to these sites, IBC Vehicles has a plant located adjacent to Vauxhall's Luton site. IBC Vehicles is a sister company to Vauxhall, it also being owned by General Motors. There were roughly 8,200 people employed by Vauxhall Motors/IBC Vehicles within the UK. Just fewer than 4,200 people were employed between the Luton sites, 2,662 at IBC Vehicles, 741 at Aftersales and 800 within Griffin House. The remaining 4,000 are employed at Ellesmere Port (pers. comm., Moxey, 2001).

Vauxhall runs its own freight vehicle fleet of 43 tractor units that are leased from Scania, and 62 trailer units leased from Transamerica (pers. comm., Lawton, 2001). These are based at the Luton and Ellesmere Port sites. Vauxhall also sub-contract out freight services to Caratrans and Christian Salvesen. Previous initiatives implemented by the company in relation to freight have included goods movement by rail freight, driver training and schemes to improve fuel efficiency. From initial discussions at meetings with the Freight Logistics Manager, it was clear that there was no overall strategy at Vauxhall, which coordinated such freight initiatives. Vauxhall has implemented and supported various sustainability initiatives (ISO14001, EMS, BiE, Sigma and Stakeholder dialogue,), and was keen to be the first car manufacturer to develop and implement a comprehensive TP, with the company keen "to lead and be seen to lead on the environmental front" (pers. comm., Moxey, 2000). As a large manufacturing company the potential to gain economic and environmental benefits from implementing such a strategy were greater than if a small organisation were to be studied (Coleman, 2000).

At the outset of the project, it was envisaged that for the development stages of the TP, data would be collected to include employee commuting, business travel / fleet management and freight transport. However, owing to the unforeseen closure of the plant, this proposed data collection did not occur for this case study. Interviews with company representatives were undertaken and included for reporting and discussion purposes within Chapter Five. During the initial scoping out phases of the research project, it became clear that whilst an attempt to cover all aspects of transport (commuter, business travel & freight/fleet) would initially be attempted, the primary focus of the thesis is concentrated on the commuting aspect. This became the

primarily focus once the Vauxhall case study was replaced by the University as the main case study for reporting against.

1.4   Research Aim

To investigate the development and implementation processes of a Travel Plans within the context of large organisations using an applied and embedded (emergent) research approach.

1.5   Research Objectives

Specific objectives of the research are:

i)   to determine the key alternative and most appropriate options in developing and implementing Travel Plans

ii)   to identify the Critical Success Factors (CSF) and Key Performance Indicators (KPI) for a specific Travel Plan

iii)   to assess the implementation of individual interventions and identify the specific issues that affected the development of these initiatives within the context of a Quality Partnership.

1.6   Thesis Structure

The thesis is presented using eight chapters. Chapter One introduces the researcher's background, research framework, an overview of the case studies involved and the overall aim and objectives of the research. National UK Transport policy since 1950 is contextualised against modal trends, behavioural change and environmental issues. The historical background of TPs is placed within the wider debate for delivering improvements to local transport within the context of SMART Growth and the Smarter Choice philosophies. This debate, alongside the introduction of localism within the Planning Framework and the introduction of the Local Sustainable Transport Fund, are covered within Chapter Two. Chapter Three addresses the philosophical underpinnings and research framework that form the methodological design process. The chapter outlines in detail the approaches used in designing the applied, embedded (emergent) research framework. Methodological tools developed for data collection and analyses and the limitations of the research, are outlined within Chapter Four. Chapters Five and Six provide the focus for analysis of the case studies used. Chapter Seven presents further discussion and a forum for outlining the contribution of this thesis in furthering the understanding and knowledge of TPs within the wider business environment. Chapter Eight provides the final conclusions to the research project, with an evaluation and recommendations.

1.7   Summary

This chapter has set out the overall background to the research, providing a research framework and an introduction to the case study organisations (University of Hertfordshire) and the wider complex network Quality Partnership (Network St Albans) that the researcher became embedded within. The aim and objectives are stated and the overall conceptual framework is outlined. Finally, this first chapter provides a structure for the thesis that follows, in order to help in its understanding. The chapter that follows provides a contextual focus that places this research into TPs within the wider context of local transport policy and provision. The impact of urban sprawl that has resulted from historical transport policy, underpins the international sustainability agenda. This international context leads into the issue of sustainable local solutions, in which organisations and individuals have to respond. Corporate Social Responsibility (CSR) and Environmental Management Systems (EMS) are considered as part of this section, in terms of the organisational structures to which TPs can be appended.

Chapter Two – Contextual Literature Review

2.0 Introduction

This chapter outlines existing research within the framework of organisational Travel Plans (TPs), government policy and impacts imposed by transport activities undertaken by organisations and their employees, in order to inform and contextualise this thesis. Further, the historical underpinning that has shaped transport policy is outlined in order to provide a contextual basis from which to explore contemporary issues - for instance, transport planning at a local level with the introduction of TPs into the workplace.

Transport Planning is concerned with preparing, assessing and implementing central and local government policies, plans and projects in order to improve the way in which transport systems and their supporting infrastructure is delivered and managed (Sloman, 2006). Many academic authors have identified limitations with the governance, finance and delivery of change to this transport infrastructure and provision of these network systems. These are considered as key issues in creating sustainable communities through integrated networks within these locations (Reeds, 2011; Dennis & Urry, 2009; Docherty & Shaw, 2008; Sloman, 2006; Cairns *et al.,* 2004). These issues will be explored and expanded on in this chapter.

In order to begin to improve on this situation, there is a requirement by any policy maker or transport planner to acquire knowledge of how the current situation developed. Secondly, an understanding of the wider policy document and current legislation (including historical legislation) that provide powers to deliver change is required. Finally, how this knowledge is utilised and the tools needed to implement change is the third aspect to consider.

Placing the above into context, the prospective transport planner then needs to consider the wider social, economic and environmental factors in which they work, and how they impact on what is trying to be implemented. In transport terms this would refer to issues such as those between central and local government policy makers, which include civil servants and their political minister and members and the issue of managing infrastructure and policy delivery between (private) motorised versus other modes. In addition, there needs to be a consideration concerning whether a market led or interventionist approach should be adopted. In transport terms whether a 'predict and provide' road policy (market led) should take precedent over a demand management approach (interventionist) or vice versa, are all issues in which the transport planner has to operate (see Dennis & Urry, 2009).

2.1   Background to the Current Situation

The first UK road related legislation was the Statute of Winchester in 1285, which was directly aimed at ensuring safe passage for travellers, elements of which can still be seen in current day legislation as part of UK law. This Statute was superseded by subsequent legislation from the 19th, through to the 21st centuries and has placed the responsibility for managing and maintaining public highways within the jurisdiction of local government, albeit overseen by a central government department of state (Webb & Webb, 1913).

An important piece of legislation from the 19th century is the Local Government Act of 1888, which provided for directly elected councils (such as the likes of Hertfordshire and other county councils). This Act created 62 county councils, 61 borough councils as well as the London County Council. These new county councils became responsible for highways and their maintenance, and remains broadly true to this day (see Webb & Webb, 1913 for analysis of the nineteenth century reforms).

At the same time as the new elected bodies were being created in the 1880s, two other major developments were introduced to the United Kingdom – the first motor cars and the modern bicycle. The latter was initially responsible for changing social habits by increasing the geographical distance individuals could travel in a shorter timeframe; the latter would exacerbate this trend to an even greater extent from the 1950s to present day. Prior to the explosion in car use from the 1950s, roads played a secondary role to other modes of transport and communications, such as intercity trams and railway systems, the telegraph/phone, cycling and walking (Dennis & Urry, 2009; Hoyle & Knowles, 1998).

In 1909, the Roads Board was set up to build new roads and maintain existing infrastructure, but this failed to deliver its spending targets and was replaced by the Ministry of Transport in 1919, which has evolved into the modern day Department for Transport (DfT). Although county councils are responsible for local A and B roads, the Trunk Road Act of 1936 provided the legislation under which the modern day Highways Agency (HA) is responsible for managing and operating the strategic motorway network. The Truck Act 1946 added an additional 8,190 miles of highway, which began the trend of increasing the road network for an ever increasing demand for private motor vehicles in the years following the war. By the late 1930s there were over one million private motorcars on Britain's roads, but most were still out of the reach of the majority of the population, who still relied on walking, cycling or making use of buses and trams (Bressey, 1938; DfT, 2010).

2.2   The 1950s to 1970s

A combination of factors led to the mass use of the private motorcar in the 1950-60s. These included: the mass production of affordable cars, which the Ford Motor Company had begun in the 1920 onwards; the expansion of the motorway network beginning in 1958 with the Preston Bypass, with an additional thousand miles completed by 1971; the railway cuts from 1963 based on the Beeching Report *'The Reshaping of British Railways'*, resulting in more than 4,000 miles of railway track and some 3,000 stations being closed in the decade following the publication of this report. These closures added up to around a 25 per cent reduction of track and 50 per cent of all stations (Beeching Report, 1963).

The 1970s until present day have been characterised by the tensions outlined at the beginning of this literature review. This period witnessed an increase in tensions and fluctuating political views between those supporting road building set against those in favour of promoting other mass transit modes, and their supporting infrastructure. At the beginning of the 1970s the first beginnings of an environmental movement began to emerge (Friends of the Earth for example), who began campaigning and protesting against expanding the road network (including Aire Valley, Hornchurch, Epping among others) (Dennis & Urry, 2009; Sloman, 2006; Docherty & Shaw, 2008; Hoyle & Knowles, 1998).

In addition to environmental protest groups, the 1970s also witnessed the emergence of the 'middle classes' challenging government road building policy, such as the Winchester M3 extension. The 1973 oil crisis increased concerns about secure oil supplies and price fluctuations, and promoted the then government to acknowledge that energy efficiency and conservation should be a national objective. In direct relation to this, no recognised legislation or policy was set out regarding alternatives to the inefficient consumption of the private motor car (*ibid.)*

However, the late 1970s witnessed two interesting, if not significant developments to government policy: First, the DoT White Paper (1977), *Transport Policy* identified for the first time that promoting walking and cycling as modes might warrant development; Secondly, the Secretary of State outlined plans to place greater responsibility for planning and securing integrated local public transport on local authorities, they being in the best position to assess the local needs of how best to implement them. Despite these developments, more roads continued to be built (including the M25, M11 & M6) into the early to mid-1980s, when other events also impacted on the provision of public transport services (Dennis & Urry, 2009; Lyons & Goodwin, 2008).

2.3   The 1980s up to 1997

The 1985 Transport Act deregulated the provision of bus services and also privatised the National Bus Company, with its constituent operations being sold off. The stated objective of the 1985 Transport Act was to improve public transport and let private sector competition deliver what was required to meet the public's travel requirements. However, the context at the time was strongly pro-car, against planning and against local authorities and any public bodies having more than a residual role (Mackie *et al.,* 1995). This act is often quoted (outside of London and Northern Ireland), as the main obstacle to planning integrated and easily understood public transport networks. Providing multi operator ticketing (and joint marketing material) were in an instant considered, or at least perceived to be anti-competitive behaviour if provided by any operator or local authority. The risk of prosecution by the Office of Fair Trading, under the Competition Act, was threatened if operators were seen to be working together. The Act also reduced the coverage of the bus network through large bus companies acquiring smaller companies, and closing down less profitable routes that were subsidised prior to 1985 (CBT, 2007). This has worked against the introduction of such products into the market (outside of London). Integrated ticketing has been proved to increase the use of public transport, outside of the UK (Sharaby *et al.,* 2012), and is therefore a disable intervention to pursue.

Following the 1985 Transport Act, in the late 1980s the then Conservative government published a White Paper, entitled, *'Roads for Prosperity'* (1989). This paper was based on the market principles of 'predict and provide' and was focussed on dealing with the ever growing demand from private transport users. It predicted that an increase in private road traffic by up to 142 per cent would be witnessed by 2025 (DfT, 2009). This predict and provide policy, was judged necessary by the then government in dealing with the associated traffic congestion, then seen, as now, on many major road corridors. This policy came with a price tag, with total road expenditure increasing from £1.64 billion in 1990 to £2.48 billion in 1994. Road expenditure as a percentage of public expenditure rose from 1.8 to 2.5 per cent between 1985 and 1993.

This policy would see some 500 major road schemes implemented, effectively doubling the trunk road programme, but it would be abandoned by the mid-1990s for a number of reasons. What this policy failed to predict was the public outcry and in some instances prolonged protests, in terms of the impact on the environment and on the social fabric of communities directly affected. In addition, an influential report published in 1991, *'Transport: The New Realism'* argued that, it was fundamentally flawed to build more roads and that such a policy could not keep up with the pace in traffic growth. In effect, the report argued that building more roads, generated more traffic (Goodwin *et al.,* 1991).

There were additional signs of a consensus against the continued policy of road building. In 1994 the Standing Advisory Committee on Trunk Road Assessment (SACTRA) reported that induced traffic did occur, although its size and significance would be dependent on local circumstances. In essence, a road scheme would only temporarily solve traffic congestion, before it would increase to levels higher than before the scheme was implemented. This report recognised that the volume of traffic was in part a result of policy and that road capacity could not be matched to forecast demand, and that demand was not always a given. It was at this stage that the 'predict and provide' market led approach, was replaced with a demand management approach within the political arena (Purnell *et al.,* 1999). A number of published reports, prior to this, most notably the Buchanan Report in 1963, had recognised the link between providing more urban road spaced and increased traffic level, but this had gone unnoticed at the time.

In addition to the 1994 SACTRA Report, several important transport related publications began to appear, including in 1994 the 'Royal Commission on Environmental Pollution: Eighteenth Report on Transport and the Environment'. This report began by highlighting the environmental impacts associated transport. Therefore in terms of government road building policy, 1994 was pivotal in terms of a major policy turnaround (cited in Glasson *et al.,* 1999). The then Conservative government announced that simply building more roads to deal with the growth in road traffic was no longer the way forward. This occurred just five years after '*Roads for Prosperity'* (1989) and was a major step in developing what was to come in the following decade from future government transport policy (DoT, 1989).

During the mid to late 1990s, a shift began to emerge with then Conservative government, under John Major's government, when the then Transport Secretary (Dr Brian Mawhinney) began to engage with the environmental lobby. In 1995, the Secretary of State for Transport launched a debate on transport, with the objective being to reassess the balance between economic growth and environmental protection, whilst still supporting personal choice. This culminated in a consultation paper, '*Transport: the Way Ahead*' being published in 1995. During the period of the 'Great Debate', three developments were made with the preparation of the National Air Quality Strategy, the publication of Sustainable Development Indicators and the launch of the National Cycling and Walking Strategies (pers. comm. Wilkinson, 2011).

The National Cycling and Walking Strategies (DoT, 1996; DoT, 1998 respectively) adopted ambitious targets for the doubling of cycle journeys by 2005, and then doubling this again by 2012. Similar targets were set for walking. These targets had no basis in legislation with neither central nor local government placed under any legal obligation to implement them. However, 6,500 miles of national cycle paths co-ordinated by the charity SUSTRANS resulted from the

strategy. This included a £42m grant provided by the Millennium Commission. The strategy was innovative in that it was the first document from government aimed at increasing levels of cycling; it placed cycling as a mode within a wider transport framework that could provide convenient and an accessible environmentally friendly way of travelling locally within urban and suburban areas; and it aimed to work with organisations and individuals in positions of influence to encourage greater physical, attitudinal and organisational outlooks for cycling. This provided a role to cycling and environmental groups to help deliver change. In 1996, responsibility for delivering this was handed to the National Cycling Strategy Board, which was replaced by Cycling England in 2005 (*ibid.*).

2.4 Transport Policy & New Labour (1997-2010)

In May 1997, the New Labour government came to power and John Prescott was appointed as Secretary of State for the new integrated Environment and Transport Department called the Department for the Environment, Transport and the Regions (DETR). Prescott immediately began preparing a new transport white paper based on a review of transport policy, consultation papers and a series of national seminars. Academia, business, local government, trade unionist and environmental representatives were appointed to help develop the paper, with the aim to go further than previous papers. Its main outcome was aimed at integrating multi-modal transport infrastructure and networks, whilst promoting real alternatives to single occupancy car use. This paper became known as the '*Integrated Transport White Paper: A New Deal for Transport; Better for Everyone*' (DETR, 1998).

Prescott was quoted as saying:

> *'Developing an integrated transport policy represents a major shift in direction. We don't just want to stop traffic problems getting worse, we actually want to make things better for people and goods on the move.'* (John Prescott, 1997, Cited DETR, 1998. p.1)

Defining integration in terms of transport is simply to say that the government wanted to plan road, rail, air and waterways through joining policy together with land use planning as one strategy. Prior to the White Paper, the publication in 1994 of the Policy and Planning Guidance Note 13 incorporated sustainability into transport planning. Its subsequent revision in 2001, linked land use planning with transportation, the first time that this had happened (*ibid.*).

This shift was the first indication of the government's commitment to encouraging local transport planning by large organisations in the form of TPs (*ibid.*). This would form part of a planning consent required by large organisations developing new or redeveloping current sites.

In summary, the White Paper was seen as a revelation in terms of what had gone before. It proposed: placing a requirement on local authorities to draw up five year plans to cover all modes of transport; de-trunking of the trunk road network with local highway authorities becoming responsible for these sections; introducing lower speeds of 20 mph in residential streets and areas used by cyclists and pedestrians; powers for the new Mayor of London; formal quality bus partnerships in local areas, which would include powers to force bus operators to deliver multi-operator ticketing schemes.

Local Transport Plans (LTPs) were divided plans that were to be developed by county councils, unitary authorities and passenger transport authorities, which when produced were to be submitted to the DfT and Local Implementation Plans (LIPs) for London Boroughs were submitted to the Mayor of London. Transport Policy for Scotland, Wales and Northern Ireland were devolved to the regional assemblies, where different arrangements applied. The first LSPs covered 2001-2006, the second 2007-2011, with LSP three due to run between 2012-2016, but the Coalition Government discontinued LTPs, leaving local authorities to decide how to proceed, based on the new localism agenda. Most, including Hertfordshire County Council have continued to produce such plans, in the face of limited alternatives (pers. comm., Wilkinson, 2011).

The Ten Year Plan, *Transport 2010*, (published in 2000[a]) provided more policy specification on the framework put in place by the Transport White Paper (1998). This plan stressed the role that partnerships between local government and the private sector could bring to modernising the UK transport network. It details the Government's £180 billion investment programme aimed at modernising the transport system over the following decade. It outlines how schemes tackling transport related congestion, pollution, as well as detailing ways to increase viable choices for all users alongside improving safety.

This document stressed the importance of planning the transport network, using a more integrated approach than past approaches in order to bring different modes of transport together for goods and passengers. The document stressed that past increases in economic development increased demand for transport; that essentially the two go hand in hand. The increases in traffic congestion and pollution resulting from this relationship have to be tackled, with the Plan making a commitment to reducing traffic congestion at the then current levels (2000). In

addition, a commitment was made to reduce global warming greenhouse gases and improve local air quality levels through the introduction of local air quality management areas. Whether such goals are likely to be achieved is debatable if past growth trends in all modes are realised in the future. Only if a major investment and effort is made across all areas of transport to reduce traffic demand will such goals be achievable (Loffler, 1999; Hoyle & Knowles, 1998).

Docherty (2001) casts doubt on whether increased spending would have any significant impact on reducing car use. He argues that investment directed at road projects will, as with past policies, increase travel demand, plus stresses that government structures are too weak to implement the plan's objectives. He concludes by stating that, there are many 'carrots' to promote travel (particularly car use), but very few 'sticks' to prevent unnecessary mobility.

The decade between 2000 and 2010 witnessed a major leap forward in the promotion of sustainable transport when the Transport Act 2000 (DETR, 2000[b]) was enacted. This Act gave Local Authorities powers to introduce work place parking charges and road user levies, creating a direct impact on business. Under this Act, Local Authorities were also obliged to develop Local Transport Plan (LTPs) Strategies, many of which formally incorporated TPs into planning obligations (pers. comm., Wilkinson 2011). This amended Act also introduced the concept of Quality Contracts (QCs) and Quality Partnerships (QPs) between Local Authorities and bus operators, outside of the statutory environment that existed (and still exists within London and Northern Ireland). These partnerships would be encouraged to develop and improve infrastructure and service frequency along public transport corridors by LAs and operators, entering into a statutory agreement. However, because of the complexities of the Competition Act (OFT, 1998), (which in terms of public transport was introduced to increased competition between operator, and in theory to drive down ticket prices) no QPs and only a handful of QCs were taken forward (Davidson & Knowles, 2006).

Quality contracts have been seen as difficult to develop, expensive to set up and likely to generate conflict between operators, while statutory partnerships have been seen to be complex and legalistic. That said, Hertfordshire County Council did succeed in creating a voluntary partnership on public transport information provision encompassing the whole county and all operators. This "INTALINK" partnership has generally proved successful (pers. comm. Sykes, 2010).

Missing from all this legislation was the concept of public transport as a network that could compete with the car in terms of cost and convenience. The Office of Fair Trading and the Competition Act (1988) made this difficult to achieve in practice. The Act effectively prevented

multi-operator cross ticketing or co-operation on regular interval or metro style services. This, and the 1985 Transport Act, combined with a lack of ring-fenced funding and co-ordination between different tiers of local government, has led to the decline in bus use outside of London (CBT, 2009).

This lack of integration was further exacerbated by the wider impacts imposed from increased use and dependence of the private motor car. However, wider global issues, including climate change, local air quality and pollution, as well as traffic congestion in urban areas began to alter the focus of policy. Successive Government policy documents have emphasised the importance of tackling these issues and providing a good alternative to the car. As already noted, a first attempt to reform the 1985 Transport Act was made in the Transport Act 2000. This was characterised by strong lobbying between LA interests and public transport operator interests on opposing sides.

However, when it became clear that the Act had produced little change, Ministers decided to attempt a second reform. "Putting Passengers First", published in 2006, consulted on a number of measures that would make it easier to create quality partnerships and contracts. A subsequent draft Bill led to the Local Transport Act 2008. This significantly changed the application of the Competition Act to bus services, by allowing LTAs to certify in certain circumstances that if co-operation between operators was in the public interest, then partnerships could develop. It also removed the threat of fines for "anti-competitive" behaviour and aimed to make quality contracts a more realistic option, though there are still real and perceived obstacles (DfT, 2006 & 2008). In practice therefore, the Local Transport Act 2008 encourages partnership, breaks down the division between "commercial" and "tendered" services and provides LAs with more options for improving bus services (Local Transport Act 2008). It is this change to the Transport Act (2008) that provides a narrative and reflection within this thesis for the implementation of a case study Quality Partnership (Network St Albans). This framework for improving public transport within a defined region (St Albans City & District) also provides a framework for building in TP development and implementation, as espoused by the Department for Transport's 'Smarter Choices' Agenda (Cairns *et al.,* 2004).

However, with most voluntary partnerships, a major stumbling block was the operation of Competition Law with respect to bus services, applied under successive competition acts and latterly the Competition Act of 1998. These acts have been interpreted narrowly by the Office of Fair Trading and competition authorities to give priority to the interests of possible extra operators on the basis that competing services would increase frequency and reduce fares (CBT, 2009).

With LTPs and LIPs promoting the uptake of sustainable and integrated transport, and with global concerns beginning to take centre stage, this Act came at an ideal time in terms of the wider sustainability agenda. The Earth Summit in Rio de Janeiro in 1992 (and again in Johannesburg in 2002) provided the first detailed concept for working towards a sustainable framework, with Local Agenda 21 proposed as providing local solutions to global problems. In 1997, The Kyoto Protocol aimed at limiting global greenhouse gas emissions. By 2007, 175 nation states had ratified the Protocol, with 26 of these agreeing to legally binding targets for reducing targets. More recent climate conferences in Copenhagen (2009) and in Durban (2011) have attempted to increase pressure on national signatories to deliver on their targets, whilst engaging with developing countries on their emissions. The UK's own targets are set within the Climate Change Act (DECC, 2008) to achieve an 80 per cent reduction in CO_2 emissions by 2050, with an interim target set at 26 per cent by 2020.

External government reviews, including the Stern Review and the government commissioned Eddington Transport Study, were both published in 2006. The former concluded that in order to avoid the worst impacts of climate change, action needed to be immediate and international. Lack of action would have long terms economic implications, perhaps costing between 5-20 per cent of global Gross Domestic Product (GDP) – worse than the combined effect of the great depression and the two world wars. The Stern Review argued that in contrast to doing nothing, the cost of action to reduce emissions and their possible impacts would be limited to circa one per cent of global GDP each year.

The Eddington Transport study concluded that the UK's transport network was broadly adequate, and that the government should not build new infrastructure, including high-speed rail links and cross-country motorways, but look to improve existing road and rail networks. Key pressure points on the existing network needed improvements and that parts of the network, that are vital to economic success should receive investment. These included congested and growing cities, inter-urban corridors, maritime ports as well as airports. Their full cost to the environment, including their contribution to climate change, should be paid by all modes of transport. The study also stated that Eddington supported the gradual introduction of road pricing when the political environment allowed for it, and that reformation of the planning system was required to speed up the building of large infrastructure projects (Eddington, 2006; Webster *et al.,* 2006).

A government report, *Towards a Sustainable Transport System*, was published in 2007 following Stern and Eddington. This report focused on the decarbonising of transport and outlined ways to decarbonise road transport by 2050. It concluded that around 90 per cent of car

related greenhouse emissions could be reduced, through the introduction of electric vehicles, the charging infrastructure to support it and other fuel types alongside it. It stipulated that emissions should be reduced to avoid the worst effects of climate change. Between 1990 and 2005 the United Kingdom's emissions fell some six per cent, but transport's contribution increased by just over ten per cent, with no clear policy (either national or local) to reverse it (King Review, 2007).

In 2010, the Coalition government published a list of commitments relating to transport. These included a national electric vehicle (EV) recharging network; supporting sustainable travel initiatives; encouraging joint partnership work between bus operators and local authorities; embedding a low carbon economy on the back of transit led development; High Speed Rail 2 (HS2). Interestingly, there was little about highways, aviation and shipping.

In 2011[a], the DfT published a white paper 'Creating Growth, Cutting Carbon' that was aimed at promoting low carbon economic growth, through increasing the uptake of public transport, walking and cycling within urban environments. This white paper announced a fund of £560m over a four year period (between 2011 & 2015) directly for supporting local sustainable transport projects (this fund was called Local Sustainable Transport Fund).

2.5   Sustainable Development

Transport allows the movement of people, goods and services between geographical locations at a regional, national and international level. Furthermore, the ease of access to resources is essential for a nation's economy to grow and expand to become profitable and competitive. This growth is currently at the expense of the natural environment (Brundtland Commission, 1987). This environmental concern has prompted a governmental response, culminating in the Climate Change Act (2008) aimed at reducing the impacts imposed from carbon emissions by sector (including transport) on the wider environment.

The broader basis of environmental legislation arose from the concept developed around that of sustainable development, whose principals were first put forward at the Stockholm Conference (1972), as part of the United Nations Conference on the Human Environment (Brundtland Commission, 1987). It was this conference that began to place environmental issues within the context of economic and social concerns about the way resources were being consumed at an unsustainable rate. However, it was not until the Brundtland Report, published in 1987, that the concept of sustainability was brought into the mainstream of international political policy thinking. It was this report that linked human activity with resource consumption and with long term thinking about 'future generations' being able to sustain their way of life (Hillman, 2007;

Erickson *et al.,* 1999; Hughes, 1993; Brundtland, 1987). This report provided the first real example of defining sustainability, which is outlined later in this chapter.

A detailed concept of sustainable development arose from the World Commission on Environment and Development in 1983, from which the Brundtland Report, *Our Common Future* was published in 1987. Its purpose was to propose long-term global strategies for achieving sustainable development up to and beyond the year 2000. From a political stance, the EU is placing a great deal of emphasis on the concept of sustainable development. The most common definition of this is provided by the United Nations World Commission on Environment and Development as:

> *"ensuring that humanity meets the needs of the present without compromising the ability of future generations to meet their own needs"* (Brundtland Commission 1987, p.24).

In addition to the report's headline definition of sustainable development more detailed objectives were outlined as:

- social progress which recognises the needs of everyone
- effective protection of the environment
- prudent use of natural resources
- maintenance of high and stable levels of economic growth and employment.

The outcomes of the Brundtland Report were far reaching and have become important component parts of developing many areas of government policy, as well as planning the future for transport policy. The difficulty with implementing the objectives set out by Brundtland in terms of transport policy, are that past transport activities and the policies that have driven them have often gone in the face of its ideology. This links the three pillars of sustainability; social, economic and environment together in order to achieve a balance between economic growth, social equity and environmental matters (Hillman, 2007; Karl *et al*., 2003; Worsford, 2001; DETR, 1999; Loffler, 1999; Boyle & Ardill, 1998).

Increased road transport has detrimental impacts for society, economy and the environment but there are still many factors restricting enforceable combat measures from succeeding. Goodwin (1999) sets out the main issue as individuals' attitudes towards continually increasing the amount they wish to travel for work and leisure. He also highlights the negative attitudes towards public transport and sceptical attitudes towards perceived health risks and the true impact of CO_2 on global warming (Lyons & Goodwin, 2008).

Global warming is a natural phenomenon, added to by anthropological carbon emissions from industrial outputs (including transport, farming and agriculture) (DfT, 2009; Dair & Williams, 2007). The effects, although difficult to directly measure, have the potential to affect local environments at the global scale (Marsden & Rye, 2009; Karl *et al.,* 2003). United Kingdom emissions from transport account for around 24 per cent of domestic emissions, out of which about 50 per cent derive from the private motor car, or around ten per cent of all UK emissions (DfT, 2010). Contributing to these increasing levels in GHG emissions are both private car use and ownership. Both have increased rapidly since the end of the 1950s within the UK (Gardner & Abraham, 2007). The biggest challenges in terms of GHG are car usage levels, the rapid expansion of aviation and the increase in road freight (DfT, 2004; Lenzen *et al*., 2003).

As a response to the continued rises in anthropological carbon emissions, the UK government, through signing up to the Kyoto Agreement in 1997 began to develop carbon reduction policies. As a result the Climate Change Act came into law in the United Kingdom from 2008. It placed a legal commitment on the government to ensure that net UK greenhouse gases would be reduced by at least 80 per cent of the 1990 baseline year, by 2050. The Act was aimed at enabling the United Kingdom to become a low-carbon economy and provided central government powers to introduce a range of measures necessary to achieve the targets. An independent Committee on Climate Change was created under the Act to provide advice to the Government. These national targets, to be met from all sectors, aim to reduce carbon emissions from a 1990 baseline by some 20 per cent by 2020 and a further 60 per cent by 2050 (Stern, 2006). The Stern Review argues that these targets are ambitious, but are inadequate to stabilise CO_2 emissions at the required 450ppm, which are necessary to reach the requirement of 80 per cent below current levels by 2050 (*ibid.*). In order to begin to achieve this desired reduction in CO_2 targets set for 2050, Chapman (2007) argues the necessity to constrain all activities that produce CO_2 and other GHG, including reducing the number of journeys by car or other modes of transport. Such a restraint may well have economic impacts that most governments would find difficult to implement. However, the Stern Review argues that economic growth could still be achieved through a change to a more low carbon economy. To achieve such a complex change, the report argues that one per cent of Gross Domestic Product (GDP) per annum would need to be invested by all governments in alternative low carbon technologies, in order to avoid the worst environmental effects of climate change. The report continues that, a failure to invest these sums could lead to a reduction in global GDP of up to twenty per cent by 2050 (*ibid.*).

The degradation of the natural, social and economic environment as a result of activities and processes undertaken by industry, home owners/occupiers and transport is now widely acknowledged by the scientific community (Hillman, 2007; Monbiot, 2007; Worsford *et al.,*

1996; Hughes, 1993; & Brundtland, 1987). This degradation, which manifests itself as flooding, gales and unusual temperatures, has potential untold consequences on both natural and human systems. As Worsford (2001) implies, the logistics (or freight) industry will not be immune to such consequences, and has to face up to meeting the environmental challenges ahead in order to make the industry sustainable to meet the needs of future generations.

If the concept of sustainable development is accepted, and the consequences of not following its ideology are also accepted, then the distribution industry will have to change its current practices of resource consumption and environmental degradation, as outlined (Loffler, 1999; Worsford, 2001). However, it could be argued that distribution is meeting the consumer demand for more goods and services, and that it is this activity itself that has to change, if impacts from distribution are to be reduced.

During the 1980s and 1990s government policy at national and international levels began to respond to local communities concerns about the impact of manmade industrial activity, including the increased use in private and freight vehicle use (Figure 2.1), were placing on natural environments and processes. There is a healthy on-going debate from the scientific community about the true extent and impact that these activities have, and how much occurs from natural processes (Hoyle & Knowles, 1998). This is the whole debate around the issue of climate change, which is becoming widely accepted as occurring by the scientific community, even within the United States of America, where the administration has failed to sign up to the Kyoto Agreement for reducing CO_2 emissions to those of 1990 levels. The issue has now evolved from the debate on whether climate change is occurring, to that of what extent human activity (including transport) is adding to this natural process. The impact that the transport sector has on this process is a debate that is growing in significance, and practices that reduce its impact are growing in their importance. The impact that local organisational TPs can play has yet to be proven, but there has certainly been a shift in government thinking to that of promoting such tools.

Worsford (2001) points to the many environmental reports, guidelines, directives, and codes of practice, regulations and legislation as an indication of the change to UK and EU government thinking and policy. This has begun to manifest itself in legislation imposed upon all industrial sectors, including the transportation and logistics sector. Measures from the UK and EU will be instrumental for the industry by management taking the natural environment into consideration in a more positive and sensitive manner. On the ground this will mean implementing and demonstrating environmental credentials by word, deed and action, by becoming integrated as part of a company's quality management commitment through, for example, Corporate Social

Responsibility (CSR) and/or Environmental Management Systems (EMS) (Louche *et al.,* 2010; Staib, 2005; Erickson & King, 1999; Barrow, 1999).

Staib (2005) argues that good environmental and business practices are often compatible, and that for a large, medium or small company to have in place an environmental policy or EMS with targeted actions should be considered as an integral part of quality management. In this, the researcher is in agreement. If a company accepts what Staib (*et al.*) argues, then managing impacts on the environment through the implementation of an EMS is a viable option. Only with a positive commitment to improve the environment by a company/organisation, and by individuals themselves, can an organisation hope to improve its overall performance. Through continued planning, monitoring and target setting, as well as reporting (whether internally or externally) a company can achieve a management system to reduce its environmental impact, whilst potentially increasing profitability through best practice. This is achieved by way of continually reviewing its current operations to find ways to reduce its overhead costs by means of developing internal management systems that allow for such planning improvements to be encouraged among managers and individuals involved with transport operations.

2.6   Sustainable Transport

This section focuses on the published academic material that highlights the need and potential for changing travel behaviour. The increasingly high use of the private car, it is argued, needs to be reduced and that encouraging behaviour towards the greater uptake of less environmentally impacting (i.e. public transport) and sustainable modes (i.e. cycling and walking) for travelling and commuting needs to be promoted. This approach is espoused by national and global movements, including international insights that are proposed by the Smart Growth and Smarter Travel agenda from North America and Australia respectively (2009). The European perspective on transport planning, and in the UK the development of Sustainable TPs – based on town wide Smarter Travel are also outlined. To conclude, Organisational TPs are placed into this wider international and national transport context, as one possible tool for the delivery of behavioural change and carbon reduction approaches.

2.6.1   SMART Growth & Smarter Travel – An International Perspective

Smart Growth as an urban planning and transportation theory first appeared as an alternative to urban sprawl and car dependent communities in the last 20 years. The theory works on the principle of reducing urban sprawl through the introduction of Transit-orientated developments (TODs) that concentrates growth in compact urban centres that are pedestrian friendly. The term 'Smart Growth' is particularly used in North America. In Europe and particularly the UK, the

terms 'Compact City' or 'Urban Intensification' have often been used to describe similar concepts, which have begun to influence government planning policies in the UK, the Netherlands and several other European countries.

Smart Growth is centred on holistic planning of the spatial, transport and community environment. A robust regional planning policy, assisted by the localism philosophy and the increasing need to reduce energy used transporting people and goods are part of Smart Growth. For decades transport policy has been based on improving road and air networks and keeping public transport just about afloat. In his book, *Smart Growth: From Sprawl to Sustainability*, Reeds (2011) discusses the need for fixing transport within cities, as opposed to between large conurbations. This, he outlines, is where fossil fuel depletion is at its highest and most polluting. With ever increasing low density sprawl, where workers live far from their employment, they are totally dependent on low quality bus services or the motor car (*ibid.*).

Reeds argument is that fixing how transport is currently delivered in many UK cities, is the first requirement to delivering a Smart Growth Agenda. The current spending plans for High Speed Rail and motorway improvements for inter-urban transport are not the urgent areas for investment, but urban city transport is (*ibid.*). He continues on to state that the £19 billion proposed cost for providing High Speed 2 (HS2) from London to Birmingham would provide the beginning for light rail networks in all UK conurbations with over 250,000 inhabitants.

In North America, Smart Growth has begun to reverse some of the effects of urban sprawl. With increasing fuel prices and the house price crash, people can no longer afford to commute the long distances to work encouraged by suburban developments. In places such as Baltimore and Denver, the Smart Growth agenda are beginning to increase the density of towns around rail based urban and inter urban transit hubs, with the fashion for car only transit beginning to be replaced by mass transit options (Reeds, 2011), with similar trends being observed in Canada and Australia, as part of the Smarter Travel agenda emerging there.

2.6.2   Transport Planning & Travel Plans – The European & UK Perspective

TPs have been used as a management tool in the Netherlands since 1989 (Rye, 1999[a]), and are specifically aimed at tackling problems caused by car commuting and business travel, but are increasingly including other transport sectors, such as freight. TPs have a longer history in both the United States and the Netherlands, than in the United Kingdom. It was only in the late 1990s and early 2000s they started to be developed and implemented within the latter (Rye, 2008 & 1999[b]). As such most research has been carried out elsewhere, with early TPs focused on employee commuting initiatives (*ibid.*). TPs have not traditionally included research on business

travel and freight initiatives (Loffler, 1999). In the UK, employers' attitudes to TPs have not been entirely positive, with the number of private businesses implementing them in the UK around only 4 per cent (Rye *et al.,* 1998). The figure in the Netherlands is significantly higher at 15 per cent (*ibid.*). A possible cause for this difference could be owing to the greater time span for TP development in the Netherlands, central government funding and also the tradition of employer contributions to employee commuting costs, an aspect that is lacking in the UK context. Whitelegg (2011) suggests that current local authority structures are too weak to deliver the much needed structural and infrastructural changes, like those found in Northern and Southern European cities.

TPs are now important in UK government thinking on transport since the publication of the Transport White Paper (1998), as they are seen as the means of implementing government policy at the local level. In the UK there have been a number of major transport planning initiatives that have begun to influence local transport policy. These are based on the Smart Growth/Travel and the '*Smarter Choices*' philosophies. These include Sustainable Travel Towns and Cycle Demonstration Towns, as well as Travel to School, Personal Travel Planning initiatives and the introduction of the Local Sustainable Transport Fund (LSTF).

Sustainable Travel Towns have been developed in Peterborough, Worcester and Darlington on a town wide basis using the 'Smarter Choice' approach. The aim was to increase walking and cycling over a five year period (DfT, 2004). Results indicated an increase of around 14 per cent for walking, whilst cycling increased over 100 per cent and a decrease of around nine per cent for car use was reported over the same period. Around 84 million km of car travel was removed from the road, and around 17,000 tonnes of CO_2 savings were made. The findings also reported that there was no overall reduction in the number of personal trips made, which remained constant (SUSTRANS, 2009).

In 2005, Cycle Demonstration Towns were developed in Aylesbury, Brighton and Hove, Darlington, Derby, Exeter and Lancaster/Morecambe as part of Phase One. This phase received around £7m from Cycling England and has seen increases in cycling in some towns of up to 27 per cent (DfT, 2009). Phase Two, introduced in 2009, saw an additional 11 towns chosen for the renamed 'Cycle Towns' initiative, which moved the project from a pilot demonstration towards full conception.

The 'Travel to School' initiative has funded school travel advisors in Local Authorities, and has resulted in 81 per cent of schools in England developing a school TP (as of March 2009) (pers. comm., Wilkinson, 2011). There have also been a number of projects providing Personal Travel

Planning, with over 300,000 UK household being targeted. This approach, which is expensive and time consuming, aims to provide individuals with personalised travel advice and options for their commuter and personal travel. This particular scheme is promoted under the Smarter Choice agenda (DfT, 2004).

The Local Sustainable Transport Fund (LSTF), resulted from the 'Creating Growth, Cutting Carbon' White Paper (2011). This fund aimed to provide English Local Authorities (outside of London), with financial help to develop local transport solutions to support economic growth and reduce carbon in local communities. The funding available is both capital and revenue, compared with previous funding schemes (such as the Kickstart Fund, which was capital only) and supports initiatives that improve cycling, walking and integration between modes, improved public transport and traffic management schemes. Interestingly, this fund attaches importance to community participation in decision making and delivery alongside local authorities. The purpose is to draw ideas and expertise from the community and voluntary groups and develop joint funding opportunities with private organisations, including public transport operating companies.

Set against these transport initiatives, there are many examples of authors and academics that promote measures and discussions in terms of how best to deal with traffic congestion and traffic growth (Reeds, 2011; Dennis & Urry, 2009; Rye, 2008; Sloman, 2006; Cairns *et al.,* 2004). Much of the literature focuses on the need and potential for changing travel behaviour away from ever increasing private car use, to more sustainable modes (i.e. public transport, cycling and walking) for commuting. Some provide a controversial debate concerning a post car system, as espoused by Dennis & Urry (2009), although all highlight the need to work towards high density, transit based development. Reeds (2011) begins by highlighting past trends in national road building policy and that continued expansion of the network is only restricted by the lack of cash, with £2 billion worth of building plans dropped in 2009. The alternative investment proposed in 'hard shouldering' on major motorways, would only reduce the effect on speed from traffic congestion by around three and a half per cent (Goodwin, 2009 cited Reeds, 2011 pages 219-220). In his report entitled, *The Strategic Road Network Needs Strategic Policy Appraisal*, Goodwin points out that road schemes are only ever appraised in isolation and that the effect road building has in and on cities is nearly always over looked. He suggests that appraisals should consider car users whole journeys, not just the motorway element. In terms of sustainable planning within cities, Goodwin recommended that road or traffic congestion charging be implemented; his (*et al*) 'smarter choices' agenda (including personalised travel planning) be adopted (see Cairns *et al.,* 2004); improvements to public transport, cycle and pedestrian facilities be made; that road spaces be relocated to the most productive and needy

users; real time information systems be installed, improve land use planning (away from urban sprawl); and that Information Technology (IT) for tele-working, online shopping and transport management be increased.

Whilst other sectors of the economy are currently working out how to make reductions to carbon emissions in order to meet targets, transport is still lagging behind. A report for the European Environment Agency (EEA, 2010) revealed that 87.5 per cent of UK passenger transport is by car while rail attracted 6.1 per cent. Buchan (2008) estimates that UK transport carbon emissions are higher than those quoted by the UK government (around 24 per cent). If refining fuel and manufacturing vehicles are included, this figures rises to over 28 per cent. Adding international goods and passenger movements increases this to around 33 per cent, with road and aviation making up 70 and 21 per cent respectively. The motor car, Buchan claims, accounts for around a half of this figure. Whatever the exact emissions figures are, the fact remains that transport, along with perhaps procurement (which in itself includes transportation of goods and supplies), remains one of the largest contributors to be addressed in UK climate policy. However, governments of every political persuasion, continue to avoid the issue. In the UK government's national strategy for climate and energy (2009), it stated that, if in reaching an 80 per cent carbon reduction, meant hitting the individual's desire to drive or fly, then larger cuts would have to be met elsewhere. Both Goodwin and Buchan espouse simple behavioural changes, which forms part of both the Smart Growth and 'Smarter Choices' philosophies. In terms of quick wins for carbon reduction in transport terms, the Smart Growth philosophy offers potential solutions here (Reeds, 2011). Both these approaches are closely linked, with broad policy packages which should include; a public transport accessibility standard for land-use planning; a national public transport city travel-card, smarter choice schemes for workplaces; higher development densities; rail electrification and capacity improvements; air travel taxation; consistent planning for transport schemes; changes to fuel duty and vehicle efficiency; road charges for heavy goods vehicles; develop rail / road interchange sites; and investment in rail freight.

Authors such as Sloman (2006), provide many examples of the governments' lack of integrated policy in her book *'Car Sick'*. In this, she states that the governments' Ten-year Plan (2000) talks about cutting traffic in large urban areas by up to 8 per cent, whilst traffic levels have increased during this period by up to 10 per cent. Several other authors raise the issue of planning policy and transport policy in terms of their respective impacts on promoting alternatives to the car. From an Australian perspective, Mees (2000) argues that local planning for public transport infrastructure and services should be based on the density of urban areas. He argues for a *'Smart Growth'* approach to urban and transport planning (as detailed previously by

Reed, 2011), which espouses both concentrated high density urban centres which avoid urban sprawl and which encourages greater use of public transport, walking and cycling. Mees argues that public transport can be successful at altering individual behaviour away from greater car use, but that urban sprawl encourages and entrenches ever higher trends in car growth. However, opponents of *Smart Growth* argue that planning has no impact on transport demand, but instead this demand is derived from individual wealth and income, which is the main driver behind the move towards greater use of the private motor car, and the sprawl that has accompanied it (Echenique, cited Henscher, 2004).

Other authors argue the need to change individual behaviour choice away from single occupancy car use, through the introduction of 'soft factors' or 'measures' to increase the uptake of more long term sustainable modes, at the expense of the private motor car. These soft measures, termed *'Smarter Choices'* have the potential to reduce traffic congestion and carbon emissions from transport as well as improving community cohesion and mobility (Lyons & Goodwin, 2008; Sloman, 2006; Cairns *et al.,* 2004). Such initiatives include organisational "Travel Plans" that are promoted as part of the *"Smarter Choices, Changing the Way We Travel"* and subsequent *'Making Smarter Choices Work'* agenda, as proposed by the UK Department for Transport (*ibid.*).

> *"Transport is generally regarded as one of the most critical areas for*
> *sustainable development. It is one of the fastest growing sectors of the*
> *economy in all parts of the world, and is strongly linked to economic and*
> *social aspirations, but it takes a growing share of energy consumption, and*
> *is a major source of CO_2 and other polluting emissions"*
> (Worsford, 2001 p.23).

Road transport is perceived by the public and regarded by scientific research to be a major polluter and area of conflict between different priorities (Lyons & Goodwin, 2008; Hughes, 1993). Such conflicts manifest themselves as road congestion, car park demand management issues, air and water emissions, land contamination as well as traffic accidents and environmental intrusion (Lyons & Goodwin, 2008; Schipper & Fulton, 2003; Worsford, 2001; BMA, 1997; Hughes, 1993). As early as the 1960s and 70s the 'Buchanan Report' (1963) highlighted at the time, an approach to town planning that stressed the need to separate vehicles and people through planning and land use of new towns and housing estates. This in itself indicates historical issues that have increased the influence of negative factors, seen today as impacting on society as a result of past planning practices.

In terms of past practices leading to the increased use of the private motor car, these are now beginning to be quantified through CO_2 emissions and other compounds (CO, Volatile Organic Compounds (VOCs), and PM10 levels) emitted from transport vehicles as well as noise decibels and visual intrusion from traffic. Hughes (1993) argues that the prospect of global warming, a direct result from human activity, including personal mobility, has great concerns for the future of mankind. He suggests that transport is unlike many other fundamental human activities, insomuch that in most cases movement is a means to an end, not an end in itself. The prime reason individuals travel is to engage in an activity in a different location and thus transport is something that is necessary to achieve this.

There could be an argument put forward that people do like to travel, and that the increase in personal mobility, particularly car use since the 1950s and 1960s suggests this to be the case (Figure 2.1). Certainly, political push and pull factors imposed on transport infrastructure provision, such as the Beeching railway closures in the 1960s and the construction of motorways during the same period, has to a greater degree encouraged a move by people to undertake, whether through desire or necessity, more travel in the last quarter of the 20th century and the first decade of this, than at any other time (Dennis & Urry, 2009; Docherty & Shaw, 2008/3; Hughes, 1993; Cullinane, 1992; Whitelegg, 1992). Purnell, *et al.,* (1986, republished 1999) argue that in addition to these push factors, away from public transport usage, are the pull factors that encourage greater individual mobility. They argue that simply building our way out of increasing greater use of the car, through more roads, just adds to greater road traffic use, and in turn results in less public transport investment and poorer service provision. In essence, what these transport researchers, practitioners and authors argue is that, if funding and investment is biased towards the motor car, then the public transport infrastructure and networks suffer, thus leading to a feedback loop pushing more people towards using the private motorcar (Wooton, 1999; Campisi *et al.,* 1996). If this continues, then the consequences and impacts of transport on global warming will only grow in significance. Mogridge (1990) conjectures that the only way to reduce traffic congestion within major urban centres, and thus improving the provision for public transport, is in fact to invest more in public transport and infrastructure and network provision at the expense of private vehicles. This view is supported by other authors, including Reeds (2011), Dennis & Urry (2009), and Sloman (2006), among others.

Transport trends since the 1950s, to the mid-1990s were dominated by rapid growth in demand for private modes (i.e. cars, vans and taxis), and a decline in the most sustainable transport modes (including bus, cycle, walking and rail) (Figure 2.1). Since the mid-1990s, there have been changes in the total overall demand for travel, which overall is still increasing, but which has decelerated since the early 1990s in relation to the growth in Gross Domestic Product

(GDP). Each increase in percentage point GDP growth has been accompanied by a significantly smaller increase in the movement of goods and people, compared to the case when '*Roads for Prosperity'* was published in 1988 (DfT, 2009).

Traffic on UK roads increased by over eight per cent after the Labour government came to power in 1997, with predictions of traffic growth by the Department for Transport indicating an additional increase of up to 17 per cent in the years 2008 to 2018 (DfT, 2009). Commuter trips add heavily to the volume of traffic congestion (Pooley & Turnbull, 2000), with more than a quarter of all miles driven by car or van. Thus there is real potential to tackling local transport congestion through traffic demand management techniques focusing on the business sector (DfT, 2010).
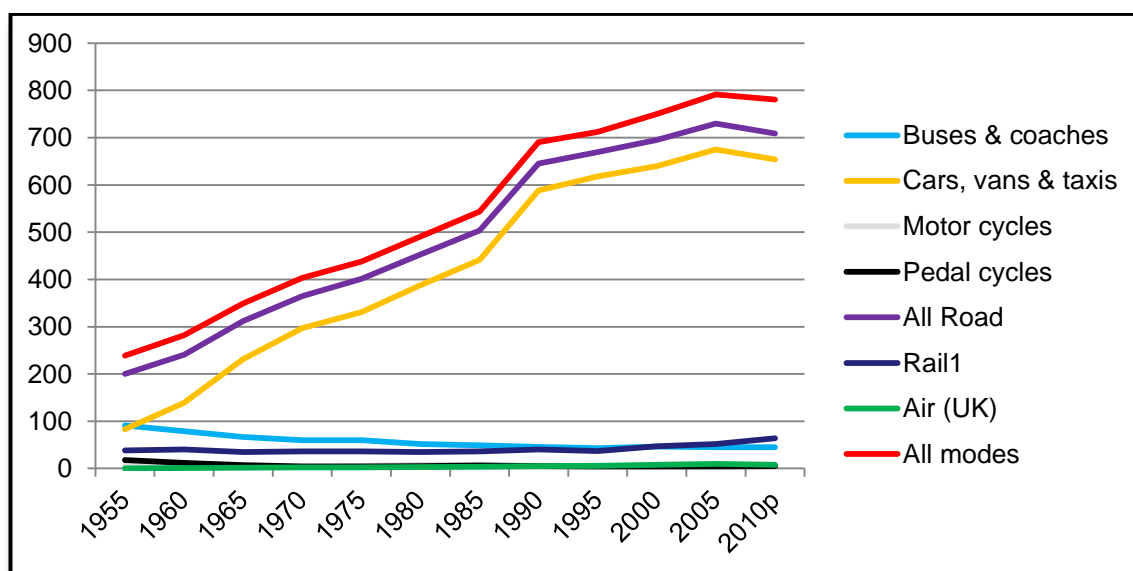
Figure 2.1 United Kingdom Passenger Transport Modal Split (1952-2010) (DfT 2010)

Since the mid-1990s, the railways (despite major incidents such as Hatfield in Oct 2000) have seen faster growth than that of road, whose market share peaked in the late 1990s. Rail is still a minority mode, and likely to remain so because there are many types of passenger and freight movement for which rail is not a viable option. The railways have the potential to provide a safe and lower CO_2 emitting alternative to private modes for commuting as well as for freight movement, as opposed to those currently undertaken by road (DfT, 2010).

The small growth in rail may be down to many factors, including the change to company car benefits in the late 1990s. This change instigated a move away from the requirement for employees to undertake up to 35 thousand miles a year, in order to receive tax concessions. The system was altered away from mileage based claims towards a carbon emission by vehicle

model. The Campaign for Better Transport (previously Transport 2000) argued at the time of the changes, that such a shift was a possible consequence of these changes, *"although measuring this after the fact would be difficult"* (pers. comm., Joseph, 2010). In addition, the increase in mobile telecommunications, as well as the introduction of '*Smarter Choices'* agenda over this period and since, may influenced some of the trend observed.

The recent government White Paper (March 2010) represents a policy shift towards high speed rail (HSR). Interestingly, although whether such a move represents a real shift away from the '*predict and provide'* model (i.e. motorway construction) for road travel is debatable. In his address to the House of Lord, the then Secretary of State for Transport, Lord Adonis also outlined the widening of the M25, therefore in terms of achieving an environmental carbon benefit from (HSR) appeared to be an opportunity missed. HSR appears to be an addition to the UK increasing the need for long distance travel and is unlikely by itself to help deliver a smarter choices based sustainable transport network or railway, as discussed by Preston (Docherty & Shaw (eds.), 2008, cited in *'Traffic Jam'*). Since the 1990s, increases in demand have been largely accommodated by improving existing road and rail networks, including motorway widening and the £9 billion upgrade of the West Coast Main Line. The £6 billion roads programme includes investment for the five years to 2014, on widening a large part of the M25 and the extension of hard-shoulder running across the most heavily used stretches of motorway. There are also plans to electrify the Great Western Main Line from London to Bristol and South Wales, with a recent announcement that the Bedford to Birmingham line would be electrified. In addition a £250m investment in the Strategic Freight Network was also made (*ibid.*).

In terms of party political differences and their respective position on transport policy, there is a general consensus among the parties in terms of their election manifestos for the May 2010 elections. There appears to be a realisation among ministers and politicians that 'we' can't continue to build roads (as *'Roads for Prosperity'* (1989) proposed) to get out of traffic congestion. Priorities are tending to focus on carbon reduction measures and incentives to change behaviour and reduce car use.

"The striking thing about the 2010 election is the level of consensus between the main parties on the need to reduce private car usage and the impact on the environment, especially climate change. The debate focused on how to do this and different ways of doing it"
(pers. comm., Joseph, 2010)

Cycling and walking are often seen as the 'greenest' or most environmentally 'sustainable' modes for travel. Both have seen a decline in their use for commuting purposes, as the

popularity of the private motor car increased, and commuters began to live greater distances away from their workplace (DfT, 2009; & Kingham *et al.,* 2003). The UK has a history of declining bus use outside London, particularly in the major English metropolitan areas, along with non-metropolitan and rural areas (Figure 2.2). Various legislative attempts have been made to reverse this trend, but so far to no real effect in most instances. The Local Transport Act 2008 attempted to address the provision of public transport services, by providing Local Authorities with a range of new powers to influence bus service provision directly, through the introduction of Quality Partnerships and Quality Contracts (DfT, 2009). It should be noted that the system for managing public transport in London is totally different, in that public transport services are tendered out by the Mayor of London's office.
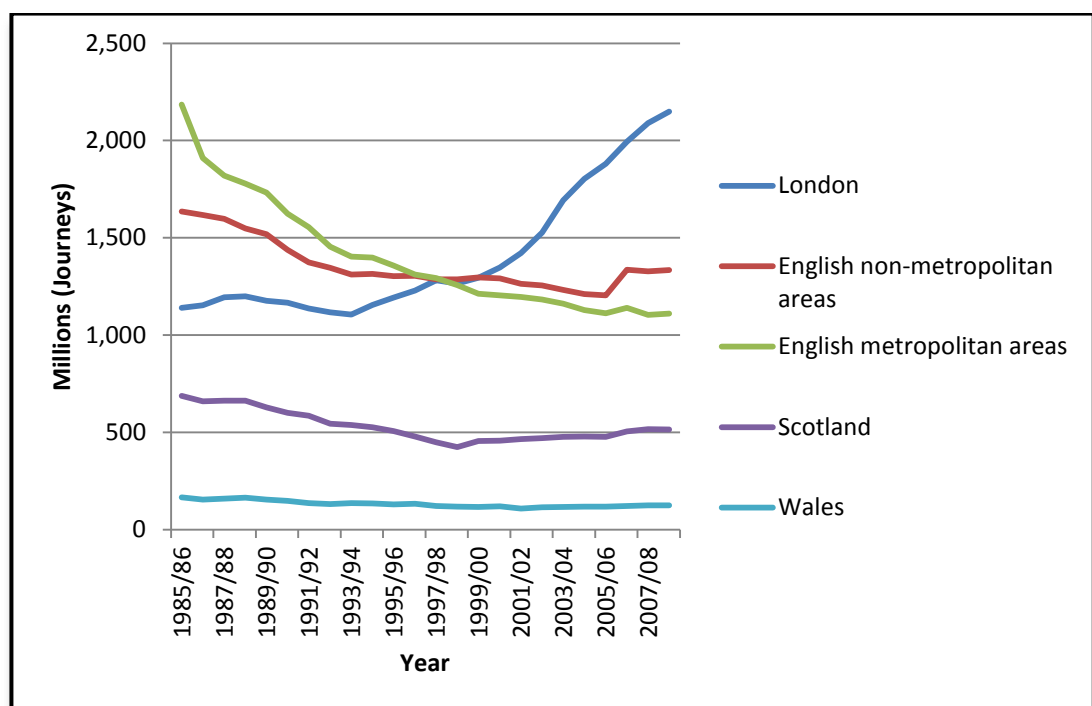
Figure 2.2 United Kingdom Bus Patronage (million passenger journeys/annum) (DFT, 2010)

The impacts that post war national modal split trends have had on the wider social and environmental fabric, are a direct result of past and current government transport policy (both nationally and locally). These issues are difficult for politicians to directly influence, owing to the public's love affair with the motor car. Politicians, academics, transport operators, practitioners, as well as the general public, often debate these contentious issues vigorously.

In their publication, '*Public Attitudes to Transport'*, Lyons & Goodwin (2008) outlined that attitudes to transport are often highly complex and are affected by many interrelating issues. These include attitude to lifestyle, aspirations, age, gender as well as peoples changing aspirations. Often debates are influenced, not by facts, but by how the media negatively portrays

events that occur on the public transport network. Often reporting reinforces the perception of public transport (which are not always realised), or biased towards road and private motorcar use at the expense of alternatives, such as rail and bus services. Such negative reporting plays on people's fears and creates false perceptions, but can also be reinforced by individuals' everyday experiences through their interaction and use of public transport systems. Peoples own political and/or social belief systems and prejudices also influence how such issues are dealt with politically. Certainly, the researcher is aware that they too are prone to such biases, and as such, is at pains to stress that from the transport issues outlined above, accepts that impacts are real and growing problems for the individual and wider society (DfT, 2008).

From an environmental perspective, emissions to air formed during fuel combustion are a major hindrance to achieving the goals of sustainable development. Emissions from vehicles, for example, PM10s and CO_2 cause serious health risk and add to environmental degradation. If agreed upon, Loffler (1999) & Worsford (2001) argue that the logistics industry should introduce 'greener' measures, such as alternative fuels (CNG), low-sulphur diesel fuel, battery power and encourage greater use of alternative modes (rail and water), which links with what the government set out in its *Sustainable Distribution* publication. Loffler (1999) and Worsford (2001) both argue for a 'greener' approach by the freight industry in terms of bringing in technology and practices to achieve this shift. However, the practicality of successfully implementing such initiatives needs to consider economic, social and practical barriers to achieving such a goal.

Use of sustainable transport could and should also be adopted for the commuter journey and organisations' business travel needs. If sustainability and health concerns outlined above are to be dealt with, as was argued previously by Goodwin (2008); and in the past by the BMA (1997), Whitelegg (1993), and Hughes (1993), that government policies have to be far reaching and encompass all elements of the transport sector. Just concentrating policy on freight, whilst an important sector, is irrelevant, if similar issues concerned with commuter and business transport are not collectively taken forward in a coherent manner. Without directly tackling political, organisational or individual behaviour through a cultural change, merely looking at physical infrastructural or real alternative public transport and other modes, will likely fail in achieving a real change. This was recently recognised by the National Business Travel Network (NBTN), a government lobby group (2009).

Simply indicating that commuter, freight and other transport sectors need to implement such measures, is a limited argument, as it does little to tackle why government and other organisations have not implemented measures in the past and why individuals have not adopted

'*Smarter Choices*'. Implementation of transport initiatives, for whatever mode, requires a complex consideration of factors (finance, political, environmental, behavioural, to name a few) and has to consider the complex inter-relationships at and between political hierarchies, for example, the political climate at the time, the financial situation, the current best available technology and future investment in place, as well as the buy-in from modal users. All of these factors affect transportation planning at the organisational and individual level.

Understanding how decisions are made at the local level, and the barriers and obstacles, whether organisational or individual (or both), and whether they are real or perceived, is what needs to be further researched and understood. If such 'barriers' can and are to be overcome, then managing the decision and implementing making process of such initiatives, is yet another obstacle to be overcome.

2.6.3   Organisational Travel Plans

The above sections outline the policies and the resultant transport trends that have formed the basis behind transport planning since the 1950s. The next section attempts to place Organisational Travel Plans (TPs) within the framework of government policy, and outlined some of the impacts imposed by transport behaviour undertaken by organisations and their employees.

It is intended by national and increasingly local authorities (under planning regulations), that TPs be developed and implemented by employers, partly to meet a wider need of integrating the local planning needs with that of the transport planning agenda (CfIT, 2009). The Commission for Integrated Transport (CfIT) has recently published its *'Planning for Sustainable Travel'* web tool, which sets out eleven key issues in terms of joining land use planning with transport planning. In summary, these issues include the consideration of strategic development location, transport network improvements, population density (as outlined previously by Reeds, 2011; Sloman, 2006; Echenique, 2004; & Mees, 2000), accessibility, mix of uses, neighbourhood design and layout, and traffic demand management measures.

The Commission argues that a significant proportion of households are 'reluctant car users'. This group is forced to drive due to the real lack, or perceived lack, of viable alternative modes to the car for commuting. The complex rationale for travel demand, including but not limited to, changing development design, highlights the critical importance of viewing conventional land use and transport planning, as part of a wider strategy for fostering attitudinal and behavioural change that are consistent with national sustainability objectives (CfIT, 2009; Levinson & Krizek, 2008; Banister, 2008; Cairns *et al*., 2004).

A TP aims and objectives are aimed at altering current employee commuter habits for a particular organisation, usually in isolation (CfIT, 2009; Rye, 2008; DTLR, 2002). The principal task is to combat an organisations trend towards greater demand for travel and instead move towards more sustainable practices, away from the motor car, specifically single occupancy journeys. Such local level practices need to be set into a wider context both spatially and temporally, in order to assess their likely impact on the sustainability of the wider environment (CfIT, 2009).

TPs are a key policy tool aimed primarily at reducing car dependency for commuting, but progressively consider other transport areas such as business travel and freight in their development. For companies to consider these issues in such a way is relatively new and as such the terminology is far from agreed. *Green Transport Plans* (GTP) and *Green Commuter Plans* are terms widely used (Coleman, 2000; DoE, 1992), although for the purpose of this research, (sustainable) travel plans have been adopted, because it was felt by parties involved in the project to encompass a wider remit than just traditional commuting by individual's to the work place, and to include business and freight travel. The term 'green' was also unpopular in the context of the business environment (see Chapter Five).

A TP is a tool that manages and brings together a company's transport issues/needs in a co-ordinated (or integrated) strategy (Steer Davies Gleave, 2000). At the local level, since the mid to late 1990s, TPs have had an important role to play in altering the travel patterns of commuters and in establishing sustainable transport practices throughout business (Business Travelwise, 1997 & 1999). Examples include companies encouraging employees, through policies and initiatives, to actively use alternatives to the car, if alternatives are available to them. For commuters, this could be through implementing so called '*carrot*' initiatives, such as designated car sharing spaces at the workplace, and encouraging greater use through implementing what is termed 'stick' measures at the same time. This could be in the form of increased car park charges, but as previously discussed by Docherty (2001), such '*sticks*' are rarely used to discourage car use because they are deemed too politically sensitive; they could affect the decision makers disproportionately, and viable alternatives are often perceived or not considered feasible.

The Government's Ten Year Transport Strategy encourages the voluntary uptake of TPs. Similarly PPG13 (*1994, revised 2001)* states that a Local Authority should set targets for the adoption of TPs by organisations, and that TPs should be submitted alongside planning applications for developments likely to have significant transport implications. For example, all state schools must have a TP in place by 2010 (pers. comm., Hertfordshire County Council

Officer (anon.), 2008). This approach, although a useful tool to encourage development of TPs, does not necessarily encourage the successful implementation of such a strategy or to achieve its given objectives of reducing the negative environmental impacts imposed from organisations. Rye's (2002) evaluation of the effectiveness of TPs, identified their scope for achieving a commuter modal shift, but argued that any measures within them required continued support and marketing to reduce relapse to the continued rise in use of the private motor car. Regarding implementation, Rye was critical of TP development being based purely on the planning requirements of LAs, suggesting organisational TPs were needed within inner city metropolitan areas, where their uptake was not as prevalent.

Without any real monitoring of targets set, and ways to determine if they are met, it is unlikely that organisation will take TPs seriously, owing to their lack of understanding of staff and wider commuter planning. With companies whose business involves substantial freight distribution, their everyday planning should tackle such issues. However, with the limited integration of transport networks and planning from central and local government, it seems difficult to understand how such companies can plan their own needs alongside those of others, in order to tackle the national transport issues outlined.

At present, the national and more specifically, regional UK government policy, in the form of Local Transport Plans, focuses on encouraging large organisations to develop and implement a site specific TP, rather than small and medium sized enterprises (SMEs) (Coleman, 2000). It is debatable if this approach will be successful in achieving the aims set out by government, due to the fact that the UK business sector is increasingly becoming a flexible economy, based on smaller business units (Banister *et al.,* 1998). If this trend continues, and meaningful changes are to be made to transport demand on UK roads, then these organisations need to be brought into planning their transport requirements, in the form of local business park TPs, or indeed city-wide TPs, as opposed to solely individual TPs that in themselves would be unlikely to achieve a major shift away from the car.

However, if TPs are to become more widely known outside the area of transport researchers, operators and government policy makers, then it needs to be recognised that large employers are more likely than their smaller counterparts to implement successful TPs in the short term, as the wider benefits are more likely to be seen (Rye, 1999[a]). The greater opportunity of achieving a reduction in car use from this group provides the justification for current government policy to focus on this area. There has been little research undertaken on understanding the views of employers, especially the smaller employers, regarding TPs (Coleman, 2000), which is a concern, given that employers are regarded as their key implementers.

The majority of organisations preparing TPs are concerned with developing procedures aimed at adhering to local planning regulations, rather than focussing on and understanding the more complex economic, social and environmental factors that influence them within the commercial business environment. However, evidence from this work indicates that TPs are becoming important aspects to organisations, rather than just being completed at a superficial level to meet planning obligations, under section 106 of the PPG13 on land use and transport planning (Worsford, 2001; Coleman, 2000).

Publications on TPs have tended to focus upon the mechanisms used for their development, rather than at the barriers that may constrain their implementation and effectiveness. These include, but are not limited to, issues such as internal/external support, data interpretation and usefulness for benchmarking/monitoring, focusing the plan and understanding the complexity of interrelating issues. This is reflected by the large amount of literature outlining different methods for TP formulation (Steer Davies Gleave, 2000), some of which have been applied to this study, compared to the lack of detailed information regarding TP implementation as a local transport management tool.

In 2002 the Department for Transport published a comprehensive document titled '*Making Travel Plans Work*'. This provided background case study material on TPs, but also importantly, details on how funding could be achieved, as well as how to use the planning system to secure the future of TPs (DTLR, 2002). Following on from this, one of the most influential TP documents published was the DfTs '*Smarter Choices, Changing the Way We Travel*' (Cairns *et al*., 2004). The acclaimed authors of this paper stated that initiatives such as TPs could reduce peak urban traffic from between 5-21 per cent and nationwide traffic between 2-11 per cent. The authors coined the term 'soft factors' or 'measures' as a label for identifying transport initiatives that could form the basis for developing organisational TPs. Whilst no rigorous definition of such measures was provided, they argued that there was a growing body of practical experience and theoretical understanding of the role for such measures within transport policy. They argued that 'soft measures' provide a number of ways of providing more reliable public transport information, better informed traveller attitudes, and more efficient ways of travelling for commuters.

The document concluded by making recommendations for government implementing transport policy that promoted 'soft factors', as a direct and opposite policy to that provided to the 'predict and provide' policies of the past. Implementing such a soft factor transport policy agenda, they argued, provided the framework against which a wide range of different objectives could be realised. These included reducing road traffic congestion, increasing revenue for public

transport operators, improving commuters' health by encouraging more physical activity in their journey to work, improving social inclusion, and reducing environmental damage and saving on commercial costs for employers. They concluded that the most important feature linking these different policies together, would be the potential to impact on reducing the overall use of the private motor car, and with it, the impacts imposed by this mode on sustainability.

The authors also put forward an argument that in implementing soft factors, there would need to be implemented alongside these, demand management initiatives, in order to 'lock in' the benefits from such measures. Only then, they argue, would such measures, if well designed, have the beneficial effects on travel choice and road traffic conditions, although were unable to provide real quantifiable evidence. The effects of soft factor policies would be dependent on the scale of implementation chosen. In addition other effect factors would need to be considered alongside these, including central and local government transport policy, associated and interacting this with other policies being assessed, including prices, public transport service improvements, traffic control and management, as well as infrastructure changes (Cairns *et al.*, 2004).

In terms of soft factors, organisational TPs are seen as directly fitting the mould of providing the much needed framework for delivering this DfT agenda at the local level. However, Roby (2008) argues that in order for TPs to properly deliver on soft measures, espoused by the Smarter Choices agenda, they need to move away from merely achieving an organisations need for planning requirements. She argues that this is beginning to occur, in that organisations are beginning to align their TPs with their environmental and Corporate Social Responsibility (CSR) agendas. These claims back up research by Kadesh and Roach (1997), who stated that both mandatory and voluntary TPs seem to work best when employers and employees recognise the need to reduce transport. These needs are identified through reducing local traffic congestion, improving local air pollution (including reducing carbon emissions) and on site problems such as the lack of car parking space or business travel needs (1997). Uptake in developing TPs is also seen when employers and employees benefit from a reduction in car commuting such as shorter work journey times (Rye, 1999[a]). Even when companies recognise a need and potential benefits, they are often reluctant to take the initiative (i*bid.*). However, Rye (1999[b]) argues that administration costs mean that employers are more willing to implement low cost (soft) TP initiatives, such as car sharing databases and cycle facilities. These low cost initiatives depend on locality, and are not always effective at reducing the impact of single occupancy commuter journeys.

2.6.4   Organisational Drivers & Barriers

Organisations increasingly recognise that implementing an environmental policy that covers transportation, and merging this into business practice as part of a strategic plan, can add value towards a company's effectiveness and proficiency (Kotler & Lee, 2005; Staib, 2005; Worsford, 2001). Such drivers, as outlined by Steer Davies Gleave (2000), can include:

- better management of staff, time and resources
- a potential reduction in running costs
- remaining profitable and competitive
- keeping abreast or ahead of environmental legislation
- improving a company's image and marketing profile in the industry, among customers and wider society
- forming part of a commitment to continual improvement in the context of an environmental management system.

It can be argued that such factors influence the bottom line of any company, although there are practical and financial limitations to achieving environmental goals that are imposed by the nature, diversity and structure of the transport industry and bias in governmental fiscal policy. This includes issues that companies can directly influence, for example, improving driver practices and vehicle operation through education and training programmes in relation to freight or providing employees with free bus passes when commuting to their place of employment (Potter, 2008; DTLR, 2002). The last of these have tax implications themselves, reducing the impact of a car reducing initiative, as discussed by Rye (1999[a]). Within the UK context, unless a specific tax exemption is provided by the government, employer support for staff commuting is treated as a taxable 'income in kind'. Commuting in the UK is seen as a private activity and therefore if the employer were to pay for, or support their employee in any way, this would potentially be a taxable benefit. This is the opposite position for business travel expenses (Potter, 2008). It should be noted that for non-employees (students, visitors or customers), any TP benefits implemented by an organisation on their behalf are not liable to tax. In terms of business travel cost incurred by any employee as part of their working practice, payments made to them through the company payments system are also tax exempt, provided limits are not passed on or that a private benefit is provided in its place.

Up until 1999, the only major tax exemption that employers provided for staff commuting to their place of employment was car parking, which at a minimum is worth circa £500 per annum. This value rises considerably depending on geographical location, but overall to this day, still

provides a lucrative incentive for employees to commute by a private car to their place of work. However, since 1999, certain additional TP measures have become exempt from Income Tax and National Insurance contributions (NICs) (*ibid.*).Such exemptions, in addition to car parking and business travel, include provision for bicycle parking, employer provided works buses (with over eight seats used specifically for commuting). Occasional use for other trips such a lunchtime shop run or station runs is permitted under the existing HMRC rules (2009). Additionally, if an organisation runs a car share scheme, a lift home service for emergency trips (up to 60 per year) is also exempt. Finally interest free loans can be provided through the employer. These loans allow employees to purchase season tickets, a bicycle, a car or anything else that are legal (up to £5,000 is allowed within a given tax year).

The provision of bicycles, electric bicycles and associated safety equipment (helmets, lights, carriers, locks, repair kits and clothing) up to the value of £1K, has been tax exempt since 1999. In addition, employers can provide breakfasts to cyclists as a tax exempt benefit, but cycle maintenance and rescue services would be liable (DTLR, 2002). If employers were to pay bus operators to improve a service to their site(s) as part of an employee TP benefit, then this would not be tax liable. Such entitlements could also include discounted or free fares for employees. Employers could also subsidise a season ticket for a specific bus route or service. However, a difficulty or complexity arises with this exemption in that it is limited to a specific bus service for which the employer provides the financial support to. If there was not a specific contract with a service provider, or the employees journey involves the use of a network (i.e. more than one route), this would be liable to taxation (HMRC, 2009; Potter, 2008).

Other benefits which may be provided as part of a TP, and which would be liable to taxation, include a payment to give up a car parking right/permit, sometimes referred to as a 'cash out payment'. Vanpools, subsidies to train, tram, and underground service tickets, as well as other cash incentives, including prize draws would also be taxable. The latter less so, in that HMRC would regard such benefits as trivial, although technically they would be liable to taxation if provided on a large scale (*ibid*.).

If an employer wished to provide a flexible voucher or points scheme for rewarding commuters who do not make use of the car for all or some of their commuter journeys, this would need to be designed carefully to avoid the employee being liable for taxable benefits. Such a scheme could find all aspects of the benefit(s) package taxable if it were to contain taxable and tax exempt measures (*ibid.*). However, it has to be recognised that there are many indirect issues that an organisation does not have influence over. Alternative fuels that pollute less may be desirable, for example, but if they are less efficient, or even not available in the right quantity or

region, a company would not be able to implement such an initiative. Initiatives have to be practically viable and economically sound if an organisation is to give the go ahead to implement them (Loffler, 1999).

Companies involved with logistics (or distribution of goods) are limited by a number of factors that impose themselves on the sector. Companies are responsible for a number of facilities including transport, warehousing and offices, with transport often perceived as the most damaging environmentally (Potter, 2008). Factors that can reduce the environmental impact of logistics activity often remain in the hands of manufacturers, government and other groups. Examples include technological and design changes to vehicles and fuels (Potter, 2008; Worsford, 2001). These organisations often play a key role in shaping environmental legislation that impacts the industry. A company's purchasing power, in relation to vehicle specification, has the potential to play an important role in speeding up design in environmental improvements, in order to achieve economic savings.

Other barriers to improving the environmental performance of a company can include the nature of the industry in relation to its diversity in transport mode use, distribution and storage of a wide range of goods. The realities of the business, both practical and managerial, can prevent the achievement of set environmental targets and performance, some of which are outlined below.

- Recent trends show that larger logistics companies are continually restructuring which generates instability and uncertainty.
- Management turnover leads to a loss of direction, focus and purpose.
- Continued price competition and industry undercutting.
- Changes are required to company mind-set and culture.

As a result of some of these issues, the environmental impacts imposed from a company's transport activities can often be low on a manager's list of concerns (Staib, 2005).

2.7   Commuter Travel

Commuting by car to place of employment, accounts for around sixty-one per cent of total commuter journeys in the UK. Walking and cycling comprise 13 per cent and public transport 15 per cent. 80 per cent of car journeys are single occupancy (DfT, 2010). The average person travels 12.8 miles to work. In the DfT Low Carbon Strategy (2009), carbon emissions related to transport account for circa twenty six per cent of all UK emissions, having increased steadily from about 18 per cent in the early 1990s (Figure 2.3). This increase can be likely attributed to the decline in the manufacturing base and the continued increase in car use during this period.

As suggested by Dennis and Urry (2009), commuter travel accounts for about 24 per cent of this figure, with business travel accounting for around thirteen per cent (*ibid.*). There was an increase over the previous decade in car commuters and a decrease in walkers, cyclists and public transport (bus and train) use. These trends are a result of:

i)   the flexibility that individuals have when choosing how to travel

ii)   increased car ownership, which has helped increase distances between home and the workplace (urban sprawl)

iii)   past government transport policies that have focused primarily on promoting car use (Docherty, 2001).

Since the Rio 'Earth Summit' (1992), and its decennial follow-up at Johannesburg (2002), there has been a shift in UK government policy towards more sustainable policies, although this has only had a superficial impact in practice. The Rio Summit was the catalyst that set in motion a framework for developing more sustainable ways of living through Local Agenda 21, by bringing decision making to the local level (Brundtland Commission, 1987). TPs have evolved directly from this agenda, and their success has yet to be quantified, if, in an ever-changing world, they ever can be.

Most of the research into travel behaviour has addressed individual behaviour and attitudes relating to car commuting (Lyons & Goodwin, 2008; Banister *et al.,* 1998) and green solutions (Golob *et al.,* 1998; Tertoolen *et al.,* 1998), or environmental and geographical factors (Naess *et al.,* 1996; Bannister *et al.,* 1998). Research work has also been undertaken on the travel planning tools themselves (such as TPs) as well as on ways in which to manage changes at the organisational or individual level through using the planning system to secure the future direction of TPs (DTLR, 2002). In late 2011, the Social Research and Evaluation division at the DfT published a behavioural insights tool kit in order to provide practitioners with a way of better understanding why individuals behave in the manner that they do in terms of transport choice. The methodology within the *Behavioural Insights Toolkit* draws on insights from behavioural theory, providing guidance on designing transport initiatives that enable behavioural choices that support policy objectives. The approach identifies that policy-making involves dealing with human behaviour, through implementing small-scale measures or 'Nudges' (i.e. through minor infrastructure, legislation, financial incentives or information provision) to achieve more desirable travel behaviour change (DfT, 2011[b]). The background to this, suggests that whilst hard TP measures are important in providing viable alternatives to the car, the psychological and behavioural choices that result also have to be considered. The toolkit has since been used to help inform elements of Hertfordshire County Council Local Sustainable

Transport Fund Application (LSTF), which has been used to provide discussion and insights within Chapter Six.
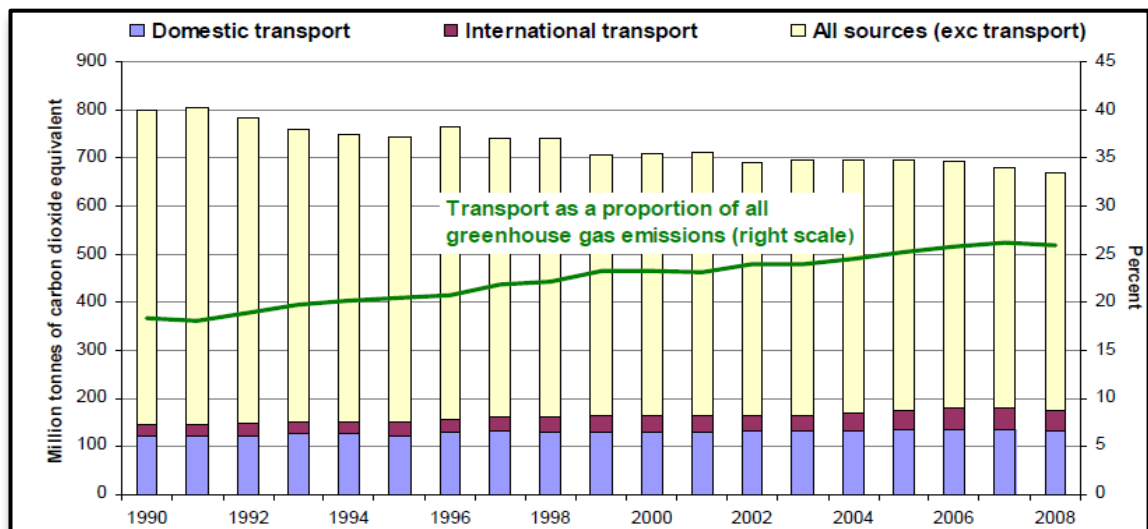
Figure 2.3 United Kingdom Greenhouse Gas Emissions (1990 to 2008)

2.8 Corporate Social Responsibility & Environmental Management Systems

Louche *et al* (2010), Staib (2005), and Gilbert & Gould (1998) have helped define the elements that make up a Corporate Social Responsibility or Environmental Management System as:

- a strategy or policy statement indicating the organisation's commitment to improving and reporting on financial, social and environmental aspects
- aspects can include resource conservation and protection, waste minimisation, pollution control and continual improvement
- a set of plans and programmes to implement the system throughout the organisation, including through to suppliers and customers
- integrating the system into the daily operation of the organisation, developing techniques in order to minimise environmental impacts
- the measurement of performance against set plans and programmes – auditing (internal and external) and reviewing progress towards achieving the policy and its stated targets
- the communication of information, education and training to improve understanding of environmental issues.

These elements combine to provide a systematic and structured management approach to environmental performance. This in turn allows continued improvement to practices through monitoring what is happening and putting in place measures to make improvements, should

there be a lapse in performance. The effectiveness of such a system depends on the correct management and implementation of the system (*ibid.*). ISO 14001 is an international eco-management standard specifically relating to environmental management and improvement systems. Focusing on the environmental effects of an organisation's activities, products and services, the standard is a result of the Local Agenda 21 ideal, which emerged from the Rio 'Earth Summit' (1992). Registration to ISO 14001 is on a company-by-company basis, and applies to environmental aspects that the company can control or influence. The standard requires a company to communicate progress on their environmental policy to suppliers, customers and the wider community (Erickson & King, 1999; Gilbert & Gould, 1998).

It was the intention of this research to place TPs within the CSR and/or EMS framework for delivering and embedding a TP within a large organisation. The results and extent to which this was successfully achieved are presented in the following chapters.

2.9   Conclusion

In conclusion, the above discussion of literature emphasises the more proactive government policy stance taken in regards to local transport provision since the mid-1990s. This was opposed to the previous supply and demand model followed since the 1960s, until the mid-1990s (including *'Roads for Prosperity'*). At this time, it was recognised that the market led approach to deliver ever more growth through major road building programmes, could not keep up with the latent demand for road space (Purnell *et al.,* 1999). More recently, the revised Transport Act (2008) was a response by government to further promote partnerships between LAs and public operators for improving local services and local urban planning. Even more recently, under the banner of localism, the new National Planning Framework (punished in mid-2012) aimed to further promote 'green' or 'sustainable' local living and mass transit initiatives throughout urban areas. This framework seeks to reduce the impact of modal behaviour from that of ever increasing car use, and its associated impacts (local and regional traffic congestion, air pollution, noise and transport related carbon emissions). As the proponents of both the 'Smart Growth' and 'Smarter Choices' agenda argue (Reeds, 2011; Cairns *et al.,* 2004 & 2008). Examples include measures that promote and encourage the use of public transport modes, new electric vehicles infrastructure, improved mass transit developments as well as walking and cycling schemes as part of a Smarter Choice agenda (pers. comm., Wilkinson, 2011; Sloman, 2006; Cairns *et al.,* 2004 & 2008).

This thesis seeks to provide some new insights into the views of large employers, in so far that it aims to look at the issues involved with the development of, as well as the implementation of

TP initiatives in regards to improving the understanding of barriers to their development and possible implementation. It examines how organisations manage this impact within the context of TPs, developed from local and regional government Local Transport Plan (LTPs) strategies. These strategies emerged directly from Transport Act 2000, as a result of international sustainability debates in previous decades, since the 1970s. The research uses both quantitative and qualitative data collection methods to both develop a TP framework, as well as to understand further the barriers to effective implementation within organisations. The philosophical approach is discussed further in the following chapter.

Chapter Three – Theoretical Framework

3.0 Introduction

Epistemology and methodology in broad terms refer to the philosophy of how research or researchers come to know, develop and apply knowledge especially within the context of research project (Trochim, 2000). The latter is specifically concerned with how knowledge is developed using specific tools, or methods that can be used/applied to try to better understand the world. Essentially epistemology and methodology are intimately related, the former involves the philosophy of how we come to know the world and the latter involves the practice of knowing it (*ibid.*).

Following on from the literature outlined in Chapter Two, it is evident that philosophical approaches used by researchers in the study of TPs have tended to follow what is termed a deductive positivism paradigm (as outlined by Lindsay, 1997; Flick, 2007). This essentially means that empirical data are collected in order to identify patterns within and between datasets. In this case, it relates to employees' commuting behaviour / patterns. This line of thought usually relies on an objective collection of empirical data through a process quantitatively measuring 'real life' phenomena in order to seek the truth, making use of tools such as categorical questionnaires (Patton, 2002). A positivist holds that anything beyond this, such as emotions and thought cannot be measured in any scientific sense and thus is irrelevant and should be ignored (Trochim, 2000).

From the perspective of this research project, the researcher wanted to understand the process of developing a TP, using the positivist approach outlined above by Trochim. Therefore defined tools were adopted for developing a TP (i.e. categorical commuter questionnaire). However, living the 'real life' or 'world view' experienced by the Travel Planner, was also an aspect that warranted reporting, not least because of a clear research gap here. As such a qualitative post-positivist perspective (as outlined by Creswell, 2007) has been adopted, and appropriate tools designed and utilised (i.e. reports, interviews, minutes) that will allow for the experiential aspects of TP development and implementation to be explored using a researcher-embedded approach to this research.

At this point it is worth providing a definition of qualitative research (as described by Denzin & Lincoln, 2005, p.3).

"Qualitative research is a situated activity that locates the observer [researcher] *in the world. It consists of a set of interpretive, material practices that make the world visible. These practices transform the world".*

"They turn the world into a series of representations…interviews, conversations, recordings and memos to self. At this level, qualitative research involves an interpretative, naturalistic approach to the world".

"This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them".

According to Creswell (2007), there are broadly five contrasting qualitative approaches to undertaking research; Narrative Research, Phenomenology, Grounded Theory, Ethnography and the Case Study (Critical Realist). Narrative Research focuses on exploring the life of an individual, whereas Phenomenology focuses on understanding the essence of experiences. Grounded Theory seeks to develop theory grounded in the data from the field (Allan, 2003; Strauss *et al.,* 1990; Martin *et al.,* 1986). Both Phenomenology and Grounded Theory studies primarily rely on interviews as data. Ethnography describes and interprets a culture-sharing group, and the Case Study (Critical Realist) approach develops an in-depth description and analysis of a case or multiple cases, highlighting participant observations and interviews in particular.

Narrative Research, Phenomenology and Ethnography are focused on life or the lived experiences of individuals or groups, as well as the essences of experiences from cultural settings and the reporting on them. Grounded Theory and Case Studies are more interested in building theory and describing settings from the perspective of the individual researcher and from the setting of the research. In philosophical terms, it is apparent that the approach most relevant to this research thesis, in terms of its philosophical underpinnings is that of the Case Study (Critical Realism).

3.1   Case Study (Critical Realism)

A critical realist approach distinguishes between the events that are experienced, the events that happen regardless of experience and to that which produces events. Thus they reject a rather restrictive scientific or positivist position, instead privileging an 'open system'. What this means is that rather than using scientific enquiry set within a laboratory setting to produce a TP, an open and iterative process to research was used involving many diverse characters (including an

embedded researcher), situations, and places, that can more usefully be studied at a comparative level, that allowed for an evaluative understanding of real causes and effects (Sayer, 2004).

Post-positivist Critical Realists, as viewed by Trochim (2000), believe that there is a reality independent of thought, that is in contrast to the post-positivist subjectivist line of thought (that no external reality exists), and that individuals exist in their own right. Constructivist post-positivists believe it possible to construct a view of the world based on individual perceptions and observations (Creswell, 2007). Even though these are fallible, constructions can be made from them but these are accepted as imperfect. This school of thought believes that all methods of measuring phenomena contain errors and/or weaknesses, and that theory is thus revisable in this light. In essence, the goal is to obtain knowledge as close to reality as possible, even though research can never truly achieve this (Creswell, 2007; Trochim, 2000).

In his paper relating to Critical Realism, Pawson (2000) refers to the 'missing link' between social theory and empirical research, outlining Merton's (1968) concept of 'middle range realism theory' as the clearest blueprint of theory driven empirical inquiry. Merton's middle range theory provides for the creation of sociological pathways that link concepts, allowing for them to be drafted into an explanation of diverse social phenomena. Pawson argues that Merton's theory is only half complete, in that the theory is much endorsed but seldom observed in practice, and that Merton's theory concentrated on the ends rather than means. In essence Pawson argues that 'middle range theory' provided the vision for developing social knowledge, but was not clear in the application of appropriate design approaches. He goes on to describe that researchers, need to identify 'key issues' in designing their research. These are based on initially formulating problems and hunches from their chosen research topic, which leads them to select cases for study, and then develop methods of data collection and analysis. With new research topics being developed using an array of social settings, Pawson argues that researchers need to understand how to build a research design that generates explanations and insights that build on 'middle range theory'. In essence, Pawson argues that Merton provided a picture of how to implement middle range theory, but not how to conceive or assemble 'middle range' hypothesis. In short, according to Pawson, Merton's work presents a 'top-down' view that does not provide a framework that helps the researcher generate hypothesis. Further criticism of middle range theory by Layder (1993), argues that proximity by the researcher to what is being researched limits the theory's developed by this philosophical approach, in that it tends to be defined by the variables it is concerned with and not wider 'general sociological orientations' in which the research is taking place. However, Pawson suggests that such criticism is misplaced, in that middle range theory's prime function does provide a useful generic framework for explaining diverse empirical research areas, but which are not mapped systematically to

describe the complex strata that makes up society. The multi-layered 'social reality' could include attitudes, identities, individuals, interactions, practices, relationships, collectives, experiences, cultures, texts, discourses, rules, belief-systems, order, change, structures, systems, etc. The researcher therefore needs direction to inform their specific research design. These could include what populations or cases to study, what the appropriate unit of analysis might be whether to 'qualify' or to 'quantify' and so on and so forth.

The approach that was adopted throughout the research process was that of a 'Critical Realist'. Therefore, this research is based on the qualitative perspective, that researchers adopt a natural setting for collecting data where participants experience the issue or problem under study. This approach to collecting information through talking directly to people, or seeing them behave and act within the real world setting, is a primary characteristic of qualitative research (Creswell, 2007) and has been extended to also include the role of the travel planner/researcher in this process.

3.2   Triangulating Methodological Approaches

As a whole, post-positivism as a theory, supports the view that objectivity is difficult to achieve and therefore puts forward the notion of 'triangulation' as a way of reducing its impact (Creswell, 2007; Silverman, 2000; Holt–Jenson, 1988). After overcoming the controversy regarding combining qualitative and quantitative methodologies (Creswell, 2007; Denzin & Lincoln, 1998) the application of multiple methods for triangulation is currently well accepted (Flick, 2004; Johnson & Onwuegbuzie, 2004). This proposes the use of a multiple methods approach to try to deal with the unique errors that each method has. Triangulation has been defined as the combination of two or more theories, data sources, methods or investigators in one study of a single phenomenon (Denzin, 1989). Johnstone (2004) suggests that using mixed methods can triangulate, complement or expand the contribution of a single approach. Combining quantitative and qualitative methodologies is associated with a high degree of complexity, as these methods belong to different paradigms, with fundamentally distinct frameworks (Foss & Ellenfsen, 2002). Silverman (1993) argues that triangulation is problematic as it can lose the context through which alternative meanings are derived, as it assumes some convergence on objective reality. Although this thesis accepts this argument, it does attempt to make use of the strengths that triangulation provides in making use of quantitative and qualitative data methods, whilst presenting a narrative of findings within the context in which they were derived, namely the University of Hertfordshire.

The methodological basis of this research uses a participant observational perspective. Creswell sets out the characteristics of qualitative research, by beginning with the researcher acting as a key instrument in collecting data through examining documents and interviewing participants. Often a self-designed tool for collecting data is used, with the researcher responsible for gathering information. Often multiple sources of data are gathered, which can include interviews and documents, rather than relying on just a single data source. Once data are collected, the researcher builds patterns, categories and themes from a 'bottom up' perspective, organising data into more abstract units of information. A research process is emergent, in that the initial research plan cannot be tightly prescribed, and that all phases of the research can shift after entering the field to collect data. An example of this is that individuals and sites studied may be modified as the research develops. The key point of qualitative research is for the researcher to learn about the problem or issue from participants and to address the research appropriately in order to obtain that information. Creswell (2007) proposes that qualitative researchers use a theoretical lens, in which to view their studies. This can involve the study being organised around identifying the social, political or historical context of the issue under study. Interpretations are made by the researcher of what they see, hear and understand. With this process, readers, participants and the researchers' interpretations of the research report produced, enable multiple views of the problem to emerge. Finally, the qualitative researcher attempts to provide a holistic and complex picture of the issue under study. This part involves reporting multiple perspectives, identification of the factors involved in the situation whilst also trying to provide a general overview of what emerges (the outcomes). The qualitative researcher is not bound by cause and effect relationships, but through identifying the complex interactions of factors within any situation (Creswell, 2007).

From the researcher being embedded within the organisation, the development of an organisational TP was used as an emergent approach, allowing for on-going monitoring and evaluation (as espoused by Denscombe, 2007). It has also meant that the changes that have become necessary to this thesis, as the research progressed – chief amongst these was the closure of Vauxhall Motors in Luton, have been incorporated and adapted and hence the need to use an alternative case study. Furthermore, transport policy and legislation constantly changes or updates: an emergent methodology allows for these developments to be incorporated into the research.

3.3   Researcher Positionality & Reflexivity

Reflective accounts of the researcher often occur at the end of a research process, owing to its very nature in being reflective. However, through the research process it was important to

understand how the researcher fitted in and was positioned within the overall research project. Reflexivity takes the process of self-reflection and sets it within ones' personal ideological framework, allowing for self-exploration of the factors that aid in constructing our own identities within a social order (Taylor *et al.,* 2010; O'Leary, 2007). The process of self-reflection and exploration, allows the researcher to recognise his or her own role as a social actor and how this itself influenced the research process. As Denscombe (2007) identifies, the researcher can never stand outside the social world that they are studying. Within this thesis, it was important for the researcher to recognise the potential influence of existing knowledge and insights in the area being investigated. To achieve a degree of reflexivity, this research has utilised 'reflective' diary boxes to enable the researcher to acknowledge and document lived experiences and thus to reflect upon them. This reflexivity aids research through providing more authentic interpretations, leading to more reliable and valid research, which is important when using qualitative approaches (Taylor *et al.,* 2010).

Throughout writing this doctoral thesis, it proved challenging to bring together the applied aspects of the research with the academic and theoretical aspects. Having started the research process in the year 2000, the only experience of the working world was a year within industry, working as an assistant within a Transport Research Group. Whilst this provided the experience to develop an interest in transport, specifically Travel Planning, it did not allow any applied work as a Travel Planner within a real world setting.

Providing a qualitative reflective narrative, alongside the pure quantitative data, collected as part of the role as University of Hertfordshire TP Coordinator, has helped to begin to breach the gap in terms of the challenges observed and experienced in delivering a 'step change', or even just a small change on the ground, in terms of developing and implementing a TP, and its associated measures within a large organisation, and its wider environs.

The success of TPs at meeting set targets, based primarily on positivist methods and target setting, has thus far relied upon the collection of structured quantitative data, without attempting to understand any underpinning inductive qualitative processes that influence/affect TP development and implementation of their measures. Quantitative data, by their very nature, are analysed by their sub-division into categories and sub-groups for statistical analyses and significance tested for associations and patterns between the variables employed (Bryman, 2008; Robson, 2008; Kumar, 2005). Generalisations are made from a sample population based on these analyses and used to make wider generalisations about individual behaviour. It is these results that are used to set targets for TP documents and monitor specific initiatives within a TP of a given organisation.

However, this thesis rejects this approach as the only meaningful way of researching TP development and monitoring their impact. Although positivist methodologies are utilised in the construction of the TP for the University of Hertfordshire, this thesis also makes use of a more post-positivist emergent paradigm approach. The research into TP development makes use of unstructured and semi-structured methodologies (i.e. semi-structured interviews, partnership minutes, company reports, images). This research is concerned with understanding, to a greater extent, the development and implementation stages of TPs, and what organisational barriers aid or restrict their success, if any at all. Post-positivist (and generally qualitative) methodologies aid this, using insights from positivist quantitative approaches.

It is this multi-methods approach, using methods derived from both deductive positivist and inductive post-positivist theory, that this thesis applies, which therefore couches it within a Critical Realist Theory framework. The thesis uses these approaches to construct a greater understanding of the 'complexities' that surround TPs within organisations and as part of a wider area transport strategy.

3.4 Critical Realist Conceptual Research Framework

> *'A conceptual framework covers the main features of a case*
> *study and their presumed relationships'* (Bryman, 2008 p.143)

Can a critical realist research approach demonstrate not just whether TPs work, but for whom, in what ways, when and how?

This research attempts to link both quantitative and qualitative methodologies in order to form a conceptual overview for reporting research outcomes, using a triangulation approach as a way of combating the post-positivist view that objectivity is difficult to achieve. The component parts of this research have focused on three evaluative elements; context, mechanism and outcomes relating to the phenomena of TPs that when combined attempt to set out a triangulated approach. This evaluation approach is illustrated using a framework (Figure 3.1). The framework consists of the three reporting elements representing the context, mechanism and outcomes that influence the development and implementation of TPs.

3.4.1 Context

From Table 3.1 below, the 'context' is identified as the element providing the driver(s) (whom and/or what) behind each case study. Creswell (2007) proposes using a theoretical lens in which to undertake research. This research uses a case study in which to focus the theoretical research

lens within the real life setting of a TP for the University of Hertfordshire (and beforehand Vauxhall Motors) in which to help identify whom and/or what the key drivers are.

In terms of the University, the primary focus for developing a TP at the outset was to obtain local planning consent under a section 106 agreement. This was therefore identified as an immediate driver for the organisation. However, additional drivers included reducing the effect of on street parking as a way of building good relationships with the local community, with the environmental impact less evident at the outset. The environmental context gained importance in the light of new and emerging legislation, particularly surrounding Scope One to Three carbon emissions affecting the HEI sector. The University, through its emerging EMS, increasingly wanted to demonstrate good practice within this field.

For Vauxhall, the main driver and CSF were seen as a corporate governance issue, in order to demonstrate the organisations environmental credentials to the wider community (both locally and nationally). This driver changed towards an economic focus once the viability of the business was the organisation's main priority. Therefore the focus of the research shifted away from commuter transport towards freight and the finance of logistics. No TP was developed or delivered for Vauxhall and therefore no KPIs were identified, not even in the development process.

Through the emergent research setting, the context provided by the University resulted in a wider transport strategy being evolved within the local city community of St Albans. Here the main drivers were more diverse and broadly focussed, but none the less included dealing with an array of key drivers from the perspective of multiple interest groups. For local politicians the drivers were about tackling social inclusion and environmental concerns in the form of Air Quality Management Zones resulting from local traffic congestion. Bus operators were focussed on the bottom line, and increasing patronage on their declining routes, whilst local business focussed on economic issues resulting from local transport congestion. Each of these case studies provided a distinct and diverse setting in which to undertake the applied research.

3.4.2 Mechanism

The element outlined in Figure 3.1 as Mechanism, refers to how and when specific approaches have been utilised in order to develop a delivery tool for each case study setting as appropriate. For the University, a Critical Successful Factor (CSF) to embed the strategy within University reporting structures was identified through the use of an Environmental Management System (EMS). This EMS allowed for the emergent TP to provide a framework for reporting management information structures throughout the organisation. Within EMSs, KPIs are

required to be developed and reported, and as such modal split targets were set within the TP for reporting to internal and external bodies as the key motivation.

The buy in of multiple partners, including local politicians, Local Authority Officers and importantly local transport operators was seen as the major CSF, without which the partnership could not have been formed. In order to achieve this, a Memorandum of Understanding (MoU) (see Appendix 4) was developed as a KPI. The MoU was one of a number of KPIs underpinning the partnership, which also include a reporting framework, resulting in a board and working groups tasked to deliver the partnerships aim and objectives. This structure was used as a reporting mechanism to the wider primary and associated partners that evolved out of this model. All were key factors to success.

3.4.3 Outcomes

The research adopted an outcomes approach that was important for reporting both the development of and implementation processes involved with TPs/QPs. In each case, the KPI was the successful formulation of a TP for the University/Vauxhall Motors to each organisation's specific requirements. In the case of St Albans, the KPI was that of having a delivery framework (MoU) for the implementation of a Smarter Choices agenda to travel planning. In the case of the University, a developing and working TP is outlined and reported (chapter Seven). For St Albans, the detailed development and implementation of the QP is reported primarily within chapter Six, with insights from a commuter travel survey undertaken in 2008. There is no TP for Vauxhall owing to the closure of the organisation a year into the research.

All three evaluation elements are applied to the different case studies settings in this research. The 'Context' element describes 'the drivers' behind each of the case studies, specifically relating to the 'whom' and 'what' that is behind developing an individual organisational or area wide transport strategy. The 'Mechanism' refers to the approaches (how and when) adopted in terms of developing and reporting the applied elements. The 'Outcomes' relate to the methods and processes employed for developing and implementing TPs/QPs outlined in the thesis. Each of these, when combined together, form a whole in terms of what is required in order successfully to devise, develop and implement individual or area wide TPs. In his discussion of Critical Realism, Pawson (2000) refers to finding the 'missing link', through identifying 'key issues' between both the social and empirical research approaches (Section 3.1). Figure 3.1 attempts to draw together these key issues within broad elements, through the application of both qualitative, quantitative methods with the inclusion of a reflective narrative for reporting

findings. This attempts to bring together the research into this particular phenomenon, using a triangulation approach (as outlined in Section 3.2).
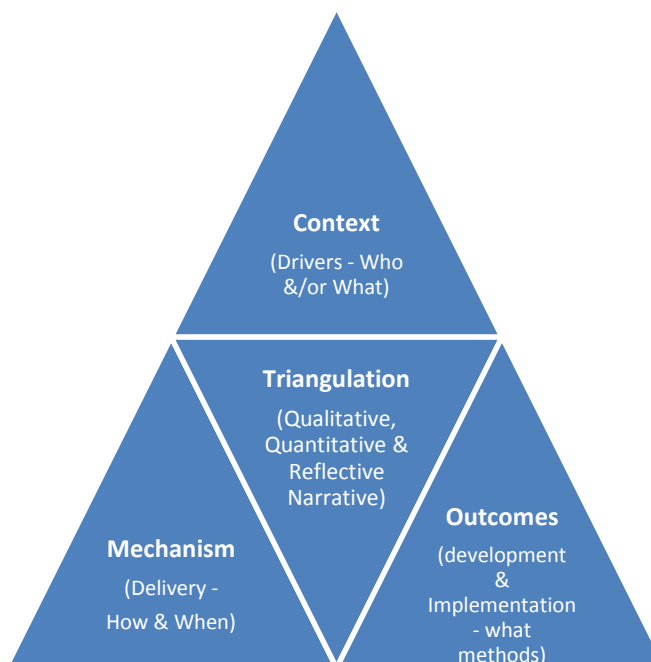
Figure 3.1   Critical Realist Conceptual Framework Illustrating the Interconnecting Elements of Travel Plan Development and Implementation

A reporting framework has been developed using a matrix (Table 3.1) in order to begin to outline the interaction, connections and motivations behind TPs within each of the case studies. Key Performance Indicators (KPIs) and/or Critical Success Factors (CSFs) within each case study have also been highlighted.

Table 3.1   Comparative Evaluation Case Study Matrix

Case Study Setting	Comparative Analysis	Context	Mechanisms	Outcomes
University of Hertfordshire : Organisational Travel Plan	Whom	University Estates Management Local Community Planning Officers	Travel Plan Coordinator (CSF)	Internal & External Stakeholders, Staff Students and Local Community
	What	Planning consent (Section 106) (KPI) On street & Campus Parking: Management Demand (KPI)	EMS (CSF):	Travel Plan (KPI Modal Split Targets)
	When	-	On-going Continual Improvement (CSF)	Annual reporting & biennial monitoring
	How	-	Stakeholder Engagement and Partnership (CSF)	-

Case Study Setting	Comparative Analysis	Context	Mechanisms	Outcomes
Network St Albans: Complex Multi-sector partnership	Whom	Local Politicians Public Transport Operators Business	Quality Partnership Coordinators (CSF)	Local Community
	What	Air Quality Management (KPI) Traffic Congestion (KPI) Social Inclusion (KPI) Increasing Revenue & Patronage (KPI) Economic (KPI)	Quality Partnership (Voluntary) (CSF)	Delivery Framework (MoU) (KPI)
	When	-	Quarterly Meetings (KPI)	
	How		Board & Working Group Reporting (CSF)	Annual Report (KPI)

Vauxhall Motors: Large Commercial Firm	Whom	Company & Local Community (CSF)	Travel Plan Coordinator (CSF) -Unlikely	Internal & External Stakeholders, Staff Students and Local Community
	What	Corporate Governance Economic (KPI)	EMS or CSR: (CSF)	Travel Plan (Modal Split Targets KPI)
	When	-	On-going Continual Improvement (CSF)	-
	How	-	-	-

The matrix above attempts to draw together the context, mechanisms and outputs of developing a TP within different case study settings. The matrix provides a visual aid of these three elements and their overlapping interaction with each other. It is this interaction that represents the complexity and dynamic research, which the critical realist approach underpins.

It is the dynamic interaction between these elements that provides the focus for study, through the application of applied research using mixed quantitative and qualitative methods within case study settings from the perspective of an embedded researcher. Adopting a critical realist approach allows for identification and then better understanding of the interactions between these elements through analysing both empirical and social data obtained from the methods employed.

The 'context' setting for developing a TP strategy within each location differs. For the University of Hertfordshire, the reasons, or that 'what' was the purpose for the TP, related to a number of factors, primarily obtaining planning consent for building its de Havilland Campus. A KPI resulting from this was the development of a transport demand management strategy (i.e. a TP). This resulted in the TP being developed within the 'mechanism' of an EMS. The EMS required an 'output' of target setting through annual reporting and biennial monitoring (i.e. 'when'). The 'what' element of the matrix provides a reporting framework for evaluating the success of target setting to both internal and external stakeholders for 'whom' the TP was developed. In the case of the University, this included Estates Management (including security) related to car parking demand management (on and off campus); and in the case of the external stakeholders - the local community and local planning officers - the TP's impact on street parking. The 'whom' mechanism for delivering the TP at the University resulted in a TP

Coordinator post (embedded researcher), who was responsible for delivering the TP within the EMS, on an on-going, full time basis (i.e. when), achieving this through stakeholder engagement and partnership (both internal and external to the University). The on-going nature of the work, is also seen as a CSF, because without this element the TP would not have evolved to the extent is has.

Similarly, in St Albans in terms of 'what' were the reasons behind developing a complex multi-sector partnership QP, the complexity increases owing to the number of stakeholders (whom) that wanted to effect a change through intervention. Air quality issues resulting from traffic congestion, as well as social inclusion issues within the city, were the focus of local politicians. Increasing bus revenue / patronage and economic growth were identified as KPIs as a result of any transport interventions implemented. In terms of 'what' mechanism could deliver this change, a voluntary QP was established, using the 'outcome' of a delivery framework (MoU), from which a full time QP coordinator role (CSF) was established to manage the delivery of the partnership. Within the delivery framework, a quarterly board and stakeholder meetings provide the feedback mechanism, from which an annual report is produced as the outcome. These are then reported back to the main QP partners and stakeholders at board meetings via the QP coordinator.

Finally, in terms of Vauxhall, reporting is limited because of the case study ending prematurely. However, for reporting purposes, the elements have been partially completed based on initial involvement in the process and learning from the University. In terms of what ways the TP would benefit Vauxhall, this was primarily because of corporate governance issues, and the company's wish to be seen at solving its transport related impacts within its local vicinity, but also its national reputation. This issue soon altered to economic concerns when the company entered a difficult phase within its business cycle. Certainly, like the University, embedding the TP within its existing EMS and/or CSR was the mechanism that would have been developed for embedding the strategy within this organisation, which should have led to on-going continual improvements and annual reporting against TP KPI targets as an 'outcome'. In this sense, a similar pattern to that developed at the University would likely have emerged if this case study had been completed. These 'what', 'when' and 'how' elements would then have provided the framework for the development and delivered Vauxhall's TP, for reporting to internal and external stakeholders, which should have completed the continual improvement cycle.

The evaluation matrix forms a central link between the qualitative and quantitative methodologies that will be adopted. Examples of the types of approaches available are outlined below (Section 3.5), while the specific quantitative and qualitative mixed methods adopted are

further outlined in Chapter Four. These methods have then been adopted and reported in the analytical chapters (Five & Six). The utilisation of the evaluation matrix will itself be evaluated in Chapter Eight as part of the conclusion of this research along with a reflection of effectiveness of critical realism as an underlying conceptual framework for this study.

3.5   Research Approaches

Research approaches for studying organisations are either 'problem/practice orientated', or 'psychological' in nature. This research follows the former, as it is looking at an issue/problem, using organisations as case studies. Hussey and Hussey (1997) treat 'research design' as a term that outlines the whole research process. This approach is based around business or management research, which is usually problem/practice orientated. The approach is based broadly around the post-positivist paradigm using exploratory inductive logic to generate new theoretical insights about the nature of a TP as a phenomenon.

This research follows the problem/practice-orientated approach, whereby a research problem has been identified and a theoretical framework and methodology have been developed. It is recognised by the author that certain research elements also fit well with the psychological research approach outlined above, and as such have been included where appropriate. Easterby-Smith *et al.* (1991) define the three broad research approaches as pure, applied and action research. The latter two of these are what this research are broadly based upon, owing to its use of humanistic elements to problem solving and a critique of the methods used in data collection during the process of research.

Applied research aims to discover solutions to specific problems. For credibility, explanation needs to be given as to what is happening, as opposed to merely providing a description of it. It is important that the applied researcher is critical of ideas and methods used and considers the quality of evidence introduced in support of an idea. Results need to be reported to the client as well as journal publications aimed at practitioners. Confidentiality of results is paramount (Blaxter *et al.*, 1996; Easterby-Smith *et al.*, 1991). Action research should lead to change, and this should be incorporated into the research process. Stakeholders are actively involved with the researcher in the process, with the latter not necessarily the expert (Blaxter *et al.*, 1996). From the philosophical descriptions briefly outlined above by Easterby-Smith & Blaxter, it is clear that the research approach used throughout this thesis, makes use of applied/action research, whereby the research seeks to discover greater understanding of TPs, through the process of developing one using case studies. Action research is also most usefully suited to

emergent methods approaches, where the researcher acknowledges that exogenous changes take place that affect research, as the research is undertaken.

3.6   Case Study Theory

Kumar (2005, p. 113) outlines a case study as being 'a strategy for undertaking research that involves an investigation of a particular contemporary phenomenon within a real life context. The case study provides an 'opportunity for the intensive analysis of many specific details often overlooked by other methods'. Furthermore, a case study can be defined by the concentration on the specific case within its own context, with every case study being unique (Kumar, 2005; Ritchie *et al.,* 2003; Robson, 2008). A case study approach to research is adopted when 'how' and 'why' questions are posed and the researcher has little control over events (Yin, 1994). As Denscombe (2007) asserts, this case study approach allows the understanding of the case as a whole, and a discovery of how the many parts affect one another.

Researching a case study or studies has provided this research with the opportunity to study TPs within the working, or real life scenario. Although a research case study can encompass an individual, group, neighbourhood, service, an institution or many other bodies, this often makes it difficult to define what the term 'case study' means (Robson, 2008). A single case study may represent an extreme or unique case, or the case study may be described as a revelatory case (Yin, 1994). In the case of this research, the opportunity to observe and analyse a phenomenon, that is, TP development within an organisation, makes use of case study examples. A single case study may involve more than one unit of analysis, which includes outcomes from different projects within the case study being researched. In an organisational study, such as this, embedded units may be in the form of meetings, roles and/or locations. However, units are selected; the resulting design is called an embedded case study design (Yin, 1994).

The holistic design strength is when no sub-units are identified and when relevant theory underlying the case study is itself holistic. Problems with this design include; examining specific phenomena in detail are often avoided, an entire case study may be conducted at an abstract level and lacking clear measures or data. Another weakness with the holistic design is that the entire nature of the case study may shift during the course of the study, and research questions being asked may not be being addressed when such a shift occurs. One way to reduce such problems is to have a set of sub-units that serve as an important device for focusing a case study. This sub-unit approach is termed the embedded design and is more complex than a holistic approach (Gibbs, 2007).

The embedded design has its own advantages and disadvantages. The sub-units add significant opportunities for extensive analysis, which improve insights into the case study. A major disadvantage occurs when a case study is focused on the sub-unit level but fails to return to the larger unit of analysis. For example, when the sub-unit involves individual stakeholders, the research needs to take into account that if one stakeholder changes, the whole focus of the 'larger unit' – in this instance the TP – may change too. This research aims to explore how this disadvantage may be overcome using mixed method triangulation approaches (quantitative and qualitative), making use of more than one case study setting.

A case study may contain more than a single case, in which instance a multiple-case design must be used. Multiple case study designs have distinct advantages and disadvantages. Evidence from these is often seen as more compelling and more robust (Herriott *et al.*, 1993, cited Yin, 1994). However, often the rationale for single case studies cannot be met by multiple cases, and conducting a multiple-case study can require extensive resources and time, which are often beyond a research student.

Research undertaken using a case study can be pre-structured or emergent, depending on the nature of the research being undertaken. Robson (2008) breaks these two approaches down, suggesting that if the purpose of the research is exploratory (i.e. trying to gain an insight or understanding of what is going on in a new situation, where there is little or no guide of what to look for), then a tight pre-structured approach would not be suitable. Therefore, although this research employs positivist methods, it also makes use of post-positivist techniques using an emergent, applied multi-case study design. This is achieved through the use of a series of methodologies for collecting different data types, referred to as triangulation (see above, and Silverman, 2000).

If the case study is being used to confirm previous work or outcomes, then there is a need to adopt a pre-structured approach. However, Robson (2008) furthers his argument by suggesting that a case study does not need to limit itself to confirmation of suggested relationships, but can also be embedded in a wider study that aims to throw further light on potential relationships. These can even suggest alternative views on the phenomenon. Miles and Huberman (1984; *cited* Robson, 1993), outline four main aspects to approaching case study design. These include requiring a conceptual framework; a set of research questions; a sampling strategy and methods for collecting data. These will all be utilised in this research.

Outlining a conceptual framework around which the case studies can be researched, provides a structure around which analysis can be conducted. For the purpose of this case study research, a

conceptual framework has been developed and detailed (Figure 3.1). Research questions, sampling and the methods to be employed also play an important part in the design of techniques for researching the case study. Within this case study design, there is a framework around which the methodologies to be developed can be structured. However, the framework provides the researcher with the flexibility to modify and change focus throughout the study (consistent with an emergent approach). This approach is inherently more arduous than having a design outlined at the beginning of the research, as with experiments and surveys, in which any deviation from design would involve starting again, with perhaps elements of redesign.

3.7   Conclusion

The research method utilises an emergent and embedded, critical realist approach. Data have been analysed and presented using a matrix in order to construct 'a complexity' of the issues arising and impacting upon the development and implementation processes of case study specific TPs. Although this thesis does not totally reject the deductive positivist paradigm to researching TPs, it recognises that positivist research within the area does not consider the more subtle influences that individual thought and belief can have on developing and implementing TPs. The thesis accepts that the inductive post-positivist thought paradigm does take these issues into account and attempts to provide discussion on this.

With the overall conceptual framework developed and the philosophical underpinnings and the research areas identified, the next stage was to develop a set of specific methodological research approaches for collecting the data. The methodologies used in the construction of this thesis, include both quantitative and qualitative tools and form the focus for the next section. These are outlined in greater detail within Chapter Four.

Chapter Four – Sources & Methodology

4.0   Introduction

This chapter outlines the various sources and methodological tools used during the study, in order to answer the overall research aim and objectives as outlined in Chapter One (Sections 1.4-1.5). The methodological approach uses a selection of standard quantitative tools for developing a TP, that broadly speaking are based on a positivist approach to research. However, in addition to these traditional methods for developing a TP, this research specifically makes use of qualitative tools, for example, the use of semi-structured interviews (Appendix 3), company reports, minutes of meetings and plates. This is in order to further understand and inform the development and implementation of TPs, which are based on post-positivist research approaches (see Creswell, 2007; Denscombe, 2007). It is this latter part of the research, using a post-positivist approach to researching TPs in an embedded participatory way, which forms the focus of the previous chapter. In addition this chapter also provided a critique of positivistic research approaches. There is little evidence or sufficient attention given to post-positivist approaches in the existing literature, especially within transport geography. Thus, this thesis helps to fill a gap in the research that will add a more holistic dimension to the understanding of TPs.

4.1   Methodological Approach

The methodological approach employs a multi-methods (sometimes referred to as a triangulation of methods) approach using Applied/Action Research (Hoggart *et al.,* 2002; Yin, 1994; Flick, 2007). These approaches were chosen owing to the practical nature of the research, allowing for flexibility to evolve and respond to the natural business environment in which the research is set. This approach was appropriate to adhere to, as opposed to the more rigid methodological laboratory approaches offered by pure science (Creswell, 2007; Fowler, 2002; see also Yin, 1994).

Through the processes of developing these data sets, it became apparent that the majority of research methods provided by transport practitioners for developing TPs rely to a greater extent on quantitative approaches to data collection (see Steer Davies Gleave, 2000). Subsequently such methods are the main focus for TP development, target setting and monitoring of measures or interventions put in place under the auspices of TPs. Such methodological approaches have been adapted for this research, and are outlined further within this chapter. Approaches used are critiqued within the analyses chapters (Chapters Five & Six) as a means of formulating discussion of traditional data collection methods to developing TPs. Furthermore, additional

data collection tools have been developed using qualitative approaches as a means to further understand how organisations approach the development and subsequent implementation of a TP (Figure 4.1).

Methods to accomplish the component parts of the research outlined below vary, and are broken down into three distinct sub-categories. These categories are defined as structured quantitative methods, unstructured and semi-structured qualitative methods. These three distinct categories for data collection and reporting are further broken down by the use of what are termed internal and external reference points. These are purely used to provide a distinction between data collected during the course of the research, signifying data collected within the primary case study, with those external to it.

Quantitative Methods

- Structured -

- University Employee Commuter Surveys (2005-2011)

- Structured -

- St Albans City & District Commuter Survey (2008)

Qualitative Methods

- Unstructured -

- Minutes (QNP)
- Company Reports
- Personal communications
- Images/Plates

- Semi Structured -

- Interviews (3)

  - University (1)
  - Vauxhall Motors (2)

- Interviews (4)

  - Herts County Council
  - Matra BAe
  - London Luton Airport
  - John Lewis Partnership

Emergent Outcome(s) Approach to Analysis
(Chapters 5/6)

Key

| Internal Case Study Reference Points |
| External Reference Case Study Points |

Figure 4.1 Multi Methods Approach (Triangulation)

The first stage of research was to access relevant data that existed in formal reports, academic literature and from previous studies undertaken (if any). Once the extent of existing data relating to employees' primary commuter modes were collated, further tools for primary data collection were developed. In regards to the quantitative approaches for developing a TP, methods were relatively structured, and included an employee commuter questionnaire (Appendices 1 & 2). Qualitative approaches employed less structured methods, including semi-structured interviews with seven individuals, three within the primary case studies and four from external organisations. Minutes taken within the 'Network St Albans' Quality Network Partnership meetings have also been utilised in presenting findings. These data provided the baseline evidence of the internal workings of the QNP, through development to implementation.

4.2   Quantitative Methods – Structured

Quantitative research involves the systematic collection of numerical information, often under controlled conditions, with the analysis of the information using descriptive and statistical tools (Polit & Hungler, 1995). Based within the positivist approach to social research, the discovery of patterns, trends and regularities found within the social world, makes use of scientific method provided by the natural sciences (Denscombe, 2007). The quantitative methods employed within this study include the use of employee and student commuter surveys from the main case study (University of Hertfordshire), as well as insights from a reworked secondary source, a city wide commuter survey, as outlined in Figure 4.1.

4.2.1   Employee Commuter Surveys

In regards to quantitative methods adopted, the main data collection tool developed was a categorical commuter survey. This tool is in common use for developing and monitoring the impact of a particular or set of initiatives/interventions within organisational TPs (Steer Davies Gleave, 2000). The tool is also appropriate in attempting to determine existing commuter patterns and to try and quantify how a population commutes to a given site, and what influences these patterns. Data obtained from these surveys often underpins target setting and monitoring against such targets. This data collection method formed the baseline from which the University's TP has been developed (Chapter Seven), initiatives implemented and monitored.

Undertaking commuter surveys were important in order to identify physical barriers to non-car use. This also helped begin to develop clear ideas as to the alternatives available to commuters, so that recommendations could be made to develop a baseline TP. In addition, it is important to identify sustainable transport alternatives or interventions to the car, and identify possible initiatives where improvements could be implemented. Data obtained from a site survey

provided a baseline against which the TP was developed as part of the University's Environmental Management System (EMS) (Appendix 6). This EMS provided a continual improvement framework within which the TP evolved and in which it is now situated for reporting.

Four longitudinal commuter surveys (Appendix One) were undertaken over a period of six years at the University of Hertfordshire. This built on an initial commuter survey undertaken by the University, prior to the researcher's direct involvement. Results from this 2002 survey have been included as part of the baseline development for the University TP and to include in wider discussions. These surveys provided temporal data for the setting of appropriate modal split targets from 2002-2011. The University surveys were distributed via internal email and intranet sites, using electronic survey tools. Typically, response rates for employees ranged between twenty five to forty per cent, which for the purposes of validity was considered representative of the population sampled (Bryman, 2008; Robson, 2008; Denscombe, 2007). Student responses ranged between five to ten per cent, which equated to circa 1,300- 2,700 over the period that the surveys were conducted. It is not known why student responses were lower than that of employees, but for the purposes of analysis, the numbers involved were again deemed valid (taking into account the limitations of obtaining a representative sample when undertaking quantitative surveys) (*ibid.*).

A second city wide commuter survey was undertaken (in 2008) within the District City of St Albans as a result of no secondary data existing within the LTP or other source. This was conducted as part of the University's wider TP work and involvement with the local community. This work has been included to provide a comparative analysis and discussion as additional case study material. The SADC commuter questionnaire was distributed to some 678 businesses within the central city limits (one mile radius from main city centre) using a self-administered questionnaire (Appendix 2). Businesses were initially selected using SADC's 'Point of Interest' database, which was provided for use by the district planning department. Businesses were asked to distribute the survey among their employees using a cover letter. Questions relating to commuters main mode of travel into the city, as well as attitudinal questions were posed. A total of 2,000 hardcopy questionnaires were distributed by mail shoot. An online link to an electronic version of the questionnaire was also provided in order for additional PDF copies to be downloaded by larger organisations. Employees that participated were advised that their personal details would be kept confidential using a password secured digital database and that hardcopy questionnaires would be destroyed upon their input into the digital database. Participants were also advised that should they wish not to include any

personal details, they were not required to. This was only a requirement should they wish to be included in the prize draw, as an incentive for completing the questionnaire.

Using both the University and city wide commuter questionnaires was important in order to begin to build an understanding how these employee groups travelled to and from work, as well as why they choose to travel in this way. These data helped inform and develop the TP for the University of Hertfordshire, as well as inform the development and launch the Quality Partnership in St Albans. Questions as to 'who' would be able and willing to change their travel behaviour in favour of more sustainable modes, and what measures would be most popular among employees, were included within the questionnaires scope. In later versions of the University survey, questions relating to environmental factors, such as Scope 3 commuter carbon emissions, were also included, in order to begin to develop an understanding of carbon-related emissions from commuter travel within the case studies.

Analysis was undertaken on these data sets using the analysis tool, Statistics Package for the Social Sciences (SPSS), making use of bi-variate statistical analysis tools, specifically Chi-square (Chi^2) and the student T-test (as described by Bryman, 2008; Denscombe, 2007; Fowler, 2002).

The Chi^2 is a non-parametric, bi-variate test that makes use of two nominal variables for testing statistical significance. This test is applied in order to establish a confidence level of the trends displayed within the data table (called the contingency table) in terms of making generalisations or inferences from the sample to a population as a whole (Bryman, 2008; Fowler, 2002; Robson 2008). This is the most appropriate test to apply to the data collected from the commuter surveys, due to the majority of variables in the survey providing nominal data (also known as categorical data, due to the sub categories to which the variable comprises) (Bryman, 2008). Kingham *et al* (2003), in their analysis of similar commuter data collected on a large manufacturing organisation, used the same test in analysing and presenting their findings. The use the Chi^2 is further justified by the fact that it helps the researcher to place a level of significance between the observed data against that which would be expected, should everything be equal. The test has been applied in relation to this work, with analysis and interpretation of commuter surveys collected from the University commuter survey (2011), as well as the St Albans commuter survey (2008).

The student T-test is a bi-variate parametric test that was applied to continuous data variables (also referred to as interval or ratio (*ibid.*)), namely time and distance travelled. The T-test allows for the use of a single nominal based variable (for example age, gender, mode) to be

applied against a single scale variable (such as distance, time travelled) in order to determine if there is a significant difference reported between the nominal category means. A normality test using Skewedness and Kurtosis measures (Rogerson, 2006; Gregory, 1963) were applied and histograms plotted relating to the scale variables (miles and minutes) prior to testing (see example Figure 4.2 for distance/time distributions). This process determined if the data were normally distributed for reporting purposes, with a '0' recording on the skewedness indicating the histogram is symmetric about the mean (*ibid.*).When this distribution test was applied to the datasets collected as part of this research, the majority were close to a zero reading (Table 4.1).

Applying the Kurtosis distribution, gives an indication of how flat or peaked the data are, in terms of its distribution when plotted on a histogram. A recording of >3 on the Kurtosis distribution measure indicates a flat histogram, <3 a high degree of peaks (*ibid.*). Therefore it has been assumed that the majority of scale data were normally distributed about the mean, and that a parametric t-test could be used in these instances. Having established this both Chi^2 and T-test statistical analysis have been undertaken in Chapter Six, which have provided insights for developing the TP outlined within Chapter Seven. Analysis of the data using three or more variables were investigated for possible multi-variate analysis between the case studies, but this proved difficult due with the various differences between the data collected. This demonstrates the difficulty in combining the multitude of data transport sets, even in at a small scale research project. Securing recent LSTF funding (£9.67m) within the research area will help develop monitoring and evaluation tools, which should help fill this data gap void, particularly using time series data prior to implementing interventions and recording wider impacts.
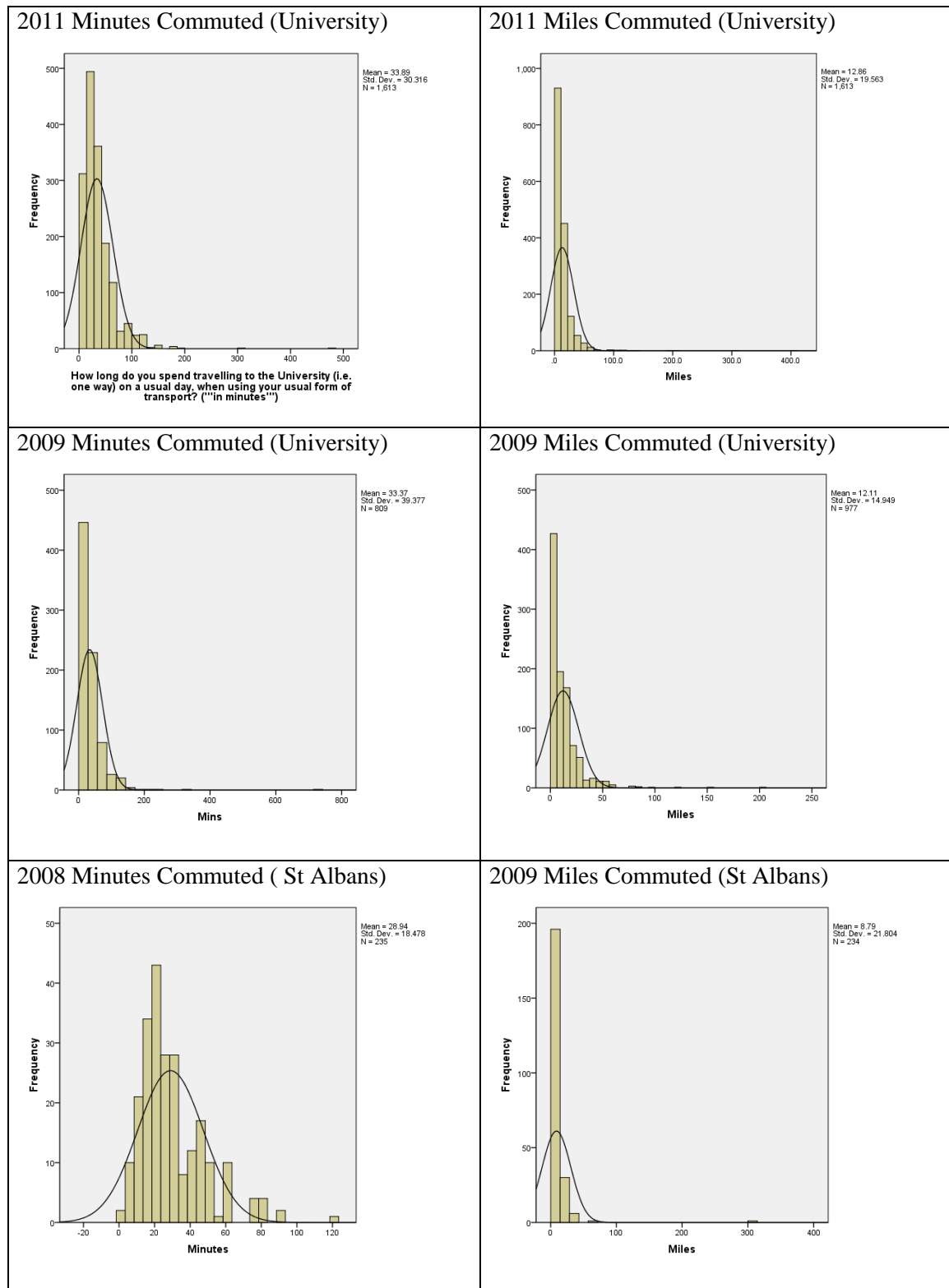
Figure 4.2   Example Normality Plots of Case Study Commuters (Minutes and Miles to Work)

Table 4.1   Skewedness and Kurtosis Normality Distribution Measures Relating to Case Studies - Time and Distance

	University Commuters											
	2002[+]		2005[+]		2007[+]		2008[#]		2009[+]		2011[+]	
	Miles	Minutes	Miles	Minutes	Miles	Minutes	Miles	Minutes	Miles	Minutes	Miles	Minutes
Skewedness	1.029	22.023	2.488	1.359	2.068	1.972	12.003	1.518	4.511	7.920	88.57	3.646
Kurtosis	1.787	**489.242**	**8.992**	2.100	**5.786**	**5.465**	**166.315**	**3.076**	**38.174**	**118.825**	**135.744**	**34.670**

Key

University of Hertfordshire Survey[+]

St Albans Commuter Survey[#]

The surveys conducted did not ask any attitudinal based questions which would have made use of the Mann-Whitney U test. This is an area that needs consideration for future research, primarily through the application of personalised (before and after) travel surveys (Chatterjee, 2009). This would be of particular use in soliciting individual attitudes relating to specific interventions developed within each case study area.

Excel spreadsheets were utilised when calculating carbon emissions from the data analysis obtained using SPSS. Statistical cross tabulations between categorical variables in the datasets was undertaken to determine modal splits over time, providing a useful reference point for discussion of TP target being met (or not). In addition, analysis of modal use, behaviour and alternatives to current transport choice were undertaken and presented for discussion in Chapters Five and Six. A comparative analysis between case studies has also been presented. Where possible, Geographical Information Systems (GIS) analysis of the data sets has also been incorporated to provide spatial information for discussion and analysis purposes.

In broad terms, GIS are tools that can be applied for the input and processing of spatial data for decision making in the many fields of geography (Ormsby *et al.*, 2010; Heywood *et al.,* 2006; Longley *et al.,* 2005; DeMers, 1997*).* Within this thesis, some data obtained from the employee commuter surveys at the University, as well as the St Albans City & District commuter survey, have been inputted into a GIS. Employee home postcode data have been mapped using the national grid reference system. Against this, public transport routes were digitised as shape files as a separate spatial data layer. These layered spatial data where then overlaid over a downloaded geographical Ordinance Survey map of Hertfordshire (Digimap, 2009), to provide a graphical context for the postcodes and public transport layered data. GIS plots created using this approach are presented and analysed within Chapter Six.

In addition, supporting the evidence base of the commuter survey, company reports referring to car park utilisation and on-street parking surveys undertaken to support University TP development, is presented within the analysis sections. This provided further insights into the issue of whether organisations should increase or decrease supply of parking in order to meet demand - an approach espoused by the 'Roads to Prosperity' White Paper (1989), or whether existing or new car park provision should manage demand within the context of TPs, for example, using the 'Smarter Choice' demand management approach (see Cairns *et al.*, 2004). The issue of whether increasing supply to meet demand (as discussed by Purnell *et al.*, 1999) leads to an increase in overall vehicle numbers is discussed.

A source of secondary data available to the researcher was provided by the Hertfordshire's Traffic and Transport Data Report (HCC, 2011 (and 2000/2005), which results from the Local Transport Plan. The report is high level in its findings, and therefore does not provide detailed data for drilling down to the district level for comparison in either of the case study locations. It does, however, allow for a broad modal split comparison of the case study data of St Albans and the University, with that of the rest of Hertfordshire. In addition, national transport trends are also compared against these within Chapter Six, so as to help inform the thesis in terms of the impact of wider socio-economic trends impacting on travel patterns, in the absence of TPs.

4.3 Qualitative Methods – Unstructured

In addition to the quantitative data collected on commuter habits and patterns, unstructured and semi-structured qualitative data techniques have been developed and employed within the case studies used. These qualitative methods involved the use of minutes from Quality Partnership board meetings, University and other company reports, image documentation (plates), as well as from personal communications with relevant individuals within organisations. These have been included throughout the discussion and analysis sections. These latter, often informal, conversations with individuals working within the case study organisations were included within the research findings, as they helped form part of the triangulation approach, as described in the preceding chapter.

4.3.1 Minutes of Meetings, Company Reports, Personal Communications & Images

At the outset of the research, meetings were set up with employees throughout the case study organisation, who were involved with transport operations from a managerial or operations perspective. The aim was to collate as much existing data on transport patterns and obtain a broad understanding of current practices.

Two types of data were collected, formal minutes and reports of meetings at the University of Hertfordshire, the Quality Partnership, and less structured notes of meetings held by the researcher with individuals who worked within these case studies. These notes provided insights from personal communications with individuals throughout the research and are interjected as part of the analysis sections. Both informal and formal meeting communications provided the framework for recognising individuals who would ultimately be responsible for developing and implementing TP related interventions at the organisational or area wide level. This initial approach was adopted prior to developing a more formal interview approach. This was used in order to provide a quick and simple approach for meeting individuals and assessing the 'state of

play', in terms of the types of initiatives that had been implemented previously, and to try and identify the extent to which they had been successful and the reasons for this. Hand written notes were made during these informal meetings and the qualitative data obtained from them has been presented as personal communications (pers. comm.), where appropriate within the analysis sections of this thesis. This provides additional input to the more structured data obtained from the formal interviews and quantitative data collection methods.

Minutes of meetings were taken in order to provide a brief overview of what was discussed. These took the form of hand written notes, outlining those present and the area of discussion. In the case of formal meetings (for example, QNP Board and Sub-working Group Meetings) these minutes were typed up and formally logged and agreed within the partnership structure. These informal meetings also provided a useful means for identifying individuals within each internal and external case study for the more formal interviews that would be developed to ask more detailed and probing questions.

The qualitative methods outline above refer to text based data. As Denscombe (2007) describes, there are also visual data sources for social researchers to make use of, as data in their own right. Visual images (or plates) can be valuable to research in that they add factual information relating to the specific information that they contain and that they represent evidence of a phenomenon (*ibid.*). In terms of this research, Plates are used to present evidence of specific University travel planning interventions implemented. A brief qualitative analysis is provided alongside their inclusion.

In developing the University TP, there are both internal and external reference points that have been used to inform this process (Figure 4.1). The QP is clearly an external reference point and the Minutes of the QP Board meetings have been used (see Chapter Six) to illustrate the ways in which the management group make decisions that help inform the development of the partnership within the context of area wide interventions (that is, multi-operator ticketing, marketing of public transport networks, real time information etc.). It would have been unlikely that such measures would have been developed or implemented without the researcher working in partnership within the wider community group. Examples of area wide TP interventions, such as those mentioned, are presented and discussed in the analytical chapters (and in Appendix 5).

In terms of the delivery of TP interventions for the University, the work of the Quality Network Partnership has help to inform and indeed deliver additional TP measures that would have unlikely been achieved through solely working through the context of the University of Hertfordshire.

4.4   Qualitative Methods - Semi Structured Interviews

Following the chosen philosophical underpinning of the research as an emergent, applied case study approach, semi-structured qualitative interviews were developed (Appendix 3). The aim for undertaking these interviews was to help bridge the 'data' gap between what the previous quantitative and qualitative data methods, (outlined in Figure 4.1) provided for analysis. An attempt to help 'bridge the gap' was achieved through interviewing seven individuals from across a wide variety of organisations, from freight operators, local authority officers to individuals directly involved with TP development (and implementation) within their respective organisation. This aspect of the research process was to help provide and enrich the narrative and understanding of the other methodological approaches outlined and used throughout this research.

The aim of collecting this data was to help build up an in-depth picture of how and why individuals working in the environment of TPs construct, interact and develop TPs measures to reduce negative transport impacts (as outlined in Chapter Two). By interviewing individuals in depth, the research allowed for individuals' comments to be deconstructed and then reconstructed against the other participants comments, using a themed 'outcomes' approach to developing theories as a way of describing and explaining social issues (Creswell, 2007; Gibbs, 2007; Silverman, 2000; Holt-Jenson, 1988). This provided an additional triangulated means for findings using different methodological and sampling strategies (as outlined by Miles & Huberman, 1984).

According to Spencer *et al.* (2003), one underlying concern within qualitative research is the relationship of the researcher, to the researched. They suggest that reflexivity is one technique that should be used to enhance the quality of qualitative data. The authors define reflexivity as showing awareness of the importance of the research on the researcher and vice versa; recognising how values, assumptions and the presence of the researcher may impact on data. Relating reflexivity to this aspect of the thesis was important, given the researchers existing knowledge and views relating to the subject, as asserted by Holloway (1997).

It is important that researchers are reflective and aware of their own potential to make unwarranted assumptions throughout an interview. Therefore, it is important when undertaking interviews, that the researcher openly acknowledges their point of view (Holloway & Fullbrook, 2001). This was approached using an analytical framework to ensure that the final analysis provided the basis for a sound narrative.

4.4.1   Identifying & Sampling Participants

Participants for semi-structured interviews were identified on the basis of their role within the organisation for potentially developing and implementing TP initiatives. A total of seven semi-structured interviews were undertaken with individuals. Three were within the research case studies and four with external organisations. As Holloway and Fullbrook (2001) assert, sample size in qualitative work is not as important as 'information-rich' cases, and therefore seven respondents were selected. As Fossey *et al.,* (2002) assert, qualitative samples are often small, as the researcher is not trying to generalise his or her findings, but instead to achieve a depth of exploration. In terms of case study research, usually no more than four to five cases are used within a study. Creswell (2007) suggests that this number should provide ample opportunity to identify themes from the cases researched, as well as being of use to conduct cross case theme analysis. He goes on to describe that when selecting case studies, maximum variation sampling should be used where feasible so that multiple perspectives are represented, using a variety of data. In the situation where such critical case studies are difficult to engage, then using a mixed sampling strategy is appropriate.

This study employed a purposeful sampling approach that is often a requirement of qualitative research (Creswell, 2007; Curtis *et al.*, 2000). Purposeful sampling is a concept often used during qualitative research by the inquirer. Individuals and/or sites are selected because they can 'purposefully' inform and help further understanding of the research problem or phenomenon under study (Creswell, 2007). Marshall and Rossman (2006) suggest four aspects to sampling as events, settings, actors and artefacts, noting that sampling can change during the course of research, and that the researcher must be flexible in his or her approach. Creswell (2007) then describes that sampling takes place at the site, event or process and participant level, suggesting that qualitative studies often have one or more present. This approach to sampling involves the selection of relevant cases that will inform the research aims (Patton, 2002). Kumar (2005) suggests that this type of sampling is particularly useful when the researcher wishes to describe a phenomenon or develop something about which little is known.

The following outlines the various sampling strategies used for qualitative data collection during this research design and process. These are identified as 'maximum variation' and 'critical cases', which when combined, provide for a mixed or triangulated approach to sampling. Maximum variation, as a sampling technique is popular in qualitative research, in that it consists of the researcher determining criteria in advance, and then selecting sites or participants that are different to the criteria (Creswell, 2007). Critical case sampling provides specific information relating to the research problem. Using these two sampling strategies for

the qualitative aspect of the research (i.e. maximum variation for selecting participant semi-structured interviews and critical case sampling for the embedded case studies approach), provides for a flexible triangulated approach to researching a phenomenon, and helps to meet multiple interests and research needs (Miles & Huberman, 1984, cited Creswell, 2007, p.127).

In addition to the interviews within the case studies, further interviews external to the case studies were identified using a purposeful sampling strategy, in order to provide a wider context for the development of the TP. Therefore meetings were set up on an individual basis and initially hand-written notes were taken. This semi-structured approach is similar to the Applied/Action research approaches previously outlined. Participants who were considered expert in or knowledgeable of local transport issues were approached to undertake semi-structured interviews. Individuals can be classified as 'experts', in that they have informed views of their specialised field, or that experts often occupy authoritative positions. As such, the researcher would expect the information they provided to be clear, consistent and accurate, although this is rarely the case (Lindsay, 1997).

This research adopted a semi-structured approach to interviews that helped the research to develop a more comprehensive approach to data collection, than that provided by the approach adopted thus far. To achieve this, an interview schedule (Appendix 3) was developed. This was structured around identifying issues that affect specific TP initiatives that were considered successful or unsuccessful and their successful implementation.

The University of Hertfordshire and Vauxhall interviews were undertaken with the *Environmental Affairs Manager*, [Respondents E & A respectively] and a [Freight] *Transport Operations Manager* [Respondent B]. These individuals were interviewed due to the relevance of their roles and therefore to the broad scope of the research. Respondent E & A, as Environmental Managers in their respective organisations were directly in charge of all environmental issues and planning at their organisations, and as such were the first source of information.

Out of the four external individuals interviewed in-depth, the organisations they represented included a Local Authority [Respondent C], an Airport Authority [Respondent D], a large manufacturer for the defence industry [Respondent F] and a Freight Distribution Operator for a large department store [Respondent G]. These four additional interviews were undertaken with these external organisations because they had either developed or were implementing a TP, or had undertaken similar transport activities to that of the research case studies, and were deemed useful for comparative analysis.

Respondent C was approached owing to her background in transport policy and interest in promoting the benefits of TPs to large, medium and small organisations (SMEs) within Hertfordshire. Although as Respondent C stated:

"I am not directly in charge of developing and implementing the council's own TP"
(Respondent C)

Respondent C's input was deemed crucial and important to obtain, both in determining the success of the Council's own internal TP, but also in understanding from the policy level the likely future success of regional government involvement in travel planning with different organisations. This is a vital objective for investigation for this work. The fact that the council employees commuter habits impact heavily on the local area was also of interest to this project, as the council is deemed a large employee within Hertfordshire.

The remaining four interviewees were included because of their roles as working directly within large organisations that impose a great deal on the environment from transport activities, whether from freight [Respondent G], commuter travel [Respondents C, D, F], or from business travel. All respondents were directly involved with the development/implementation of a TP strategy for their given organisation or were implicitly involved with transport planning or management issues.

Respondent D is employed by the Airport Authority as their:

"…Planning and Access Operations Manager with…Luton London
Airport Operations Limited…" (Respondent D)

This individual was approached to be interviewed for a number of reasons. First, he is employed by London Luton Airport Operations Ltd, which *"runs the concession to operate London Luton Airport"* [Respondent D]. This organisation is responsible for developing and implementing the airport's access strategy, which encompasses a TP for on-site employees as well as customers flying from the airport. Secondly, the fact that this organisation was situated on the doorstep of Vauxhall Motors was deemed a useful case study from which to obtain detailed information for TP development and implementation.

Respondent F was interviewed because of his employment at a large manufacturing organisation. Although carrying out contrasting manufacturing and research activities to Vauxhall in regards to transport, this organisation had similar impacts, and the fact that they were undertaking activities as part of a TP was also a factor in approaching the respondent for

interviewing. As with previous interviewees, Respondent F's, responsibilities extended beyond travel planning as the individual was employed as an Environmental Manager to the organisation.

Respondent G was approached as a freight manager, to compare directly with Vauxhall's own in house freight operations. It is interesting that this respondent had no knowledge of how TPs worked and that his organisation had no such TP in place, but as part of his role his organisation implemented cost saving and environmental initiatives.

All the external individuals were interviewed for their position, within their respective organisation, being linked in some way to travel planning, policy or management. The fact that the majority were actively developing or looking to develop TPs was another reason for approaching them. This in itself is an important point to make. There was not a great deal of organisations actively developing TPs at this time (as outlined by Rye, 1999[a]) and as such when one was located implementing one, they were approached due to a lack of alternatives available. Hence, this was why a purposeful sampling strategy was adopted in selecting external case study interviewees.

4.4.2   Semi-Structured Interview Analysis

Despite the justifications for adopting a qualitative approach to explore this subject, qualitative research is sometimes considered to be a 'soft option' that lacks scientific rigour and is at risk of potential bias (Chapple & Rogers, 1998). Several authors have suggested that this criticism stems from a lack of detail presented by the researcher as to how the findings emerged from the data (Pollock, 1991; Clarke, 1998; Crist & Tanner, 2003). It is therefore vital that qualitative researchers clearly illustrate the stages taken to arrive at their descriptions and/or interpretations.

For such reasons, this study has employed Burnard's (1991) fourteen-stage framework for the analysis of interview transcripts in qualitative research (Table 4.2). One possible approach to analysis of the data obtained through the semi-structured interviews was the use of a computer assisted qualitative data analysis tool (CAQDAS). Denscombe (2007) identifies a number of advantages to using CAQDAS to manage data, which includes the flexibility of storing the data and allows for copies to be made readily and stored safely. Secondly data can be easily coded for both indexing and categorising as a preliminary part of the analysis. Thirdly, data can be retrieved and the search facilities of such software allow data to be easily located once it has been coded. However, this thesis takes into account three limitations to using a CAQDAS to qualitative analysis. First, as identified by Tesch (1993), the computer is unable to make conceptual decisions in terms of words or themes on which to focus the research around.

Secondly, there is a risk that computer software provides only superficial content of the text that could lead to further de-contextualisation of the data being analysed. Thirdly there is a risk of overloading and creating complex codes and connections. This can distance the researcher from the data that makes it more difficult to become familiar with it (Denscombe, 2007).

Consideration was given to the most suitable framework for the analysis of the qualitative data collected. Alternative frameworks were reviewed to gauge their appropriateness for the material gathered through the semi-structured interviews. Colaizzi's (1978) framework has been widely used for interview based research and involved six stages, which seek to enable the researcher to generate themes through the extraction of significant statements and phrases that pertain to the experience under investigation. This framework is often favoured, owing to its logical approach to data analysis and emphasis on moving back and forth between meaning statements and successive hypothetical lists until themes are accurately reflected. However, Colaizzi's framework is primarily used within phenomenological research where the aim is to present a phenomenological description that captures the essence of the participants' 'life worlds'. Thus it has been widely used in health and social care research where in depth, and often unstructured, interviews are conducted to further understanding of peoples personal life experiences and their responses to them. In this thesis, whilst there was clearly a focus on understanding people's experiences of travel planning, it was not phenomenological in its approach. The selected framework needed to provide a logical approach to coding and theming data, rather than using meaning statements to provide an overall phenomenological description. Therefore Colaizzi's framework was disregarded as a possible analysis framework.

As discussed, Burnard's (1991) framework was utilised to analyse the qualitative data gathered from the semi-structured interviews. Burnard (1991, p.465) himself proposes that researchers must 'start somewhere' and attempts must be made to represent the thoughts and feelings of others in a systematic way. In accordance with Johnson (1995), the researcher believed this framework to be 'clear and unpretentious', providing a logical and detailed pathway to complete analysis. The framework illustrates to the reader the processes undertaken to arrive at the final narrative, and thus avoids the criticism of some qualitative research whereby conclusions are drawn with little opportunity for the reader to follow the trail of the researcher. Burnard (1991) recommends that his method of analysis cannot be used in a simple `do by numbers' way (Clayton & Thorne, 2000), highlighting the need for the researcher to remain open to complications involved in the process. Therefore, as described by the Clayton and Thorne, whilst the analysis did progress along the stages of the framework, a number of stages were revisited during the analysis process as part of a checking mechanism.

Table 4.2   Burnard's (1991) fourteen-stage framework for the analysis of interview transcripts in Qualitative Research

Stage One

Notes were taken following each interview regarding key topics discussed.

Stage Two

The typed transcripts were then read and notes made on key themes found within them. The stage was concerned with 'immersion' into the data. Rogers (1951) has asserted that this is a process of entering a person's 'frame of reference' and therefore gaining an awareness of their so-called 'life-world'

Stage Three

The third stage involved re-reading the transcripts and producing as many headings as necessary to cover all aspects of the content. At this stage, dross; that is unusable fillers in conversation (Field & Morse 1996) was excluded. This process of open coding, involved the free generation of categories.

Stage Four

This stage was concerned with grouping categories together under high order headings and thus reducing the number of categories. This demanded the researcher to highlight similar categories and collapse them into their broader categories.

Stage Five

At this stage a final list of categories was produced by removing repetitious or similar headings.

Stage Six

At this stage in the analysis, Burnard suggests the introduction of two or more colleagues independently to generate themes of their own. From this, it is possible to discuss the three independently generated lists of themes and make adjustments as necessary. Clearly this approach has benefits in minimising research bias. There are, however, numerous claims to support the involvement of only one researcher, and as Cutcliffe and McKenna (1999) assert, it is unlikely that two people will interpret the data in the same way, and form the same categories or themes. This they claim is especially true if one researcher has been involved in every stage

of the research process. It was therefore believed that for the purpose and resources available in the analysis and writing of this thesis, that the latter was adopted.

Stage Seven

At this stage, transcripts were re-read alongside the final list of categories, to ensure that chosen categories covered all aspects of the interview material.

Stage Eight

This stage involved working through and coding each transcript in accordance with the list of categories. As advocated by Burnard (1991), a colour code was assigned to each category, and transcripts were highlighted accordingly.

Stage Nine

Each coded interview section was cut from the transcript and all extracts of the same code collected together. At this stage it was important to use the complete and original interview transcripts to ensure that extracts of material were not removed from their original context.

Stage Ten

Coded extracts of text were then pasted onto separate sheets under the appropriate category.

Stage Eleven

This stage suggests that emergent categories and themes be returned to the interviewees in order to determine if they were appropriate to the original interviewees' responses to questions. However this stage was omitted as Cutcliffe and McKenna (1999) suggest that interviewees are unlikely to all concur with the emergent themes, given that they have only added a small part of the overall findings.

Stage Twelve

All sections were filed together at this stage and were thus accessible for reference in the writing of the final thesis.

Stage Thirteen

This stage was concerned with writing up the findings. Burnard (1991) suggests that this process should be dealt with in a section by section approach, which this thesis adopted.

Stage Fourteen

The final stage in the framework is the presentation and interpretation of findings. One method suggested by Burnard is to present the findings in isolation, followed by a separate comparison to the already existing literature. This it is claimed is perhaps the purist manner to present the findings and was thus most appropriate for this thesis.

4.4.3   Undertaking Interviews

Oppenheim (2001) suggests that undertaking an interview requires a great deal of interpersonal skill. A key skill requires the interviewer placing the individual respondents at ease by asking questions in an interested and interesting manner. Taking hand-written notes or recording notes digitally needs appropriate consideration. The permission of each individual needs to be explicit before responses provided are recorded in a particular way in order to reduce the likely hood of upsetting the flow of conversation. The qualitative researcher or interviewer must be able to give support throughout the process without introducing his or her own bias on the interview material being provided.

Oppenheim (2001) suggests there are essentially two kinds of interview techniques.

1. Exploratory interviews, depth or free-style interviews.
2. Standardised interviews such as those used in public opinion polls, market research and government surveys.

The former are regarded as informal and the latter formal (Lindsay, 1997). Lindsay argues that the important difference between these two interview techniques is the level of interpretation that takes place. In the case of informal interviews the researcher typically does the interpreting after the interview, with the framework long constructed before the interview took place. With informal interviews, one of the important tasks is to identify appropriate directions to take during the interview for the process of data collection.

The informal exploratory interviews are essentially heuristic, developing ideas and research hypotheses rather than gathering facts and statistics. They are concerned with trying to understand how ordinary people think and feel about the topics being researched. Therefore

these were most appropriate for this thesis in determining respondents' involvement, perceptions and experiences in relation to organisational TPs. Exploratory interviews help formulate the research problem. Formal standardised interviews are essentially large-scale surveys interested in collating large amounts of data.

4.4.4   Interview Schedule Design

An interview schedule was developed (Appendix 3) using nine questions, with sub questions underpinning them. A semi-structured schedule was developed in order to provide sufficient structure for feeding into the analysis sections. It also needed to be flexible enough to ask additional questions of those being interviewed, should such questions arise through the fluidity of the interview questions, including the complexity of the area and variety of the individuals approached for the interviews (Silverman, 2000; Lindsay, 1997).

Questions one and two began by asking the individual's position within their respective organisation, and how that position was linked to transport. This was an effective way to gain important background information about the respondents and to address the issues of 'apprehension phase', which is common at the beginning of an interview as described by Whiting (2008). Respondents were then asked to formally provide a description of what they thought a TP was and their overall knowledge of TPs as a local travel planning tool. This provided the researcher with a clearer understanding of the context in which the respondents were involved with the area of transport within their particular working environment (see Lindsay, 1997).

Questions three through to six then asked the individuals whether they had been involved in developing and implementing past, current or planned future TP interventions. Question four asked respondents to list and then explain the background to their development and implementation. The interviewees were then asked to say whether they thought that initiatives that had been implemented had been successful in achieving their aims, and again their overall involvement.

Questions seven and eight asked more probing questions about why the individuals thought that specific initiatives that had been identified during the interview had been successful or had failed. This was in order to identify themes and sub-themes within the analysis chapters of this thesis, to try to understand from a post-positivist perspective, why certain initiatives succeed and others fail (Silverman, 2000). Question nine concluded the interviews by asking each individual to add any further comments on the issues discussed.

Ethical approval was obtained from the University of Hertfordshire Faculty of Natural Sciences Ethics Committee (since superseded by the School of Life Sciences Ethics Committee with Delegated Authority), and a protocol number provided (NS1/4/03P).

4.4.5   Semi-Structured Interview & Researcher Positionality

With regards to undertaking the interviews, a researcher position was taken whereby those being interviewed were regarded as the professional practitioners in their field, and as such questions were asked in a manner as to try to understand where each individual stood in regards to 'Travel Planning'. Interviewing the three internal case study employees at their place of work reinforced this position. This was intended to provide the participants with a familiar environment in which they would feel comfortable to express themselves, as recommended by Burns and Grove (2005) and Clarke (2006). Practicalities, such as time availability also had to be considered in that participants had working commitments and other constraints placed on their involvement. Such commitments meant that fitting interviews around work activities had to be planned with interview times arranged well in advance. It is important to note for the purpose of this study, that such a working environment may in itself have made those being interviewed unwilling to express their true thoughts about the subject, if any sensitive questions or issues were raised during the interviews.

However, it is accepted by the researcher that answers given during this process were generally given in a professional manner, in that when personal opinions were given, the participants often separated out these responses from the 'official' company line. This 'deviation' was achieved by the researcher nurturing a trusting professional relationship with these individuals as part of the process. Although the extent to which such professional relationships impacted on the answers given is difficult to qualify. It was felt that the interviews undertaken with all interviewees were natural, comfortable with extensive answers provided.

The main outcomes derived from the research process are outlined within seven broad themes that emerged through the analysis phase. These were *'Travel Plans & Perceptions'* *'Government Policy', 'Business Climate', 'Environmental Management & Travel Plans', 'People – Engagement, Culture & Industry Representation', 'Communications & Marketing',* and *'Travel Plan Measures & Infrastructure'*.

4.5   Limitations & Conclusions

Near the beginning of the research process, several issues occurred that had a dramatic impact on the direction the research was to take. As stated earlier, the reporting of the closure of the

Vauxhall Plant early on in the process meant that the perceived importance of developing and implementing TP initiatives, let alone a complete TP, was not what it had been at the outset. The whole environmental agenda within Vauxhall, which at the time was based in their Environmental Affairs Department, was downgraded, and many of the individuals the research relied on within the organisation, either left the company or moved to other locations. Ultimately Vauxhall closed down in Luton completely in 2002 and moved to Ellesmere Port. From a practical perspective achieving the research was near impossible and a decision to move on from this case study was taken. However, insights from early engagement with Vauxhall have helped informed the eventual direction of research.

The issue caused a great deal of difficulty in terms of the processes and methods developed for data collection, in that, data on freight and business travel, which had been two areas for focussing the TP, could no longer be fully undertaken. This led to two methods, which had begun to be developed (freight review and business review) being superseded. As a direct result of this issue, the research was suspended until such a time that an alternative case study or approach could be used for developing TP interventions, and researching their overall impact and success. Eventually, a role of TP Coordinator arose with the University of Hertfordshire, to which a TP would need to be developed and implemented as part of a planning requirement. As such, the researcher applied for this role and was successful in being appointed, allowing research to resume (albeit on a part-time basis). This opportunity allowed for the research to develop focusing specifically on developing an employee commuter TP for the University of Hertfordshire from an embedded researcher perspective (see Chapter Seven).

The implications for the thesis in not being able to undertake all the planned methods within the original case study organisation, led to a loss of research time and effort at the outset of the research. Whilst some of the communications made with representatives have been alluded to within the thesis, much of this has had to be excluded, and a more generic reporting of this data presented. Fulfilling the role of TP Coordinator within the University of Hertfordshire has been a useful opportunity to provide a platform for the research subsequently to emerge. At the outset, the researcher perhaps naively thought that organisations would embrace TPs and their respective initiatives, and that this would be a straightforward subject to research. Even working within an organisation, implementing interventions on the ground, whilst researching them, was found to be not a straightforward process. However, this thesis provides an approach to organisational TPs, their vicissitudes and their slow progress as tools for implementing the 'Smart Growth' and 'Smarter Choices' agenda (see Reeds, 2011 and Cairns *et al*., 2004).

Using an emergent approach to research from the outset, has allowed for a rich and diverse knowledge base to be developed. Certainly the researcher, in his attempt to overcome many of the difficulties of the research process, has helped evolve TPs in new ways and directions. With the emergence of a Quality Partnership (QP), it may mean that TPs fit into wider TP measures rather than the more traditional single organisational approach.

The methods outlined above and summarised within Figure 4.1, provide the basis of a multi-methods approach to data collection. In terms of analysing and presenting these data sources, both qualitative and quantitative approaches have been used. Qualitative data sources are presented using an 'outcomes approach' to analysis. This uses an emergent approach, whereby categories and subsequent sub-themes are identified through the analysis of interview scripts. These categories are then used to provide a framework against which to present a narrative of the qualitative sources. Quantitative methods have been presented using statistical, graphical and tabular, as well as GIS analysis tools in Chapter Six. This process provided a structured approach to feedback and analysis of the various multi-methods used (see Gibbs, 2007; Limb *et al.*, 2001/2007 and Robson, 2008). These findings are covered in depth within the next two empirical Chapters Five and Six.

Chapter Five - Qualitative Data

5.0   Introduction

This chapter aims to present and discuss the findings from the semi-structured interviews undertaken as part of the initial stages of the research. In addition, reflective diary boxes are embedded within the discussion, to provide an insight into the researcher's reflective thoughts. These diary boxes have also been used to highlight learned outcomes to be used to inform the development of a TP for the University (outlined in Chapter Seven).

As detailed previously in Chapter Four, Burnard's (1991) 14 stage framework was applied to the analysis of the interview data. In summary, this firstly involved the transcribing of the seven semi-structured interviews into written transcripts, which were then read through thoroughly by the researcher. This initial stage allowed the researcher to gain familiarity with the data, from which it was possible to generate a comprehensive list of themed categories. At this stage, the richness and diversity of the participants' experiences was recognised, as an extensive number of categories were generated. Following on from this, each transcript was then coded with a specific colour, in accordance with the list of generated categories.

When assigning these colour codes, it was noted that a number of participants' comments related to more than one code. In these instances the comments were assigned to the most relevant code for the purposes of reporting, although it should be noted that throughout the chapter there is cross-referencing between the categories, and these are reported and discussed where necessary. From this, it was possible to collate related categories leading to the emergence of seven key themes. The seven themes that emerged from this process were: *'Travel Plans & Perceptions'* '*Government Policy', 'Business Climate', 'Environmental Management & Travel Plans', 'People – Engagement, Culture & Industry Representation', 'Communications & Marketing',* and *'Travel Plan Measures & Infrastructure'*. The seven themes have been used to provide a framework for reporting the findings of the interview process as presented within this chapter.

5.1   Travel Plans & Perceptions

One of the aims of this part of the research was to explore the respondents' understanding of organisational TPs, and the extent to which their roles were linked to delivering transport related measures within their specific organisation. This would help determine the way the questions would evolve towards the development of interventions, whether they had been implemented, as well as understanding the issues surrounding this process. Owing to respondents' roles within their organisations, there was found to be much variation in both their understanding of what

TPs were, as well as respondents' perceptions of the implementation of travel planning within their respective organisations.

When asked to broadly define a TP, respondents placed varying emphasis on the elements that could be incorporated within them. This was because they were all employed in areas ranging from environmental to freight managers within their respective organisations. From this, it became apparent that there was a focus on commuting, some business travel and freight. Employee commuting to work was cited most commonly as being the primary focus for developing and implementing TPs, perhaps because traditionally this is their focus within the applied and academic fields. Respondents A, E, F & G all considered commuting as the main transport related issue for their own organisation that they themselves experienced. More specifically, they highlighted the importance of reducing the numbers of single occupancy car commuters to their site(s), as a key indicator for their organisational TPs. This is a classic indicator for Travel Planners to provide as part of a TP application to local communities (Steer Davis Gleave, 2000).

In interviewing Respondent A, he acknowledged that the emphasis of TPs being on commuting, could be seen as a 'traditional view' of defining the role of a TP, and was therefore seen as too restricted a definition in this individual's organisation.

> *"I feel that it is traditionally a plan about commuting to work. As far as Vauxhall is concerned, I think it goes far beyond that…the Plan that we are working on,* [is] *really starting out at looking at the environmental impact, and on that basis, the day to day employee commuting comes bottom of the list"* (Respondent A)

Respondent A highlights the view that Vauxhall wanted to move beyond the traditional approach of TPs, to a holistic one, focused on such elements as 'environmental impact' – this at the time of the interview was integral to the 'emerging approach' to developing an outlined for a TP. As the aim of this thesis was to gain a better understanding of the issues and requirements of the company, using an iterative process of analysis allowed for issues that arose to be incorporated, if deemed appropriate to do so. This initial interview provided an idea of developing a TP within an EMS (as suggested by Staib, 2005) (see Appendix 6), and help use this learning as a 'prod' for developing this idea with future interviewees.

Respondents B & F identified a more narrow focus for TPs, as concentrating more specifically on the aspects important to their roles, not just the commuter aspect. In the case of Respondent

B, the focus of a TP was specifically concerned with freight vehicles entering and exiting a plant (although it was accepted that commuter travel would also be encompassed within a TP). Whilst it was acknowledged that this view was a broad outline of what a TP should be, the respondent reported that his knowledge was quite limited, stating that:

"it really is not my concern"
(Respondent B)

This may well be related to this individual's role, which was focused on managing the freight fleet of the organisation. This provided an insight to the research that individuals' roles within originations can create a silo mentality when looking at complex issues. Individuals are not always willing to look outside their own sphere of influence, or to change their own behaviour, let along their own organisation, if they do not see, or want to see the bigger picture (as outlined by McCalman & Patton, 1992).

Respondent F considered the primary aim of a TP to reduce the number of people driving alone to work by car, thus insinuating that a TP should principally focus upon the commuting aspect. There was no further expansion by this respondent in terms of defining the role of a TP. When asked about his knowledge of a TP, Respondent G was unable to provide a definition, owing to the fact that this individual's role was based within freight distribution. When prompted further, he believed that the focus was on commuting and proposed that a TP would be concerned with:

"...as regards the information you have hinted at, I would imagine that it
is how we are to get people out of their cars and into work."
(Respondent G)

It is important to note that Respondent A considered the impact of freight and business travel to be more significant for a TP to address than commuter travel within their organisation. Furthermore, the same respondent acknowledged that the purpose of a TP was to reduce the business costs associated from organisational travel, as well as to minimise the environmental impact. It was considered that reducing employee commuter travel would have little impact on reducing business costs, when compared to freight and business travel activities. This view seems to contradict itself from the point of view of environmental impact. During this study, calculating carbon emissions for the University from commuter travel indicated that this activity had an indirect impact of contributing, in the region of two-thirds of the total emissions, of that particular organisation. Whilst the researcher accepts that this figure may alter between different sectors, it seems that including indirect carbon emissions within management systems is a

difficult concept for individuals and organisations to consider or accept. It appears more direct emissions, such as Scope 1-2 emissions (relating from estates and business travel), are easier to calculate and influence. This point brings into focus the challenging issue of reducing organisational and individual contributions to carbon emissions by commuting activity. Calculating emissions, whilst challenging in itself, is only the first stage, prior to raising awareness to individuals. Changing behaviour towards less polluting modes is yet another angle that a TP can use to encourage change, but this in itself is unlikely to achieve the desired mass modal shift required (Dennis & Urry, 2009; Marsden & Rye, 2009; Dair & Williams, 2007; Sloman, 2006).

The impact of transport activity on the environment, and more broadly the concept of 'sustainability' also featured in other respondents' definitions of TPs. Respondent E highlighted sustainability by stating:

"Sustainability is the overarching thing, and peoples' total use of the car
is going against what sustainability is trying to achieve"
(Respondent E)

Respondent C went further by highlighting the importance of a more holistic and planned approach to Transport Planning, with the aim of achieving a more desirable and sustainable situation for alternative transport modes to that of the private motor car. This opinion was clearly based on the broad concept of sustainable development put forward by the Brundtland Report (1987), which indicated that this individual had a good knowledge of the wider impacts imposed by the transport sector.

What was clear from this stage of interview script analysis was that there was a broad range of understanding and knowledge surrounding TPs by practitioners in their respective fields. This proved to be a trend throughout the research, whether through working with individuals developing the TP, or through working with individuals and trying to change their travel choices. A great number of people have varying issues and opinions in relation to their professional and personal travel habits. Often, the personal requirements of individuals would impact on their professional decision making or were unwilling to change tried and tested methods to managing transport provision (as discussed by McCalman & Patton, 1992). Overcoming this was a continual issue within the research and applied process, with change management surfacing as an approach to TP development through delivering effective leadership and management of the process of engagement with stakeholders.

*One of the key aspects of my research was to develop a better understanding of individuals within organisations and how they went about TP development and implementation. I hoped that insights gained from this process could help inform the overall development of a generic TP (*see chapter Seven*).*

*At the beginning of the research, I often went into an interview or a meeting with an individual (that would benefit or impact upon the success of the University's TP) thinking that they knew more about the subject than myself. At the end of my research, I have learned that more often than not, this assumption was incorrect. This was made apparent within the formal semi-structured interview process, when a number of the respondents did not have any working knowledge of TPs and that often assumptions were made based on subjective personal wants and desires, rather than objective needs for the organisation (*as outlined by Sloman, 2006*).*

The role that the individual held had a large impact on this knowledge and this had a significant impact on the direction that a transport strategy, or TP would take within a given organisation. For example, Vauxhall and John Lewis respondents' focus was freight, and this made the perception of their TP to be focussed on that area.

What was important to me as a researcher, even at the early stage of scoping the research, was the variety of answers gained from the perceptions of a TP. Commuting, business travel and freight were all areas that a TP could encompass and these were the first outcomes from the interview process.

Outcome: 5a

The role of individuals, their perceptions and knowledge all have potential to impact on the direction of a specific organisational TP.

Reflective Diary Box 5.1 Travel Plans and Perceptions

To implement alternative transport options for commuters, Respondent C identified the importance of looking at these alternatives and in particular how they would relate to their own organisation. The issue of providing alternatives to the car was also discussed by Respondent E, who referred to a 'carrot and stick' (as discussed by Sloman, 2006; Cairns *et al.,* 2004; Docherty, 2001) approach to travel planning.

"[It] is also about providing carrots and sticks, so that people…have
actually got realistic…affordable…accessible options… available to
them to use these alternatives"
(Respondent E)

This respondent furthered this, by suggesting that an appropriate 'stick' would be to ensure proper car parking charges, which represented the *actual* cost of managing car parks. However, this respondent recognised that a complete 'anti-car' approach would be inappropriate, given that there would always be some commuters who would have no alternatives available to them, other than the private motorcar. Such an approach has been discussed by Lyons & Goodwin (2008) and Cairns *et al.,* (2004), and would ideally incorporate the implementation of transport policies within an organisation, or indeed a region that would first develop real, affordable and realistic alternatives to the motor car, whilst also bringing in financial and physical constraints on the use of this particular mode (*ibid.*).

As a researcher, I found an interesting paradox into TPs gained from the University interviewee. She outlined some aspects to consider when developing a TP (specifically for commuting), namely the key issues of changing behaviour through the use of car parking charges (i.e. a stick approach).

That particular organisation was the only one that currently charged for parking. She introduced the term 'stick and carrot', suggesting that the users cost should mirror the cost of managing the car park. She then went on to suggest that charges would be seen as 'anti-car', and that any TP needs to accept that some commuters would have no alternative available to them.

This to me as a researcher is the key issue and outcome from this aspect of the interview process. None of the other participants would even consider car park charges as politically acceptable within their respective organisations, but at the same time not one of the participants seemed to consider that there could be commuters that had no alternative but to use public transport or sustainable modes (cycling and/or walking). It seemed to me as a researcher, that car commuters were the ones considered by the majority of respondents to be the transport poor and not those using other modes.

Outcome: 5b

Develop an organisational Travel Plan that introduces behavioural change through a 'stick and carrot' approach. Such an approach should reflect the cost of car parking management, charges that are not seen as 'anti car' and are politically acceptable to the organisation, whilst promoting and developing affordable and realistic alternative modes to the car.

Reflective Diary Box 5.2 Travel Plans and Behavioural Change

Respondent A highlighted the difficulty of implementing real alternatives as part of an organisational TP strategy from a freight perspective. He provided the example of a supplier to his own company based in Ellesmere Port (The Wirral, North West England), where the remote geographical location of the site was itself a limiting factor. Sustainability was also recognised by Respondent D, who cited various factors of sustainability that needed to be balanced within their business.

> *"There are many definitions of this* [sustainability]*; we are certainly trying to embrace the sustainability of this, as regards political, economic concerns etc.* [sic]. *Sustainability certainly contains all of the areas I have just mentioned."* (Respondent D)

Once I had gained a better understanding of the respondents and the context in which they worked, it was important to begin to gain an appreciation of how the process of managing change within an organisational TP or how specific transport measures were development.

Throughout the research, there were many factors that had an impact on both progress and outcome of the TP. Not least changes in personnel and management within the case study. Whilst this was at times frustrating, and it even halted the research (as in the case of the Vauxhall Plant closure) it provided a real life critical case study for reflective reporting.

If a TP can be developed within existing organisational structures, it becomes a living document that provides its own justification and begins to deliver a real step change and then develop under its own steam. If personnel leave the organisation, then the structures in place can be continued by subsequent employees.

The interesting outcome from this was the organisational structures for managing TPs

internally were outlined by several respondents as Environmental Management Systems for narrow focus or Corporate Sustainability Responsibility strategies for more holistic strategies. Not all participants' organisations had such management structures in place, but what I concluded from this was that target setting and continual improvement emerged as themes for developing key performance indicators for improvement. For example, the University, County Council and Matra BAe employees highlighted the importance of reducing Single Occupancy Vehicle (SOV) users as an environmental impact, whereas John Lewis and Vauxhall outlined the importance of more holistic approaches, usually under the banner of CSR strategies.

Outcome: 5c

Develop a Travel Plan within the context of an Environmental Management System (EMS) or a Corporate Social Responsibility (CSR) strategy. Either approach should reflect a process of continual improvement and target setting within organisational Key Performance Indicators (KPIs)

As the researcher, having developed an outcome for placing TPs within and EMS or CSR (Outcome 5c), this provided a foundation for the development (and eventual implementation) of a TP using this structure. This outcome provided the longer term validity and added robustness to TP development. All organisations continually experience a change in personnel and management. Often, as with this research, if there was not a manager or an individual championing the TP, then little or no progress was made. To embed the TP in an EMS using a reporting and development structure helped to maintain progress that was lacking at the beginning of the research.

Reflective Diary Box 5.3 Travel Plans and Environmental Management Systems

In terms of the broad concept of sustainability, respondents also discussed aspects relating to financial, wider community (social/cultural) and environmental impacts imposed from transport. Other issues such as employee recruitment, which related directly to respondents' own organisational needs, were also noted. These aspects fit well within wider Corporate Social Responsibility (CSR) agendas. However, tackling these myriad issues within CSR is not a legal requirement on any organisations. With economic pressures on business and organisations such 'add on' are not always at the forefront of managers or businesses in times of an economic downturn (as outlined Louche *et al.,* 2010; Erickson & King, 1999). This was later proved true at Vauxhall Motors. At the outset of the research the TP was important, but changes to leadership and economic pressures forcing a plant closure, the focus and driver for a TP

changed, to the detriment of the TP development, and prior to any transport provision changes begin achieved.

5.2   National & Local Government Transport Policy

Travel planning at the local level is highly influenced by national and increasingly European Transport Policy. Several respondents discussed the impact of national government policy and legislation on their organisational and employees attitudes. This is a direct result of the impact from past central government policy impacting at the local level of transport delivery. An example to emerge through both the research and literature review, was the impact of privatisation of the bus industry (outside London and Northern Ireland) (CFIT, 2009) and public attitudes towards alternatives to the car (Levinson & Kriek, 2008; Lyons & Goodwin, 2008; Banister, 2008).

Respondent A outlined the impact that a change in management had within the structuring of his organisation in terms of environmental management having to become a justifiable activity, like all other activities. This is because the organisation was experiencing a difficult period in its business cycle, and that activity was seen as a potential for cost saving activity. This respondent stated that:

> *"it* [environmental management] *is increasingly becoming much more of a*
> *day to day business with the increase in legislation that environment is not*
> *…something which sits on the edge…something which should be more*
> *integrated"* (Respondent A)

Respondent D also identified the importance of legislation in discussing the development of TPs, pinpointing the 1998 Integrated White Paper on airport access strategies. This was an attempt by government to begin to set out a framework for each individual airport to develop an approach to managing travel demand to and from their sites. This was important in identifying why this particular organisation was engaging in the TP process, primarily from a planning and funding perspective. The respondent went on to explain that these strategies aim to:

> *"deliver increases in the proportion of employees and passengers that*
> *come to airports in non-car modes"*
> (Respondent D)

Two further respondents (E and F) highlighted the impact of legislation in the shaping of their organisations, particularly in relation to planning permission for the development of their

specific sites. In the case of Respondent E, this related to the building of a new University campus, which was to incorporate teaching accommodation and halls of residence. This participant emphasised the need to demonstrate how transport would be managed on site in the future, in order to obtain planning permission. What emerged from this process of analysis was that the primary focus for all the organisations engaged in the process of TP development, was planning requirements imposed from Section 106 agreements (2001). Similarly, Respondent F stated:

> *"the original plan behind it* [the TP] *was to obtain the permission to*
> *redevelop the site, we had to have it."* (Respondent F)

When prompted as to whether a TP would have been developed if it were not a requirement of local planning permission, the respondent was unable to comment, as he was not with the company at the time. The issue here is the extent to which transport issues for organisations would be tackled from purely environmental or altruistic reasons, if such a planning requirement were not in place. As Louche *et al.,* (2010) outline, CSR strategies are not a legal requirement on organisations. CSR is not something organisations are compelled to do, and with changes to leadership, organisational structures, through skilled personnel leaving and fluctuating economic conditions, it is an area that is increasingly at risk of being dissolved as a core activity.

Despite respondents reacting to the importance that transport planning requirements and legislation places on their respective organisation, it was clear that a degree of mixed government messages were creating uncertainly among two of the respondents (C and D). One example provided by respondent C was the often perceived link by planners and government for increasing road capacity alongside the need for expanding Gross Domestic Product (GDP) (as discussed by Purnell *et al.,* 1999). This respondent captured this by saying:

> *"there has been such a close link since the 1970s with the ever increasing*
> *need for road space and road transport, and the fact that economic*
> [growth] *cannot take place without it."*
> (Respondent C)

She furthered this in proposing the need to unlink economic development with road transport, suggesting that this is one of the key issues for taking forward sustainable transport policy (see Section 6.1). The interviewer prompted respondent C further by asking if economic growth is primarily to do with the car. In response, she suggested that transport professionals have to go

further than this simple statement. She believed that suitable arguments have to be developed along the lines of economic development can be achieved, alongside the development of sustainable transport policy. This is an area that previous government have promoted as part of their political agendas. The *'Roads for Prosperity'* agenda from 1989 was an attempt to develop economic growth through a road building programme. This approach was later proved ineffectual at delivering the economic growth promised, as the increased induced traffic led to market externalities that reduced the impact of the gains (Purnell, *et al.*, 1999).

This perception of mixed government messages was also held by respondent D, in relation to business approach to modal use by their employees. It was stated in summary, that there was a need for government policy to be clearer with respect of transport policy and delivery by the business sector. Whilst he acknowledged the air access strategy for airports delivering on TPs had been successful in his organisation developing and implementing a transport strategy, he questioned the government's commitment to rolling out such strategies to other businesses and sectors. This raises the question of national policy development and the ability of central government to implement policy at the local level. Moreover, the respondent continued by questioning the government's commitment to the TP process in his particular area by stating:

> *"If government is not going to take an interest in what we are doing,*
> *where is the commitment, what is the point"* (Respondent D)

He went on to report that whilst his organisation provided modal split figures to the government as part of his organisations Air Surface Strategy, he queried the extent to which this documentation was actually read, again highlighting the impact of centralised policy makers having real impact on local transport provision and policy. Respondent B also highlighted the extent to which the government prioritises transportation within the UK. He said:

> *"It* [a positive image for transport] *needs to come from the government,*
> *and we are just not their number one priority. All governments do have*
> *their priorities, and I do not think that road transport is anybody's*
> *priority, except people like me"*
> (Respondent B)

This issue of low priorities was furthered by this respondent who noted:

> *"This government* [at the time of the interview] *has been in since when…*
> [1997]…*we have had 8 ministers of transport. It maybe shows what*
> *importance they put down to that particular ministry"* (Respondent B)

The respondent stressed that this was seen as a long-standing issue, which was not unique to the government at the time, but rather a feature of all governments of whatever political standing. Respondent D then went on to raise the issue of government funding for transport related measures. He reported that, the only financial assistance that could be sort through local government funding, was that of capital projects rather than revenue, such as the running of employer supported bus services. This perhaps shows a lack of knowledge of funding opportunities through LAs, in that the government has provided access for local transport funding, previously through Kickstart and latterly the Local Sustainable Transport Fund (LSTF), funding that this research has been engaged in obtaining through the QP aspect of this research. Respondent F provided an example of the DfT capital funding available for cycle shelters to be installed, stating:

"we were actually able to gain a grant from the Department for Transport to help implement those [bicycle shelters] *on site. Basically, the grant were money set aside by the Department for Transport to encourage people to cycle to work"*
(Respondent F)

Overall, there was a perception that legislation was increasing (as reported by respondents A, D, E and F) and respondent A stated that organisations needed to be pro-active, as opposed to reactive. This individual considered his organisation to be primarily pro-active towards legislation, and attributed this to the wide number of issues associated with it.

It was proposed by respondent B that in terms of legislation, the European Union was increasingly imposing restrictions on the working practices within organisations. He specifically raised the Working Time Directive and Electronic Taco-Graphs as examples. He stated that these were gradually having a major impact on working times allowed for Heavy Goods Vehicles drivers. This directive restricts the working hours of drivers to a 44 hour week and therefore also their earning capacity. Interestingly, the average hours worked by drivers within his organisation were around 50 hours per week and thus the respondent commented on the longstanding practice of drivers working overtime to increase their basic earnings. Increasing European legislation, such as that of the Working Time Directive, was seen to add to the already existing shortage of Heavy Goods Vehicles (HGVs) drivers.

Following on from driver working hours and the impact of the working time directive, respondent B discussed the impact that government transport policy was having on the overall road traffic levels. In particular, when asked about the extent to which legislation is increasing

the amount of freight on the road network during peak times, he reported that in his opinion, this was not an area that had been properly considered by ministers and their advisors. He queried the extent to which the Road Haulage Association (RHA) and Freight Transport Association (FTA) influenced government transport policy.

As a Travel Plan practitioner, I was asked by management (within the University and initially Vauxhall) to justify the TPs existence, in terms of cost savings and how it added to the organisation meeting its legal requirements.

In order to instil organisational and a cultural understanding of a TPs importance, I wanted to begin to unpick what the respondents understood of national and local government transport policy. There was a view that there had been a long term underinvestment (capital and revenue) in local transport services and infrastructure, and that government often gave mixed messages. National Transport legislation and Local Planning Authorities encouraged the development of TPs, but often contradicted themselves. An example cited was growing GDP on the back of expanding road capacity, therefore linking economic growth to that of the car, at the expense of the Environment. For the University, the local authority would set TP targets and sign them off, but as soon as the University required planning permission, is initial stance was to tell the Estates Dept. to solve on street parking by increasing on campus parking capacity. To take such a course, would render existing and agreed TP targets null and void.

Outcome: 5d

Develop a justification for the Travel Plan to include costs savings; legal requirements; organisational and cultural understanding; national and local transport policy; investment in alternatives to local transport services and infrastructure.

Reflective Diary Box 5.4 Travel Plan Justification

Some respondents (B and D) emphasised the need for local planning in order to achieve the needs of their own organisations, as opposed to relying on central government transport policy. Respondent B commented that although he had attended various transport committees within his field:

> *"the problem is always that every company has its own priorities, puts*
> *its criteria on this and that, and the importance of it"*
> (Respondent B)

He therefore believed that transport planning should be addressed locally and that a generalised plan or policy imposed by central government would not be suitable for all organisations. This is because in order to deal with specific issues, they require local solutions. This is an aspect that the new planning framework is attempting to promote. Respondent D also briefly identified his organisation's attempt to involve local planning as part of the development of their TP initiatives, yet he did not provide any further commentary as to how this could be taken forward.

Respondents E and F outlined their organisations need to develop a TP based on the requirements of the Local Planning Authority. One such example provided by respondent E was the existence of a site master TP (on the former British Aerospace site in Hatfield, Hertfordshire). Respondent E reported the need to adhere to the modal split targets set within this site master TP, although acknowledged that some of these targets were possibly 'aspiration'. This plan had been previously created as part of a site redevelopment order between the Hatfield Business Park contractors (Scott Wilson) and the local authority (Hertfordshire County Council). This plan stipulated that any organisation locating to the developing business park, would need to have a TP submitted as part of local planning requirements, under Planning Policy Guidance (PPG13), section 106 agreements.

Respondent C was asked the extent to which the LA, for whom she worked, was engaged in the TP process on their site(s). She acknowledged a greater involvement in the development of initiatives and attributed this to the potential political pressure to increase the authority's own engagement with organisational TP implementation. She highlighted two points here, one being the need for the LA to set an example in 'practising what they preach'. Secondly, she outlined the value of gaining insights and experience to enable her organisation to better understand the needs and barriers to implement successful TP initiatives within local organisations.

> *"it has been a bone of contention in the past where we feel that we are*
> *not able to do a lot of the things that we are asking other people to do*
> *and they go off and do them more successfully than us…We need the*
> *experience of dealing with these issues to find out what works and what*
> *doesn't, so that we can go out to other companies and tell them"*
> (Respondent C).

Two respondents (D & E) both identified the role of the LA in the imposition of penalties for non-submission of a TP, for either a new build or redevelopment of existing facilities.

Respondent E continued that if agreed TP targets were not achieved within the stated time period, financial penalties would be also imposed. He suggested that:

> *"The penalties are…to come out of the local government funding. If you perform badly, you won't see funding. Their allocation* [of funding] *will be reduced"* (Respondent D).

Respondent E added to this point, by questioning what the LA action would be, should her organisation fail in delivering on agreed TP targets. She proposed the following:

> *"Would they* [the LA] *make us tone down the campus? I don't think they would"* (Respondent E)

However, despite her misgivings as to the extent to which the LA would impose actual penalties for the non-delivery of TP targets, it was clear that the profile and importance of a TP had been recognised by her organisation as an essential part of the planning and future development of the site.

The key elements to come out this section for developing the University's TP, were identified as local planning conditions (PPG13). All of the organisations that were actively involved in this stage were doing so due to the requirement of a planning consent.

In terms of the University, targets had already been set via the organisation being located on a business park. The Hatfield Aerodrome regeneration site had overarching targets of 70 per cent SOV use, which would provide the base targets for the University's campuses.

As the researcher, an important aspect of this sub theme would be to test if such targets were appropriate to the organisation, and if indeed they were achievable. The Environmental Manager at the time had suggested that this target was an 'aspiration', which suggested that such a target was set too low.

From my research perspective, the University had set its TP targets arbitrarily, and not based on empirical data or informed sources. My first role, therefore, was to ascertain whether a 70 per cent target for staff SOV was appropriate, achievable and realistic. Latterly I collected empirical data to establish the true SOV figure to base future TP targets within a realistic framework (see Section 7.4.1).

The moral of this, is that a TP target must be based on evidence rather than a finger in the air approach – an all too common problem in early TP development.

Outcome: 5e

To develop SMART targets for a Travel Plan

External stakeholders were often challenging to individuals internal to the University. At my first Local Authority district meeting as University TP coordinator, the LA and public transport operators representatives eagerly went about outlining all the problems of local transport in the area. They seemed to place the University solely responsible for all local problems. I then pointed out that the University had invested heavily in a public transport operation that served the local community, and that issues such as on street parking, associated with the University had to be dealt with in partnership with the local authority, as they had jurisdiction over this matter. It was then pointed out to me, that the University was unfairly subsidising the UNO Bus operation, to the cost of the other operators… the conversation went round and round like this for some time. The essence of this meeting to me was to talk about local transport issues on the agenda, but to come up with no viable solution to them!

I was not popular when I suggested what were the 'outcomes' to take from this meeting in order to begin to tackle the issues outlined. I was told that the meeting was just that, a meeting to discuss the issues, something that was to be a long term frustration to me. Prior to my latter involvement in developing a Quality Partnership in St Albans, meeting with local partners bore the hall mark of 'paralysis by analysis', and blaming organisations in the local community.

Another key sub theme to emerge from the interviews was the importance of local solutions to local transport problems/barriers. Participants stressed that TPs or transport strategies had to take into account the priority of the organisation, but that best practice needed to be developed and shared. This was interesting to my research, as it suggests a partnership approach to information sharing and joint funding of travel planning initiatives, whilst still taking into consideration the needs of organisations (see Section 6.6).

Outcome: 5f

To develop the Travel Plan taking into consideration a partnership approach to wider community travel issues [such as a QNP].

TP development within the organisations sampled was linked to planning consent. Therefore the

main penalty for not having developed a TP was that of not having planning consent. From an embedded researcher perspective, the prospect of not having a TP was a useful motivation to embed a TP document within the organisation for future planning consent. However, I found that beyond the initial document development, the external monitoring of TP implementation was less straightforward or understood. This was a concern for the longer term development of initiatives to meet targets, because if implementation was not going to be monitored, then the very essence of TP delivering change could be questioned by internal personnel. In other words, could the TP be a 'green-washing' exercise.

It was somewhat disheartening to discover that the principal motivating factor for establishing a TP was for gaining planning consent rather than any environmental imperative. More disheartening still is that in all my TP implementations, there has never been any external validation of the data I have used or submitted to the Local Authorities, which could be considered indicative of a tick-box culture.

Outcome: 5g

Link the long term survival of a Travel Plan to gaining planning consent.

Reflective Diary Box 5.5 Travel Plan Development

5.3   Business Climate

A trend among respondents (A, B, and G) was apparent in terms of them raising the issue of 'continual change' within the business environment. This proved to be an interesting point when discussing the relevance of TPs to their respective organisation(s). Respondent A identified a number of business related changes as important when considering the development of a long term TP strategy. These included changes to fuel type(s), Working Time Directives, delivery routes and associated dealers (as in the case of Vauxhall). Consequently he went on to describe the need for a flexible approach to TP development:

> *"...it is a very flexible system, once you set up a transport infrastructure,*
> *it is not fixed; you have to be flexible because of business changes."*
> (Respondent A)

However, this respondent reported that his organisation was much more successful in coping with these aforementioned changes, as opposed to the more commuter based initiatives. He explained that:

"I think that may be…because of the relative importance of the two

systems to the company. Freight transport is what we do. Employee

commuting isn't." (Respondent A)

Respondent B provided another example along these lines, in discussing the outsourcing of in-house freight transport facilities as a trend within the UK. It is this on-going outsourcing that he believed to be the driving force behind the continued existence of the freight fleet within his specific organisation.

"We went through a major exercise…To justify to the company why we

should keep going, and I have to do an exercise which proves that we are

doing the job a lot more efficiently and economically than our outside

opposition." (Respondent B)

Respondent G adds to the discussion on transport having to continually respond to market changes. He provided an example of arranging a successful system of backhauling goods with a supplier. However, market trends resulted in the retailer discontinuing a product line and thus the use of that particular supplier. This example underlines that effective TP measures can end due to changes in the business environment, such as the case of the Pfizer Plant in Kent (pers. comm., Elliott, 2011). This reinforces the point raised above by respondent A, who discussed the importance of a flexible approach to TPs. It also highlights the extent to which the road haulage sector provides a flexible delivery network for differing business needs, and questions the potential of rail to provide a real alternative delivery infrastructure to road haulage.

Throughout the course of the research, continual change within organisations and the business environment meant I had to take a flexible approach. Therefore an important outcome from the business climate section was for me to take into account the business cycle of the organisations or wider economic environment. I took into account the aspirations of business that were deemed important to incorporate into the TP development process from the beginning. With respondents outlining the different aspects important to their respective organisations (commuting, business travel and freight), any TP, would need to consider the relevant requirements of the organisation.

Outcome: 5h

Develop a Travel Plan that considers the business climate, developing SMART initiatives to be implemented within an appropriate timeframe.

Reflective Diary Box 5.6 Travel Plans and the Business Cycle

Respondent G discussed at length the impact of the volume of freight vehicles on the road network. In terms of his own organisation he stated:

> *"We do 33,000 journeys in a year…The more you can get off the roads*
> *the better. It is something…we are all aware of…there is far too much*
> *traffic out there for the road system to deal with."* (Respondent G)

He furthered his comments by discussing the extent to which rail could meet his organisation's delivery needs. At present, in terms of the turnaround times for the picking of product lines at the warehouse and their subsequent delivery to retail outlets, rail could not achieve the same timescale as that provided by road freight. In addition, he identified that road freight vehicles exceeded the storage capacity provided by those of rail containers, which was another aspect to consider in terms of cost. He concluded his comments by outlining his enthusiasm for the development of regional railheads by suggesting:

> *"I think it* [rail] *is good for a business, and great for the nation as a*
> *whole. I am a bit of an idealist; I think that there should be a freight*
> *railhead set up in every town"* (Respondent G)

However, he acknowledged that his ideals were a long way from being realised. Currently his company's operation would have to use a railhead that is over 30 miles away, and in the wrong direction for the majority of freight vehicle movements. Participant B, also a freight manager, echoed this positive view of using rail to a greater extent in the future. He acknowledged that where railheads served existing plants (such as their Ellesmere Port Plant, The Wirral), it was more suitable to operate using rail freight than in their other plants, where no such railheads were in place. In addition to the lack of suitable railheads, Respondent B reported the general inefficiency of rail operators in the UK as a major barrier to the expansion of freight movement by his organisation. He added:

> *"We don't seem to have the same problems in Europe as we do in this*
> *country, of getting sufficient trains to actually move the product when we*
> *want it"* (Respondent B)

With the increasing movement of materials from Eastern Europe and Central Asia, such as Kazakhstan, it was expected that rail freight would play a more important role in the organisations future import of component parts, as well as the export of finished products. He gave the example of the transportation of finished goods to docks within the UK, for export

abroad. Currently he believed that this was undertaken completely by road, yet a desirable future TP measure would be a move towards rail:

> *"I do see that changing, it really has to go from road to rail…fifty years*
> *ago our finished product…was not moved by rail, so it is not a*
> *regression, it is utilising a facility that has not been used before."*

(Respondent B)

Respondents (C, E and F) also raised the issue of funding 'SMART' TP initiatives as a barrier that had to be overcome. Respondent C identified the conflict between her facilities department and the funding of wider community 'SMART' TP measures. The arguments posed tend to be between representations from facilities arguing that the allocation of funding for travel related initiatives should be for the County Council estate, against those who work in the county wide Travelwise initiative, who believe funding for community initiatives should be the priority. Respondent E also identified the funding of TP interventions as an issue.

She described the situation of there being no direct budget allocated purely for TP initiatives, yet she noted that a specific budget was set aside for the maintenance of site car parks. This is because of the priority organisations place on the provision of parking over facilities for other modes (Rye, 2008; Sloman, 2006; Cairns *et al.*, 2004 & 2008).

In the course of Travel Plan development, the issue of funding arose time and time again. From the outset identifying appropriate initiatives was the easy part, but establishing funding was difficult. A key finding throughout this process was that of coming up against a funding gap. Funding was often available for maintenance of car parks (or laying grass in mid-summer!!) from a capital funding pot, but when it came down to finding £5-10k for installing some covered cycle shelters, this proved to be a long term difficulty. The culture within the organisation was that this could be paid for by another department. Not having access to significant funding, has been a hallmark throughout the research.

Outcome: 5i

Developing a cultural and organisational shift for funding SMART Travel Plan initiatives

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Reflective Diary Box 5.7 Travel Plans and Organisational Culture/Funding

5.4   **Environmental Management Systems & Travel Plans**

Respondents discussed the ways in which targets were set and monitored in terms of TPs. Respondent C reported the importance of target setting and monitoring within the context of an EMS, as this formed the basis for continual improvement and task setting. Such as approach is ideal to implementing a TP as it embeds the strategy within a framework that allows for monitoring of specific tasks and targets set for a given time period and allows for reporting within an organisational structure. Erickson and King (1999) state that a good EMS not only allows for good record keeping, report writing and internal and external communications, but more importantly how the culture of environmental management is integrated into the daily operation of the organisation. From a research perspective, this aspect of building a TP within an existing environmental management structure from the outset, helped in building the TP within the culture of the case study because of the structured approach an EMS uses to implement change within an organisation (see Section 7.2 & Table 7.3).

However, she proceeded to highlight the fact that within her own organisation, monitoring of TP measures to that point had been mostly anecdotal rather than through using a strategic approach. This piecemeal approach to TPs was further discussed by respondent E, who commented:

> *"...in the past, we have had transport strategies, but they have only been*
> *bits of paper...although we have been doing a number of things which*
> *have been successful."* (Respondent E)

She continued further on this point, by describing the fact that at that time there had been no formal designated Travel Planner [coordinator]. Consequently a number of different personal spread across the organisation had been involved in managing transport related issues. She further stated:

> *"...it is my job as the* [environmental] *advisor to try and promote*
> *alternative transport and systems...across the University in a*
> *coordinated manner"*
> (Respondent E)

Respondent A also discussed the difficultly in measuring the impact of specific initiatives implemented. He stated the difficulty lay in objectively measuring the impact of each initiative, and provided an example with video/teleconferencing and its overall impact in reducing CO_2:

"We tend to…calculate the amount of carbon dioxide we generate by an
estimate. You can only show the improvements by decreasing the
numbers. Unless you were to look at every teleconference you took part
in, the amount of business travel saved on, it would just be an exercise
that would not be worth the effort…" (Respondent A)

This is an important observation, because if a TP is to implement a set of interventions (either large or small) as part of the wider '*Smarter Choices*' agenda espoused by Cairns *et al.,* (2004 & 2008), then their impact needs empirical evidence for reporting success or failure in achieving either behaviour change or a reduction in carbon emission.

As discussed in Section 5.2, Respondent A reported the increasing impact of legislation on the reporting of environmental aspects by organisations. This legislation is important as it increases the overall integration of environmental issues throughout the organisation, to which TPs can be incorporated. However, Respondent C identified that the integration of environmental management, including that of TPs, was not always apparent within each department, but rather seen as the work of the Environmental Department within her organisation:

"…we actually have a whole department which is called the
Environment Department and is concerned with the environment, and
these initiatives tend to come from that department…so it is not actually
seen as integral to other parts of the business, or in any way relating to
other parts of the business. It is seen as very much an Environmental
Department thing."
(Respondent C)

Respondent C was asked to consider how the issue above could be overcome so that any department or company would have to manage transport more effectively as a business cost. In response, she identified that larger companies in particular were beginning to look at the issue as part of their Corporate Social Responsibility (CSR). Through these management systems, she outlined that organisations were better able to begin to understand and identify how much they were spending on the activity of transport for business travel purposes. This is because reporting structures are in place, against which cost savings can be set (Kotler & Lee, 2005; Erickson & King, 1999). These comments were further evidenced by Respondent G who considered transport planning to provide both economic and environmental savings. In relation to the latter, he raised the issue of environmental management for his organisation within the context of CSR, saying:

"There is…environmental benefit…which is something the partnership is
quite keen on. We have actually got a corporate department, which is
called Corporate Responsibility" (Respondent G)

> *Developing a TP and implementing it was of great importance to me as an embedded researcher. This was due to the fact that I wanted to develop an emergent narrative around such processes.*
>
> *A key sub theme to emerge from the interviews with representatives engaged in transport or other environmental issues were from those organisations working on the environmental management systems within wider Corporate Social Responsibility agendas. From a researcher perspective, I found this to be an opportunity to engage with in order to develop a TP within an EMS framework.*
>
> *What was ideal with this approach is that it allowed the research to embed itself within a strategic continual framework for improvement of environmental aspects. As the literature review (Chapter 2) suggest, transport has important environmental impacts (CO_2 emissions, local air pollution, on street parking…). Therefore if transport were incorporated within an EMS, as an environmental aspect it would begin to develop a TP within the structures and culture of the given organisation (*as suggested by Erickson & King, 1999).

Reflective Diary Box 5.8 Travel Plan as Strategic Plans

5.5 People - Engagement, Culture & Industry Representation

One of the most pertinent themes to emerge from the interviewees was the extent to which TPs were highly influenced by organisational culture and individuals perceptions, beliefs and attitudes. This is because of the impact that this has on the development and implementation of a systems led approach to management. This applied to both the development of organisational TPs as well as individuals' engagement with the measures employed within them.

5.5.1 Stakeholder Engagement

One of the key aspects reported by Respondents (A, C & E), was the importance of support and commitment of senior management for developing and implementing a TP. Such support varied between organisations with Respondent A reporting that his current Managing Director did not have the same 'driving interest' in environmental affairs. He therefore believed that the organisation had regressed in terms of its commitment to implementing environmental

initiatives. When prompted as to why this may have occurred, he proposed that the Managing Director's financial background provided him with a different focus to that of his predecessor. Moreover, the current economic climate and its effect on the motoring industry, was seen to be the overriding focus for his organisation. The issue of change in leadership and the expertise of individuals capable to ensure the survival of a TP through such change, impacted on the research throughout. Without this support 'driver', the direction of the work could be changed or even stopped all together. This situation occurred several times whilst working at the University. A total of three estates managers were involved throughout the period of the research, with supporting individuals replaced by individuals who wanted to make their own mark. Each time this occurred, the researcher's embedded role had to provide a justification as to why the travel strategy was important on delivering a continual improvement agenda. The TP being situated within the University's developing EMS aided this process of robustness when changes occurred within the organisation.

Respondent C also recognised the importance of managerial support for TPs by stating:

> *"…this applies very widely to TPs…the commitment of management at*
> *senior level is vital, right across the board"* (Respondent C)

Respondent E likewise reported the importance of this senior management support and provided an example of how this had been demonstrated within her own organisation.

> *"…we have actually had a major commitment from senior management*
> *now, we are going to have a Travel Plan Coordinator…the Travel Plan*
> *is a full time job, to work with partner organisations, to look for funding,*
> *actually coordinate with all these different people…and come out with*
> *something which staff and students are actually going to take notice of"*
> (Respondent E)

Respondents A & F also highlighted the importance of working effectively both within their organisations and with partners, such as LAs and public transport operators and other organisations. Respondent F provided an example of effective cross departmental working in the development of a 'Green Transport Week', as part of communicating their TP initiatives to their workforce. In this, he reported the development of a Steering Committee, which involved representatives from a number of departments, including Human Resources, Finance, Communications, Facilities and Health & Safety. This contrasted with the experience of

Respondent C who reported the difficulties in engaging with other departments on their TP and its initiatives, as discussed in Section 5.3.

Another aspect of engagement reported by Respondents B & E was the role of Unions. Both respondents outlined that Union representatives had actively been involved in the development of TP policy and initiatives in terms of both freight and commuting. Respondent E provided an example of positive Union involvement in the car parking charging policy. She reported:

> *"That* [travel group]*… includes other people, like the Union representatives…they are all very involved in it, because at the University the cost of car parking…is quite a sensitive and political issue, which is why the Unions are involved"* (Respondent E).

She went on to outline the union representatives' amenable approach to the University's efforts to reducing car use, believing the union to recognise the significance of reducing the demand for car use in the future. Respondent B also highlighted the positive relationship that had been built up with the unions within this organisation in keeping transport costs down. He stressed that this had been done against a backdrop of seeing a plant of 3,000 employees laid off in the preceding years. This had made it easier to talk with shop stewards on a monthly basis about keeping costs down. He outlined an example of shop stewards reporting a specific freight cost saving initiative that in previous times would have led to drivers obtaining overtime. He stated:

> *"They* [the unions] *can see a lot more positively now,* [the shop stewards suggested] *why not put those slot* [delivery] *times back an hour…then those two trucks can be in and out much quicker! They would not have suggested that a few years ago."* (Respondent B)

However, he did forecast differences with the unions in the future in terms of them gaining their members maximum benefits for when the Working Time Directive impacts, imposed from Europe were implemented.

The issue of stakeholder engagement and involvement with developing a TP would be of prime importance throughout the research. I found as a TP practitioner that working with stakeholders, whether management or employee, challenging at best and at worst frustrating.

Often I found that individuals internal and external to the organisation were more than happy to engage in the debate around excessive car parking and its associated problems (staff not

being able to find a space where they wanted one, on-street parking in the local community, poor infrastructure on site for alternative modes, lack of information on public transport to name but a few…). However, when it came to implementing change, such as a daily car park charge, suddenly the situation was not deemed bad enough for such a 'draconian' measure. Employees, it seemed were already paying for their parking [the University implements an annual permit scheme based on a tiered wage structure], *they should not be asked to pay any more, so that the University could make even more profit!! Unions often used the issue of low paid earners as justification for charging low rates.* [Chapter Six provides further insight into the cost of providing car parking spaces] (see Appendix 7).

Through development of an internal structure for managing the University TP document, there was a continual changing of employees within the organisation (including the EMS manager), and as such developing the TP within this structure proved a long and laborious process. Whilst management were happy to sign off an environmental policy, when it came to providing a budget, or signing off a change to the car park policy, they were less obliging. Through engagement with Union representatives, I had many discussions where there was agreement to develop soft/carrot initiatives, but when it came to discussing car parking charges, these should be set as low as possible so that lower wage earners were not discriminated against. This low wage demographic would be used time and time again by both union and management representatives when discussing possible solutions to the car park charges and increasing them, or altering them to a daily charge.

Outcome: 5j Develop a Travel Plan that considers low wage earners.

Reflective Diary Box 5.9 Travel Plans - Carrots & Sticks

5.5.2   Culture

An important sub-theme to emerge from the analysis process was a belief by a number of respondents that a large scale change in behaviour, at both organisational and individual level was required. If TPs and their incorporated 'Smarter Choices' interventions for modal change are to be successful in achieving a change towards more sustainable modes, then the current attitudes of a large proportion of commuters, specifically car users towards alternative transport would need to alter (Lyons & Goodwin, 2008) (see Section 6.5).

The issue of culture was raised by Respondents D, C & E. The latter discussed the impact of culture at the individual level, reporting the difficulties in changing behaviour away from car use, suggesting that people will always find or provide a reason or justification for using their car. Likewise, Respondent C also raised this issue in reporting that a number of employees

living within a mile of her organisation were known to bring a car onto site every day. In terms of motivating individuals to amend this type of behaviour, she advocated a reward system for people walking to work. However, she acknowledged that it was difficult to identify those staff that walked, and also to devise an effective way to managed and reward them. Respondent F likewise raised the issue of incentivising alternative modes to single occupancy car use. In particular he talked about a car sharing initiative, which had been successful on a small scale. He noted that unlike other schemes within his organisation there were no direct incentives provided for staff to engage in its uptake. However, he did not comment further as to whether this was significant to the degree to which the scheme could be regarded as having been successful.

In addition, Respondent C commented that implementing flexible working hours provided as a TP initiative, but went further than this, saying it would enhance staff morale. This in itself was seen as an incentive provided by management.

Respondent E mentioned the importance of geographical location and the impact this imposed on her organisation in saying:

> *"We all want to provide training for cycling as well…that is one of the things that people often state, that they do not feel safe cycling around Hatfield, as Hatfield is primarily built for the car."* (Respondent E)

In addition, she discussed the significance of car park charges in promoting behavioural change, by drawing a comparison between London (where she quoted the average parking charge to be £5 a day) and her organisation where the charge was less than 30 pence a day for employees. Despite these low charges, she reported employee resentment at any incremental increases to car park charges. Furthermore, at an organisational level, Respondent D reported that within the context of managing a business site, there was a conflict between implementing a TP that restricted car use, whilst meeting organisations expectations. He outlined this by stating:

> *"Some companies on site are constrained financially, they have different needs, as respect to walking or otherwise, and they think that it is an automatic right that each employee should have…a parking space on site, and that is their policy."*
> (Respondent D)

This illustrates the cultural and organisational difficulty in implementing TP 'sticks' in order to reduce traffic demand from car use. Following on from this, Respondent C also discussed the issue of 'free' parking for the user. She went on to report that a degree of car park restriction had been considered, however the design layout of the car park had itself been a barrier to implementing demand management measures. She also highlighted the impact of commuter travel in terms of organisations implementing flexi-time, hot-desks and home working initiatives. At the organisational level, such TP initiatives had been implemented yet had been subject to departmental and some managerial resistance. She illustrated this by stating:

> *"a very large scheme* [hot desking] *that started to be rolled out was*
> *ultimately slowed down and then stopped, as it was felt that is was not*
> *appropriate for officers not to be present at their desks…Some of the*
> *tele-working initiatives did not succeed because of the culture of the*
> *organisation, that frequently managers and members were unhappy*
> *about people not being in at work"* (Respondent C)

A large scale change to cultural car use behaviour at both the organisational and individual scale came through from the interviews I undertook. During both the engagement with stakeholders, as part of my embedded approach and during interviews, one concern that was prominent from the output was that SOV users always find or provide either subjective and/or objective reasons or justification for using their car.

Therefore, I made a main outcome for the research to develop a mechanism (in partnership with stakeholders) that would be dynamic enough to take into account individuals desire to drive, providing real alternatives as a viable options, whilst balancing environmental concerns with the organisation's and individual economic situation (i.e. low income groups and the fact that the University would only consider low capital expenditure for any solution put forward). Such a system would have to be robust enough not to enable either the individual or organisation representative to ignore the fairness reflected in the solution.

A theme from my research outcomes to take forward would be to develop suitable transport initiatives and rewards (carrots) to non-car users, whilst trying to develop some meaningful charges (sticks). Without coming up with an effective solution to begin to deal with this issue, there would be no significant movement in changing behaviour, or in reducing carbon emissions through the application of a TP strategy within an organisation, rendering the research limited in its findings.(see Appendix 7).

Reflective Diary Box 5.10 Travel Plans - developing a delivery mechanism

5.5.3 Industry Representation

Several respondents discussed the role of external organisations in influencing TP development and implementation. As mentioned previously in section 5.2, Respondent C identified the role of transport professionals in creating suitable arguments for business to engage with the sustainable transport agenda. She went on to emphasise that larger organisations are becoming more aware of this agenda but that small to medium sized enterprises (SMEs) were less well informed. She stressed that for the wider sustainable transport agenda and more specifically TPs to have a real impact, organisations and individuals need to understand that they can have an impact.

Respondents B and E identified a number of external bodies that their specific organisations were aware of, or indeed they themselves were members of. Respondent B, the Freight Manager, identified three such organisations, the Freight Transport Association (FTA), Confederation of British Industry (CBI) and the Campaign for Better Transport (CBT). This respondent was asked a specific question relating to an initiative that had not succeeded because of infrastructure problems. This identifies a key issue between central government policy and the delivery of this policy at the local level. The use of compressed natural gas (CNG) had been raised as a possible alternative fuel source for the fleet and the interviewer was keen to understand why it had not been introduced. Respondent B had replied that it was due to the lack of local refuelling sites. When prompted by the interviewer as to how this may be overcome at the local level, respondent B stated:

> "*We are working through the Freight Transport Federation and the*
> *Confederation for British Industry, so we are putting our opinions*
> *forward in those sorts of groupings.*" (Respondent B)

Although this Respondent had identified the CBT as a campaigning organisation for transport, he did not elaborate any further on this specific organisation other than to say that they were members of the FTA and they had more in common in that area.

In terms of other external bodies, Respondent E highlighted two that she was aware of, these being the Environmental Association of Universities and Colleges (EAUC) and the Higher Education Funding Council for England (HEFCE). In terms of the former, the Respondent saw this body as being important to lobby on behalf of the University for funding opportunities in environmental issues. Due to their size and the impact they have on local travel, she stressed that the university sector should lobby government at the local and national level. This is because tackling these issues as a sector she felt, was more likely to deliver change. She

concluded that through joint lobbying with external bodies such as the EAUC, it may be possible to secure joint funding for education, awareness and facilities for the University's students to undertake research on sustainable transport alternatives. She stated:

> *"Trying to get people to think about what alternatives there are, we*
> *really need to get someone to do research on all of this."* (Respondent E)

Within section 5.5.1, Respondent E stated that the University was looking to employ a Travel Plan Coordinator to undertake this research to inform the development of the University's transport strategy. As this opportunity arose and simultaneously a plant had closed within Vauxhall (the then primary case study for this thesis at the outset of the research), the researcher was able to apply for and secure this role. This position thus provided the researcher with the opportunity to use the University as a surrogate case study from which to gain insight into the development and implementation processes of a TP within a large organisation, albeit from the Higher Education sector as opposed to the manufacturing sector. These insights were utilised to inform the development of a broad transport strategy framework for a TP (see chapter 7).

5.6   Communication & Marketing

The various approaches used by organisations in terms of cross-departmental working had a significant influence on the way that TPs were communicated across an organisation. The degree to which these approaches were successful has been previously addressed.

In terms of the marketing of specific TP initiatives, Respondents C, D, E and F outlined some of the media that their organisations had adopted. Respondent D provided the example of using departmental notice boards as well as the intranet and internet to advertise. As previously discussed in section 5.5.2, Respondent D had highlighted the difficulty in getting companies interested in the sustainable transport agenda. He stated the financial constraints, differing organisational needs and the 'right' to park as issues that needed to be balanced and addressed. He concluded that the greatest problem was '*just getting the message out*'. Respondent D was asked how he attempted to get other companies on site interested in various TP initiatives he was trying to implement. He responded by outlining his approach:

> *"We did draw up a commuter plan which…was a set of general*
> *principles that we were looking for companies to sign up to…about a*
> *third of companies signed up eventually. Some companies would just not*
> *sign up, that was a bit of an obstacle".* (Respondent D)

He went on to discuss the complexities in communicating with organisations, stating that whilst email was used for many communications, some organisations did not even have a PC. Often he had to rely on an individual contact within a company, although this presented difficulties in itself due to meeting up on site with many organisational representatives on site at a particular time. He concluded:

"It is a logistical nightmare" (Respondent D)

Whatever TP measure or initiative that was developed through the course of my embedded research, this had to be marketed and its profile increased in order for potential users to think about making use of it. I found this to be the most important aspect of any of the issues experienced throughout my time within the organisation. (Examples of this marketing material are presented in Chapter Seven and Appendix 5, as possible examples that any budding travel planner can apply to their own situation). *I don't intend to present a thesis solely on marketing, however to underestimate its impact on changing travel behaviour, would be an error. Other than to say continued use of multimedia platforms are the key to any success when at the implementation stage. Being out and about and becoming the face of transport within the organisation, allows for many an interesting discussion with mainly disgruntled car, bus users and the vocal minority cyclist.*

Reflective Diary Box 5.11 Marketing Travel Plans

5.7 Travel Plan Measures & Infrastructure

Respondents were asked to discuss what TP initiatives had been implemented within their organisations, and if possible to try and explain the extent to which these had been successful. It became apparent that a few meaningful initiatives had been or were being developed. Whilst the majority were commuter based, some respondents reported wider transport initiatives for freight and some business travel. It was evident that some of these initiatives, notably all of the freight based initiatives, had not been part of a formal TP.

5.8 Summary of Findings & Conclusions

Overall respondents had varying perceptions as to what areas TPs covered. The majority considered commuting to be the primary focus, but freight and business travel also emerged as themes. Sustainability, in its broadest sense was also a main theme to emerge from this process, with the majority of respondents discussing this concept within the overall context of TPs. The issue of providing real, viable transport alternatives to the motorcar, through SMART target

setting, monitoring and incentives were raised. In addition, several of the interviewees outlined the complexity and long term vision required when developing and implementing TPs.

It was also believed by many of the respondents that increasing European legislation was impacting on delivering real change to transportation across the board because of the complexity in delivering an integrated multi-modal network. Often national government delivered mixed messages between concerns for environmental issues set against economic pragmatism, with a number of interviewees stating that transport as a whole did not received enough government attention, or indeed funding. Set against a background of an uncertain business economic climate, participants stressed the need for flexible local transport services and infrastructures. In addition the uncertainly for capital and revenue investment were seen as a major hindrance to implementing TPs for organisations. This is because most investment by government is capital as opposed to revenue. With the introduction of the Local Sustainable Transport fund in 2011, this issue was partially dealt with by central government, as it promoted local transport solutions through partnership led approaches. This fund came at an ideal time for the development of the Quality Partnership that emerged during the course of this research, and can be seen as a major outcome of this research process (see Section 6.6).

Whilst analysing the interview scripts, it was clear that organisations that had developed a TP had done so in an uncoordinated way, often using a piece meal approach. However, a couple of respondents highlighted EMS and CSR as important aspects for their organisations, but that these had yet to fully embrace TP targets and monitoring mechanisms. This angle provided a focus for the research to develop a TP along the lines of an EMS using this continual improvement and structured mechanism for delivery of environmental management (as outlined by Staib, 2005; Erikson & King, 1999) (see Section 7.2 & Appendix 6).

There was a general consensus that managerial support for TPs and their initiatives was important, because without it TPs would essentially not deliver on their targets. There were also varying degrees to which organisations and departments engaged with the processes of TP development, funding and the marketing and communication of their initiatives. A major barrier to emerge to TP interventions was embedded organisational and individual cultural behaviour. This issue is discussed in detail by Reeds (2011) within the Smart Growth – Urban Sprawl Agenda, and also as part of the academic and practical based Smarter Choice Agenda (as outlined by Cairns *et al.,* 2004; & Dennis and Urry, 2009 in their book 'After the car'). What is clear from all of these authors and practitioners, is that the current cultural, organisational and individual attitudes towards a pro car stance is at the expense of local public transport systems and networks, which is not sustainable. They all argue to some extent that

viable, affordable and reliable alternatives for commuting to places of employment are increasingly important with peak oil and fuel prices on the rise (*ibid.*).

A number of external transport interest groups and representative bodies were identified by respondents, and are seen to have a role in voicing organisations concerns and issues around the local and national transport agenda. Organisations, including the Campaign for Better Transport (CBT), have a place in lobbying national and local government to tackle both real and perceived cultural barriers to changing behaviour away from car use towards that of local public transport services and networks. They have a strong interest in using locally based initiatives as exemplar case studies for consideration at the national level. In terms of this research, the CBT was engaged directly in the development of the Network St Albans Partnership, with their Director (Dr Stephen Joseph) Chairing the QP, with the researcher acting as his Executive Assistant.

In terms of organisations promoting commuter based '*Smarter Choices*' (as defined by DfT, 2004), it was apparent that the vast majority of interventions had been implemented on an ad hoc basis. However, increasingly these initiatives were beginning to form the basis for organisational TPs, but not within overall systems based strategies (such as EMS or CSR). This was emphasised by Respondent E, who outlined her organisation developing a more coordinated and systematic approach to managing transport and their related initiatives as part of a wider TP. Within this, she discussed the increasing engagement with both internal and external stakeholders as part of this process. In particular, the cost of providing car parking, set against the amount that employees contributed in real terms, was beginning to accelerate the need for providing viable alternatives to the car. Political and cultural barriers need to be overcome, if real and sustained travel behaviour changes and its implications on carbon emissions are to be met (Reeds, 2011; Lyons & Goodwin, 2008; Goodwin, 2008; Sloman, 2006; Cairns *et al.,* 2008).

Respondents had highlighted cultural (both organisational and individual), behavioural change as well as physical infrastructural issues as barriers to implementing demand management measures in restricting car use. This is likely due to the complexity of issues, such as the perception that car users are 'hard done by', mixed messages from both local government and local planning authorities, as well as the lack for funding alternative measures. Sloman (2006) discusses the objective and subjective barriers to implementing local transport solutions. She states that often the objective measures (infrastructure) are challenging to implement, but that the subjective changes needed by individuals are even more difficult to change or influence.

Returning to car parking charges specifically, as a key barrier to achieving organisational and individual travel change, when Respondent C was asked to describe how implementing car park changes was an integral part of a TP strategy, she stated:

"I feel that is quite a tricky one, because of the nature of the organisation…Ideally in the very much longer term, I would see some form of parking management which might involve restriction" (Respondent C)

This part of the research process proved interesting at gaining insights into this organisation, and at helping to develop a set of outcomes. I was however, a little disappointed at the lack of substantial travel measures within the organisations, as I had hoped to be able to collect meaningful empirical data, to follow up the interviews. However, as my research developed and other areas of interest emerged, it became apparent to me that working as a Travel Planner within a specific organisation would be the best approach to researching specific TP interventions. As this was one of my initial research aims, I would have to use the embedded case study to answer this specific objective.

I found that my work had to flexible and dynamic enough to take on the complexity of issues involved with the role. Continually, new ideas would emerge from my everyday involvement (embeddedness) with the work, to encompass new ideas for interventions for the University. However, working in isolation, more complex measures could not be developed or taken forward. For instance, developing Real Time information on the University's bus network, whilst a desirable measure for promoting this alternative, would not be viable (either financially or practically) without taking into consideration the wider public transport network operated by other organisations. This was an interesting aspect of the work, as it helped bring home to me just how much the impact that past central government policy had had on implementing change to local public transport services in today's working environment. A suitable example to relay here is that of the Transport Act 1985 and its impact on integrated services, information and joint ticketing.

As a Travel Planner, I wanted to provide up to date, simple and clear information on the alternatives available to the University demographic (staff and students). Increasingly in my role, I found this challenging. Bus operators by law could not work together to deliver such information, other than through the Local Authority. Hertfordshire County Council (HCC) did provide a central point for information on public services and some county wide ticket offering between operators, through its INTALINK partnership. Involving myself in this partnership, it

became clear that it was not promoting joined up thinking in the delivery of local transport services. The partnership was more a county wide talk shop for operators to bemoan the difficulties in running profitable services, and not a partnership for change. The same issue that had arisen in the local borough meetings at Welwyn-Hatfield Council. I was determined to try and break this pattern of 'paralysis by analysis' by suggesting the INTALINK partnership became 'a delivery agent for change'. This essentially was where the beginnings for the first Quality Partnership in the Hertfordshire region would emerge in the City and District of St Albans. This partnership developed from the themes that emerged on partnership building, from the initial stages of this research project.

Developing this wider travel planning theme would evolve into a partnership approach that included joint funding applications (yet another theme that emerged from the interview process). This would help progress my own role/work at the University by feeding back into larger scale transport infrastructure, ticketing, marketing, public transport network development and indeed transport planning for Small and Medium business (as part of a EU funded 'Fresh Ways to Work' project). This aspect of my research became vital to enhancing the University travel planning activities that would otherwise likely not have happened through working in isolation. Towards the end period of my research, these initiatives would include, the introduction of a multi operator ticket, route network and marketing enhancements, real time information and mobile m-ticketing (among others). Initiatives that I could only have dreamed of implementing at the beginning of the project. These and other initiatives are outlined and discussed further within Chapters Six-Seven.

Reflective Diary Box 5.12 Travel Plans and Partnerships

This chapter has drawn together some of the factors that underpin the qualitative aspects of TPS. The key themes to emerge from this qualitative analysis will be used to form the basis for evaluation, in conjunction with themes that emerged from the quantitative data (Chapter Six), This in conjunction with the critical realist evaluation matrix (Table 3.1) will help inform the conclusions. The next chapter provides an overview of the processes involved in developing a TP from the perspective of an embedded researcher. Empirical primary and secondary data sources are presented relating specifically to the University, as well as a city wide commuter survey. In addition, a narrative of the researcher's involvement in developing a Quality Partnership in the City of St Albans is provided.

Chapter Six - Quantitative Results

6.0   Introduction

The University's TP has been developed through an iterative partnership approach between internal and external stakeholders. The TP Coordinator (as an embedded researcher) has produced the following strategy using a variety of source material (quantitative and qualitative) supported by a personal narrative surrounding the evidence presented. This informs a final report to the University in support of further implementing its travel strategy up until 2020, as part of an Estate's Master Plan redevelopment for its two principal campuses at College Lane and de Havilland.

The TP sets out what the research has uncovered as the core transport implications for this site redevelopment, providing evidence on car parking, travel planning and background evidence in general on transport issues that impact on the organisation. Through critically evaluating this process, issues that required attention for future analysis have been identified to support the travel planning aspect for gaining the required planning application.

The TP strategy developed for the University has been based on the following key issues that underpin the approach required to achieve a more equitable and sustainable approach to transport. This takes into account aspects of the Smarter Choice philosophy, throughout its development stages (Cairns *et al.,* 2004).

The University, as part of its Corporate Social Responsibility (CSR) and Environmental Strategy (UH, 2011), intends to provide an efficient and effective University with distinctive campus experiences that improve on the current environmental operational activities of the organisation. This effectively means any development proposals will not result in any increase in car park capacity for staff and/or students than existed prior to 2008 (when previous redevelopment of the site took place). Within the proposed redevelopment, no major infrastructure changes will be taken in terms of existing vehicle access and exiting points, other than the consolidation of the car parks around the campus into a couple of larger car parks. This aspect of the redevelopment has been vital to the success of the TP strategy culminating from the research. Prior to the re-development, the spatial distribution of small and medium sized car parks around the campuses meant that any effective control management would have involved costly capital expenditure, and thus reduced the likelihood of the proposals taking place. In effect, a small number of large car parks located around a site are easier to administer and manage.

The University's TP prime objective is to reduce the number of single occupancy car trips to its two main campuses. To achieve such an outcome, a review of parking policies and supply were undertaken, in addition to biennial employee and student commuter surveys required as part of the initial Section 106 agreement. These internal data collection surveys were a requirement placed on the University when the de Havilland campus was developed in 2002. This initial planning requirement was a vital aspect in employing a full time Travel Plan Coordinator. This role provided the basis to work with University Estates' representatives in developing a culture to implement an operational TP. Without these two planning requirements, the work presented as part of this thesis, would not have achieved the TP outcomes proposed.

Effectively, as the Travel Planner, the statutory position that the TP holds has had to be utilised throughout the lifetime of this research, to convince stakeholders (internal Chief Executive Officers & Estates management and external Local Authority Officers), of the importance in developing and promoting sustainable travel options. Without holding the position of TP coordinator, such points would unlikely have been raised during the site redevelopment phase. The evidence of this is provided by the construction of the de Havilland Campus in 2002, where a great deal retrofitting of soft travel planning measures has since had to take place, as a result of them not being included in the initial build.

In 2010, when the initial proposal for the re-development of the main Collage Lane campus were put forward, the new Estates manager started the meeting off by stating;

> *'The Local Authority (Welwyn Hatfield Borough Council) has said that
> we* [the University] *must solve the on street parking issues within the local
> community.'*

A reasonable individual in my mind at this stage, he then went on to state:

> *'If this means to obtain our planning requirements we need to build 500
> additional car park spaces and not charge for them, then so be it!'*

Having been embedded within the organisation for just over five years at this stage, three issues came into my mind:

i) the local authority signs off the University TP targets as part of a five year review [the current being set for 2008-13]*, but they had themselves gone against their own standards, in order to try and resolve a community issue* [perceived or real] *– on street parking from daily*

commuters to the organisation.

ii) that the priorities of an organisation are greatly influenced, by organisational needs and individual stakeholders values and understanding of the issues involved at that time, and that environmental aspects [including transport] *are quickly forgotten in the face of such demands.*

iii) that an organisation will quite happily consider spending millions on building infrastructure that supports greater car use, at the expense of other modes. In addition, operate a car park charging scheme that further re-enforces behaviour towards even greater car use, and thus creating a the negative feedback loop for ever increasing car parking.

With this position set out at the beginning of the redevelopment process, I had to bring together all the evidence collated throughout the research process, to develop an approach that met the needs of the organisation [i.e. to obtain its planning permission for site redevelopment], but not at the expense of increasing car parking spaces. The approach would build on the qualitative semi-structured interview data obtained from the individual experiences within other organisations, as well as commuter surveys and empirical evidence from the research.

Reflective Diary Box 6.1 Travel Plan Coordinator Role a Critcal Success Factor

The strategy that emerged from the analysis presented is based on the absence of implementing a Controlled Parking Zone (CPZ), within the immediate vicinity of the University. In 2006 such a proposal was rejected by the local community on the basis that local residents did not want to pay for permits, which was the requirement insisted upon by Welwyn Hatfield Borough Council. A transport officer at the time stated that:

> *'the district cannot afford to subsidise such a scheme, therefore it needs to be self-sustaining'* (pers. comm., District Officer, 2006).

In 2008, the University had provided funding for the survey work, under its successful Section 106 planning application for the redevelopment of its student union building (the Forum). Whilst on street parking is considered an issue within the local community, from a University perspective it undermines any attempt to bring in 'sticks' in terms of car parking charges. This is because if charges are set too high, individuals not wanting to pay the charges could instead park on surrounding streets, which is free to use. This has the knock on effect of creating tensions between the local community and University. In addition, if on campus parking supply is made available, it has the possibility of releasing latent car user demand, leading to ever greater car

use, without solving the issue. This in effect works against the TP and its targets. This latent effect has been observed when the University Park & Ride facility opened in 2006. Initially a reduction in on street parking was observed, but without any on street enforcement, just over ten per cent of car users still admitted to parking in the surrounding streets. This was despite no charges being applied. A key outcome of this latent demand phenomenon was developing a working relationship with Estates management, in order to overcome this issue of providing more on campus parking. Without tackling the issue of on street parking and car parking charges, any significant attempt to change travel behaviour through TP interventions would be continually undermined.

From my perspective, as soon as I proposed any form of onsite charging regime for car users, the argument put forward was that students (and staff) would park in the local street, therefore compounding the current issue.

The paradox of this approach was that without bringing in a daily charge, any attempt to develop a TP that could meet its targets was undermined. This became a key issue in the proposals that I ultimately developed [and present in chapter Seven].

With the key issues set out above, and taking into account the insights gain throughout my research, I set about developing a TP strategy that took into account as many of the key principles outlined in the section above.

Reflective Diary Box 6.2 Travel Plan Barriers

The next section provides a commentary on the existing travel behaviour of the key stakeholders of the organisation (that of staff and students), in addition current car parking demands (on site and in the surrounding community) are calculated. A brief summary of the proposed redevelopment phases are summarised in Table 6.1 in order to provide context for the TP proposal. The decked car park is highlighted, as this forms an important part of developing the proposal for the next phase of TP developed, discussed later within this chapter. Without considering transport and its implications for parking, no re-development could take place. This indicates the importance of embedding the principle of a TP at the early stage, because without doing this, the likely outcome would have seen the University increasing its parking supply. This would have ended in the same result that was recorded when the Park & Ride opened in 2006, which undermined the TP targets.

Table 6.1   University Campus Redevelopment Projects & Delivery Timescale

Project Phase	Delivery Timescale
Multi-decked car park	Spring 2013
Learning & student zone	Spring 2014
Student Accommodation & Energy Centre	Phased between 2014-2016
Science Building & Boulevard	Spring 2015
Engineering & Senate Building	Autumn 2017
Main Building refurbishment & new lecture theatres	Autumn 2018
Teaching building	Autumn 2019
Conference Centre	Spring 2020.

The University's two main campuses are located in close proximity to both regional and local highway networks, which primarily run in a north-south direction, as illustrated within Figure 6.1. The mainline railway network does not directly serve the organisation, but these are linked via commercial bus services provided by the UNO Bus network. A key aim of the re-development is to house a greater proportion of students on site at its main College Lane campus, attracting them from the immediate region and further afield. This approach has the potential to reduce demand for parking from daily commuters, and thus reduce issues from on street parking.

The TP has developed and evolved since its initial inception in 2003. Prior to this date, the University had developed its own bus company (University*bus*, since rebranded UNO), which in itself could be considered a travel planning intervention measure. Indeed, this network (shown in Figure 6.4 and later discussed in depth) does provide a comprehensive network as the backbone for the current TP. Since 2003, however, biennial reviews have taken place to provide a baseline against which additional travel measures have emerged, been developed and implemented. Historical and longitudinal empirical evidence includes data up until 2011. These datasets have provided the basis for developing a working dialogue with both internal and external stakeholders for evolving the travel strategy to date (January 2012) and for which a further strategic approach has been set out up until 2020, as part of the University Estates vision.

Figure 6.1   Locations of University of Hertfordshire Campuses and Associated Transport
                Infrastructure (UH Annual Report, 2011)

The following sections present empirical data under the following sections: University Parking:-
Provision, Charging Policies & Standards; Historical Parking Data; Modelling Projected
Parking Supply & Demand; University (UNO) Bus Operation; Travel Planning Proposals
Impact on Trips & Parking Provision and Summary & Conclusions.

6.1   University Parking: - Provision, Standards & Policies

This section provides the context behind current on campus parking supply (as of 2011), as well
as the current parking policy and charges that apply for their use. Additionally, the theory
behind establishing current parking demand figures are also outlined in order to present on
overall account of how the TP has been developed.

6.1.1   University Parking Provision (as of 2011)

As part of the overall review to feed into a TP strategy, parking supply and demand have been
calculated and triangulated using the biennial staff surveys, in order to obtain a better fix on
supply and demand. Table 6.2 outlines the total existing supply of car park spaces as 3,686. The
figures are inclusive of 350 spaces set aside for residential parking on the College Lane
Campus. Under planning restriction set in 2002, there is no residential parking on the de
Havilland site on the condition of it being a residential car free site.

Table 6.2 Summary of University Parking Supply (on campus and off site Park & Ride facility)

Campus Location	Car Park Supply (Nos.)
College Lane	2,055
de Havilland	699 (includes new Law Building parking of 79 spaces)
Administration Sites	176
Park & Ride Facility	786
Total Car Park Nos.	3,686

The issue of whether to provide residential parking has been an on-going and contentious issue between both myself and University employees based within the residential services. The latter were keen to retain residential parking provision at the main site, in order to make it an attractive option for students wishing to bring their car to University. As the TP Coordinator, on the surface this seems to work against the whole ethos of reducing car travel to and from the University. However, as working partnerships developed, I found that to take on some issues would work against the holistic approach that I was developing with internal stakeholders in terms of a Travel Plan strategy.

If I had insisted on no cars being brought onto site by residents, then the likely hood was that these students would only add to the on street issues outlined previously. I took this angle, based on the fact that the TP needed to focus on the daily commute and not casual use or weekend travel. As most students living on campus would walk to their lecturers, this group would add little in terms of their daily travel behaviour or carbon emissions associated with daily car commuters.

Reflective Diary Box 6.3 Stakeholder Engagment

6.1.2   University Car Park Charging Policy

The University currently implements a permit-based car parking charge regime for staff on campus and a daily charge for students. Parking off campus using the Park & Ride facility is free to park, but incurs a 50 pence charge for using the shuttle. The permit for staff policy effectively charges employees using a tiered waged regime, with the lowest earners (under £12k) paying a nominal £15 per annum. Higher wage earners (over £100k) pay £400 for a permit. Intervening earners pay sums between these two figures, with the majority paying circa £60 per year for a permit. As part of the Estates 2020 redevelopment vision, this TP plays an

important role in achieving planning permission. As a direct result, an interim solution to the charging regime is being proposed that will effectively begin a phased approach to implementing a daily charge for both staff and students (Appendix Seven). Without the embedded position of the researcher, it would be unlikely that such a result would have occurred. Instead, (as outlined in Reflective Diary Box 6.1), the Estates management team would have taken steps to increase capacity and provide it free to the user. Rye, *et al.* (2005) are that if barriers to car parking charging can be overcome, TPs with such 'sticks' can achieve up to 20 per cent reduction in car use. The Estates 2020 vision now takes a considered approached to parking demand and supply as a direct result of having a travel planner informing their decisions. Without such a role in the organisation, a more typical approach to car park supply (i.e. supply and demand) would have prevailed.

From my perspective as the University Travel Planner, this historical payment for an annual permit reinforces car user's behaviour towards ever greater car use, and also works against car sharing. Effectively this policy provides no incentive for staff to change their current travel behaviour away from car use, as the annual permit actually encourages and heavily subsidies car drivers, as the expense of other modal users. Overcoming this inherited policy towards implementing a daily charge system would ultimately need to form the basis for a future TP strategy, but I would also need to consider the impact of such a policy impacting on street parking.

Reflective Diary Box 6.4 Travel Plans and Historical Barriers

It is an important lesson that current and future parking policy needs to consider a level that encourages the use of alternative modes (including car sharing), particularly towards the UNO bus network. Any increase in bus use would ensure greater financial viability of this service, which could result in greater investment in both service quality and frequency. Thus, this creates a virtuous cycle of increasing bus use and service/frequency improvement (pers. comm., Waters, 2009).

6.1.3   Local Authority Parking Standards

The local planning authority (Welwyn Hatfield Borough Council) applies parking standards using a zoned system that are aimed at imposing appropriate parking restraint. The zoned standards allows for parking supply to be calculated based on accessibility, economic and the geographical context of a site. In 2004, the University was identified by the local authority as requiring a parking standard of between 50-75 per cent of the maximum standards. This

calculation placed the University with Zone 3, which meant that the higher level of car park provision outlined could be applied. A review of these standards and the own Council's guidance on TP development indicates that improvements made to campus accessibility allow for zone 2 parking standards (i.e. 25-50 per cent) to be proposed (or argued). When considering that local authority officers were insisting on the University increasing its parking stock, they were advising against their own standards, stating that the issue of local on street parking took precedence over these. This has major cost implications for organisations, because LAs have local political pressures that impact on policy direction and often policy and standards do not relate to each other. Local elected councillors do not (often) have training in transport or travel planning issues, but do desire to be re-elected. If they can use a local transport issue (such as on street parking) as a political tool, then this can cause problems for local officers who have to deliver change. More often than not, officers have to adhere to the line of elected members and therefore council policy. The practicalities of aligning the needs of the organisation and local community in respect to managing local transport issues are therefore made manifestly more difficult. The implication for local delivery implementation mechanisms, such as a TP, is therefore dependent on this interplay between politics and practicality.

I recall shortly after the opening of the new University Park & Ride, attending a local council meeting. At this event a newly elected councillor stood up and went about reprimanding the University about the on street problem and stating that the University should build a Park and Ride facility to solve it.

He was most surprised when informed that the new facility had opened just a year before and that no charges were implemented. He could not seem to understand why people still chose to park in the local street [the Park & Ride facility is located about 500 meters from the main campus]*, and that building more spaces were restricted by his own authorities local planning standards.*

This highlights the difficulty for a travel planner, when local political pressures often override the tools put in place to aid them in achieving targets set for such a plan.

Reflective Diary Box 6.5 Politial Influences on Travel Plans

In this specific case for the purpose of the TP, the LA's zoned parking standards (set at 50 per cent of total demand), has been used for calculating car park supply by applying the local authority standards. This was vital for assessing whether the standards that the local authority were using (and in the University's case, over riding them) were appropriate for the TP targets

set for the 2008-13 period. Car parking supply figures were calculated using University full time equivalent (FTE) staff and student numbers, including residential students (this allowed for the previously agreed car free de Havilland residential planning condition). Therefore a 50 per cent maximum standard equates to circa 2,713 car park spaces, as of 2011 (Table 6.3). This 50 per cent standard can then be directly compared with car park supply (3,686. Table 6.2), which indicates a historical over supply of some 973 spaces. This provided a strong argument that previous planning applications (that had led to increased parking supply), had been detrimental to achieving the targets set out in the TP. If a TP is to be meaningful and robust in being able to realistically achieve its aims and objectives, then targets have to be based on current and future supply of car parking. Setting an arbitrary target separate from parking supply, which is considered only an aspiration, will ultimately lead to a TP becoming irrelevant to the context in which it operates.

Demand has been calculated using both commuter survey data and car park users count data in order to try and get a fix of demand against supply. What these figures prove is that the original view stated by the Estates Manager as:

> *'If this means to obtain our planning requirements we need to build 500*
> *additional car park spaces and not charge for them, then so be it!'*

is completely opposite to both the parking standards of the local authority and the actual demand for those spaces. This is outlined below in section 6.2.

Table 6.3 Parking Standards based on Existing FTEs and On Campus Residential Accommodation (2011)

Site	FTEs	Car Park Spaces at 100% (standards provision)	Car Park Spaces at 50% (Zones 2-3)
Main Campus - Staff	1,800	1,800	900
Main Campus - Students	7,464	1,493	746
Main Campus - Visitors	500	300	150
Total	**9,764**	**3,593**	**1,796**
de Havilland - Staff	308	308	154
de Havilland - Students	6,375	1,275	638
Total	**6,683**	**1,583**	**792**
Total FTEs	**16,447**	**5,176**	-
Main Campus - Residential	1,500	250	125
de Havilland - Residential	1,500	0	0
Total		**5,426**	**2,713**

6.2 University Historical Parking Data & Trends

This section brings together historical empirical demand data provided by consultancy work undertaken by WSP in 2004, which was undertaken as part of the Student Forum Development (commissioned in 2006). In addition, an overview of on street parking is provided by work commissioned by the University in order to calculate the extent of this issue. This was undertaken at the same time the University's biennial commuter survey was undertaken. The aim of this section is to triangulate different primary and secondary data sources in an attempt to provide indicative figures as to the validity of assumptions made, concerning both on and off campus parking demand set against supply. Without understanding the implications of total parking supply and the demand from cars users, a TP targets will be undermined. If such targets are not set at an appropriate level to reduce overall car use, any changes achieved by subsequently implementing TP interventions could not be measured and reported within a continual improvement EMS.

6.2.1 Access & Parking Strategy (2004)

This next section has been considered an important secondary data source to be incorporated within the wider discussion of this section. This is due in part to its contextual relevance to the development of the TP, set against a culture of increasing parking supply. The trend seen to increase parking supply, has been one of the major objective barriers (as described by Sloman, 2006) that the research experienced.

As part of the Student Forum development (which opened in 2008), WSP consultancy were commissioned in 2006 to prepare an Access and Parking Strategy to project an increase in car park demand up until 2010 (prior to the new 2020 Estates Vision). This work made use of Supplementary Planning Guidance (SPG) in respect of the University by WHC (1999), as well as an accessibility survey undertaken in March 2004 (which was used to estimate future parking demand). When this review was undertaken, there were a total of 2,472 on campus car parking spaces (640 at de Havilland and 1,832 at the Main Campus). All spaces at this time were being utilised at peak times. The report also calculated that there were potentially 435 University staff/students parking in the surrounding streets, with just under 100 people using the then Park & Ride (located at Stanborough Lakes, around 1.5 miles north of the University). Total peak demand was calculated as 3,002 (2,472+435+95), including on street parking.

WSP consultancy also considered projected growth of the University and applied local parking standard factors in order to predict campus and on street parking demand. A summary of this report is outlined in Table 6.4, which concluded that the projected 600 space increase in supply (from 3,002 spaces to 3,617) would reduce on street parking to zero, and that any increase in further demand increase would be met by this supply increase (i.e. the construction of a Park & Ride containing 800 spaces, which opened in 2006).

Table 6.4 WSP Consultancy Car Parking Demand and Supply Projections (2004-2010)

	SPG in 2004	Sept 2006	Sept 2008	Sept 2010
Projected Parking Demand (WSP) (based on 2004 survey demand plus 2 per cent growth)	3,002	3,120	3,237	3,355
On campus parking	640	640	640	640
Residential	350	350	350	350
Park & Ride	95	800	800	800
On street	435	200	0	0
Other (Admin buildings)	1,482	1,644	1,447	1,827
Total Parking Provision	**3,002**	**3,634**	**3,237**	**3,617**

From a TP perspective, the above analysis makes no allowance for any success in reducing the use of car use through soft or hard measures being implemented. The figures above are important, as they help to provide a context in which the organisations TP developed. Between 2004 and 2010, overall University parking provision increased by circa twenty per cent. The University did not expand during this time, but it did expand provision of car parking, which led to a release in latent demand. In terms of the TP, commuter survey data during this period observed an increase in students commuting by car, from around a quarter in 2005, to over a third in 2011. Therefore, this indicates a link between increasing supply and subsequent demand, based purely on the trend data set against actual supply of car parking.

This increased demand is set against wider community on street parking issues not being resolved adequately (i.e. on street parking still existed, despite increasing on campus supply). Solving this issue was the direct aim of providing this additional parking (as Table 6.4 indicates). In terms of local travel planning and the TP, until managers and organisations understand that creating additional parking supply, results in creating still further demand, local politics and misinformed management are continually going to undermine the local transport officers and practitioners working to solve the very issues they themselves, are looking to resolve. If hard solutions, such as the proposed CPZ are not politically acceptable, then it is highly unlikely that TPs can deliver their targets, even if they are capable of providing a comprehensive set of smarter choice soft measures.

6.2.2 On Street Parking Demand (2007)

Building on the supply section above, in 2007 Traffic Data Centre (TDC) were commissioned under the authority of the TP Coordinator (working with the Estates department), to survey on campuses parking demand levels. This was undertaken alongside on street beat parking surveys. The specific aim of these data, were to better understand the extent of demand on campus and off it, post the opening of the Park & Ride in 2006. The data would help inform the TP in terms of the impact this facility had had on meeting projected demand.

The beat surveys were undertaken over two time periods, one during a peak term day and the other during a University holiday. These data provided a comparison between the two periods, in order to calculate the extent of daily in commuting traffic parking within local streets surrounding the University.

A full survey of on campus parking using beats every two hours (between 07:00-19:00 hours) recorded the occupancy levels of each car park. At the time of these surveys, on and off campus capacity was identified as (Table 6.5):

Table 6.5 On & Off Campus Parking Capacity (UH, 2011[c])

Site	Capacity
Main Campus	1,925
de Havilland Campus	848
Park & Ride	786
Total	**3,559**

The beat surveys identified a total demand for 2,973 cars parked within a University defined parking space, suggesting a surplus of 586 spaces. This again reinforces the findings outlined above in the parking standards (section 6.1.3), that there is a greater level of parking supplied than demanded. The most important finding relating to on street parking beats suggests that there are some 70 'visitors' parking on street at any one time (WSP, 2004). It can be concluded from Figures 6.2 and 6.3 respectively, that when comparing a peak parking period (at 13:00), 190 visitors were recorded during term time and 120 in the holiday period. These data provide an indication that there was an increase in on-street parking demand in 2007 that could be associated with daily commuting by University stakeholders. This varied between about 50-100 of cars parked in any one hour, suggesting a level of vehicle replacement throughout the day. When comparing these data with the WSP calculations of 435 (in 2004) and 200 (in 2006) on

street vehicles, there was a significant reduction between 2004 and 2007. This correlates with the opening of the 800 space Park & Ride in 2006, suggesting a significant displacement, but not total, of parked vehicles from the local street surrounding the University.

These data helped to provide a reasonable fix on the issue of on street parking. It has helped to inform the next stage of TP development, towards a charging regime that considers the wider impacts. In terms of charging, the main tool open to a TP is to consider a daily charge mechanism as a financial penalty to encourage a change in behaviour. When, and if, an appropriate daily charging mechanism is deemed politically acceptable and can be implemented as part of a TP intervention, then the impact of such an approach can be measured against this baseline data.

A TP and its associated measures need to be quantified and qualified, so that the success of future measures can be justified against empirical evidence. Without this, any Travel Planner does not have the evidence to back their argument for changing their organisation.
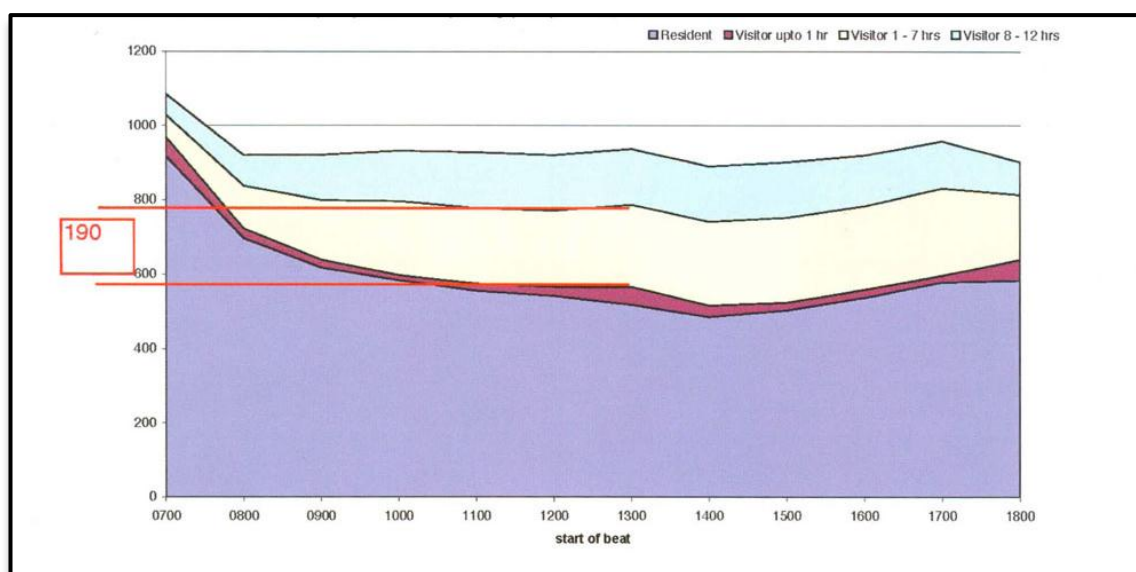
Figure 6.2   Peak On-Street Parking Demand from University Commuter Travel during Term Time (Source: TDC, 2007[a])
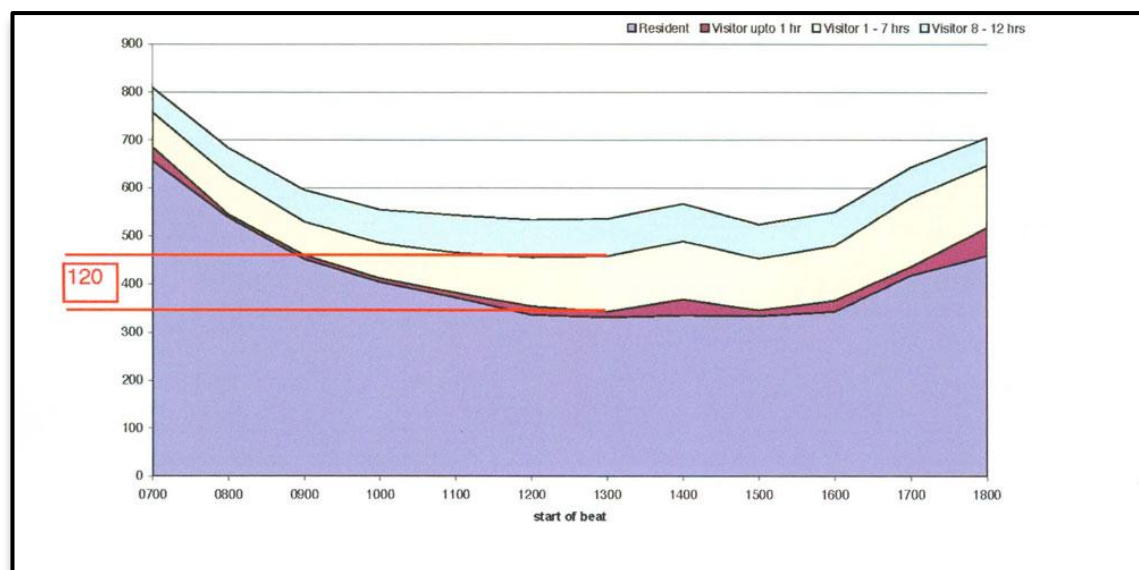
Figure 6.3   Peak On-Street Parking Demand from University Commuter Travel during Holiday Period (Source: TDC, 2007[b])

6.3   Modelling Parking Demand

In parallel to these on street and car park beat surveys, the University biennial survey has been utilised to inform the estimation of parking demand, providing another tool for triangulating the resulting model. Through applying the resulting modal split figures against typical staff and student numbers on site at any one time using full time equivalent (FTE) data, a simple car parking demand model has been built. In 2007, the Travel Plan biennial survey data recorded a car per person ratio of 0.353 (35.3 per cent) cars per FTE student. For staff, this figure was calculated as 0.726 cars per FTE. Building on this model further, the University calculates that there are circa 70 per cent and 31 per cent of staff and students respectively, on site at any one time (these percentages were provided by the Human Resources Department using electronic signing in data). Applying these FTE figures to the 2007 data above, it is possible to provide an estimate of total car parking demand of 2,901 vehicles. This demand includes all on and off-site demand (i.e. on street parking).

As previous demand in 2007 was calculated as 2,973 vehicles, with on street demand calculated as circa 70 vehicles in any one hour, total demand can then be calculated as 3,043 in 2007. The Parking Demand Model calculation has therefore underestimated the potential peak demand for parking by about four-five per cent (this being the difference between 3,043 and 2,901). The final Parking Demand Model therefore takes into consideration these anomalies and takes the following form in equation 6.1 below.

([Staff FTE*Staff Attendance*Staff person per car ratio] +
[Student FTE*Student Attendance* Student person/car
ratio]) *1.04

[Equation 6.1 Parking Demand Model]

Therefore the above equation, based on figures provided by the biennial survey, provides a total parking demand (on-site parking), but does not include off street parking. The University TP surveys the number of people parking on street, simply by asking them. These data are included in the following section, to further enhance the Parking Demand Model presented. This model is important, as it tries to bring some meaning to the empirical data collected throughout this research project. Without empirical evidence or some form of modelling, managers are unlikely to take arguments put forwarded at face value. Even if anecdotal evidence is presented, arguments against change seem to prevail. Therefore in terms of presenting a policy change for the organisation from implementing a TP related intervention, the empirical data that backs the argument needs to be coherent and clear.

6.3.1   Parking Supply & Demand (2011 to 2020)

The parking and supply model has been applied to provide an estimation for future parking demand at the University, taking into account that the University does not plan to significantly expand (in staff or student numbers) up to 2020. Data from the biennial survey in 2011 identified that the car/person ratio for staff and students commuting to the campuses were 0.706 (70.6%) and 0.366 (36.6%) respectively (including those who car shared). As set out previously, the University estimates the total number of employees and students on site at any one time as 70% and circa 31% respectively (UH, 2011[c]). Table 6.6 provides an estimated parking demand model resulting from these assumptions for the years 2011-2020.

Table 6.6 Estimated Parking Demand (2011-2020) (Source: Copsey (author) & Elliott, 2011)

Site	FTEs	On site population (Staff)	On site population (Students)	2011 cars parked
College Lane Staff	1,800	1,260	-	890
College Lane Student	8,964	-	2,779	1,017
de Havilland Staff	308	216	-	152
de Havilland Students	6,375	-	1,976	723
Other sites	200	140	-	99
Visitors	50			50
Total	17,697	1,476	4,755	-
Total parking Demand	-	-	-	2,931
Plus 4 per cent (not applied to visitors)				3,046

Total demand in 2011 (as shown in Table 6.6) is calculated as 3,046 on site car park spaces (including 50 for visitors) required up to 2020, and includes on street parking demand. This was calculated from the 2011 biennial survey that identified that 12.9 per cent of commuting students, park on local streets along with 0.2 per cent of staff. Applying these figures, suggest that circa 226 people say that they park on street at least some of the time during the day. Including car sharers, this figure increases to 247. Therefore the resulting current on campus parking demand for 2011 can be calculated as 2,799 spaces (3,046-247). With 3,686 spaces available on site, the above calculation enforces the view of the travel planner and what the research process has proved, that there is a large surplus of unused car parking available at the University. This surplus is estimated as 887 spaces (3,686-2,799), or 640 spaces (3,686-3,046) assuming that the 247 car drivers parking on local streets can be encouraged to park on campus (or indeed use other modes promoted by the TP). The key conclusion to draw from the above analysis is that despite the pressure from WHBC, and the initial view of the Estates Director to increase supply, there is no need to do so. In fact, there is a theoretical scope to reduce overall supply and if targets set for the TP are to be achieved, a further reduction is supply could be justified. This additional reduction in supply is based on achieving the University's TP targets of 60 per cent and 20 per cent for staff and students respectively. This is discussed further in Section 6.5.

At this stage, it is worth pointing out that primary data obtained through my role as University Travel Planner (from biennial travel commuter surveys) has been incorporated with secondary empirical data sources. In order to bring some relevance to the material presented, I had to work with colleagues to develop a Parking Demand Model. This model attempts to triangulate secondary data with the researchers primary data sources, in order to build a simple car park demand model for making projections from the varied sources. This was deemed an important aspect of the work, as the model used various data points to attempt to build a model, using data triangulated from various sources.

Whilst the resulting Parking Demand Model is not 100 per cent accurate, it did provide a platform for informing the TP development from a parking demand and supply aspect. I could then use this simple model to assess if the targets of the TP were appropriately set, or were being undermined by current parking policy.

Reflective Diary Box 6.6 Parking Demand Model

6.4   University Bus Operation (UNO) – An Overview

One of the key aspects of the University's travel offering is that it owns and operates a bus company (UNO). Therefore, this section provides the background context to this travel planning measure and how it fits into the organisation's TP. The University established its own bus company in 1992, making use of the powers set out in the Transport Act (1985), when bus operations outside of London were privatised. At the time, the incumbent operators were willing to work in partnership with the University to develop a public transport network for the University, but it was deemed too expensive and would not be able to expand and be as inclusive as the University required (pers. comm., Waters, 2009). During this period, the University was changing from a Technical College, based on the aerospace industry towards more service led training courses, including nursing. The bus network was required to move students between campuses and hospitals, where their applied training took place. In order to assist this, an intercampus service was expended to serve the local hospitals. This network of over 100 vehicles has expended and now serves Hatfield, North and Central Hertfordshire, South Bedfordshire, North London and most recently Northampton.

This University owned public transport service provides the establishment (and indeed the travel planner and researcher) with a real, attractive and viable alternative to the private motor car for travel to the University for commuting, but also provides the local community with a public transport network. If the University had chosen this option, it would have likely gone

down a more traditional tendering and procurement route with local operators (pers. comm., Waters, 2009) and therefore, it could be argued that it would not have been able to develop the operation it has.

In 2005, the University*bus* Company was rebranded 'UNO' and is now the major operator in central Hertfordshire, serving numerous routes (see Figure 6.4). In addition to the commercial public routes, the company also operates the Park & Ride and inclusive intercampus shuttle. Facilities include an up to date bus depot with a 100 bus capacity, service bays for six vehicles and a cleaning and re-fuelling facility. Bus stops from which UNO services operate are provided and maintained by the Local Highways Authority (Hertfordshire Highways). As part of a wider partnership project, UNO and the University have been working with the authority to establish a real time scheme, which initially launched in October 2012. The University's Park & Ride Facility is being used as a trial for this scheme that is further outline and discussed in the TP section (Chapter Seven).
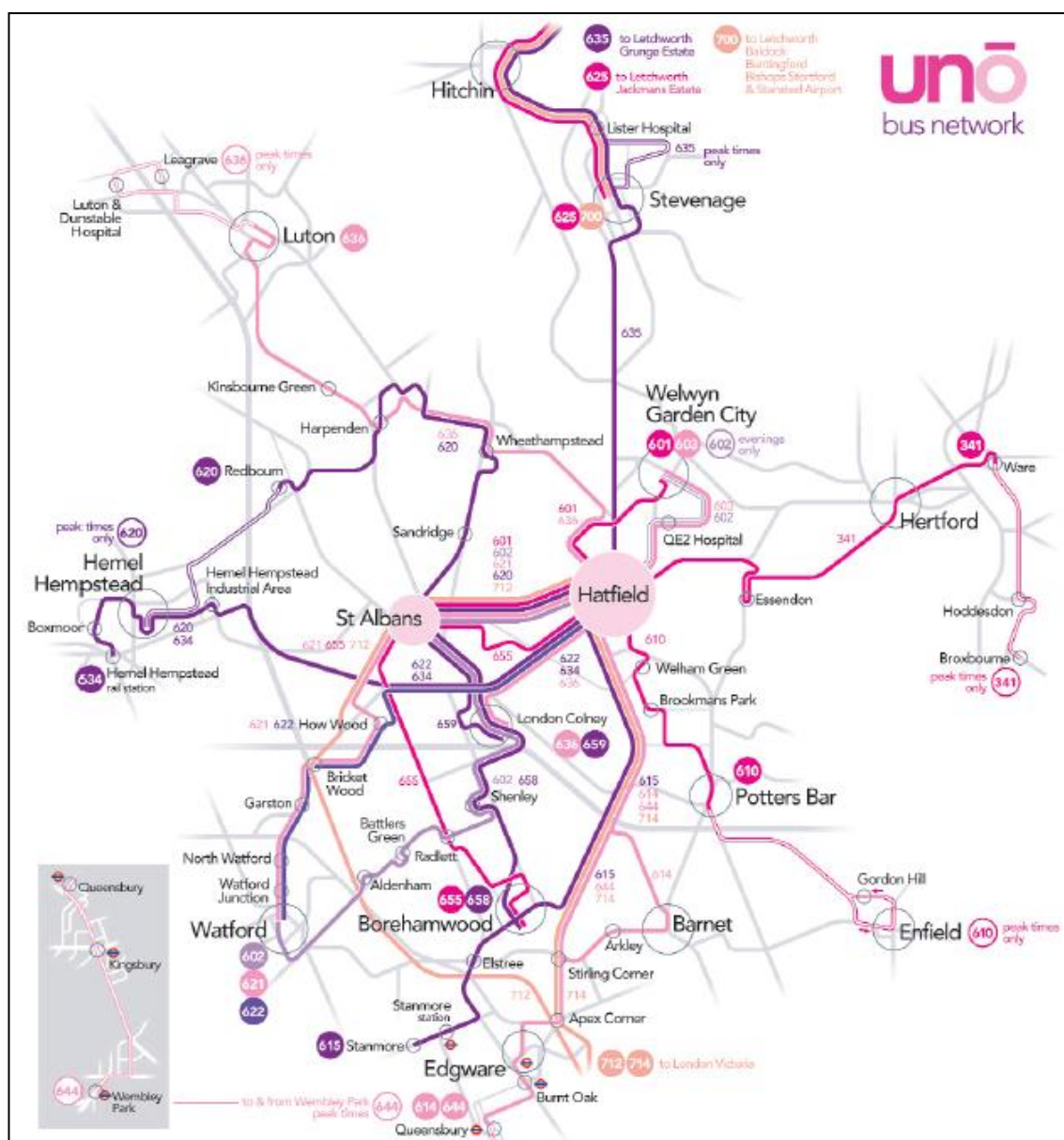
Figure 6.4   The University Bus Company (UNO) Network – Covering Central and North Hertfordshire, South Bedfordshire and North London (Source: UNO, 2011)

As a travel planner, being able to work alongside and directly influence a bus operation as part of informing a TP, is most likely unique within the context of Travel Planning (certainly within the HEI sector). This has allowed for both the UNO bus network and University it serves to develop routes that mutually benefit each other. Examples of this coordination include specific initiates for network and route development, but also the wider quality partnership approach, to which both UNO and the University Travel Planner are primary partners. Work specifically related to spatial GIS analysis was undertaken to inform UNO route development, with the specific aim of developing routes to support the University TP (Figure 6.5).

These GIS analyses have directly informed the University's TP development to help inform the bus company in terms of where staff and students live. As a result additional bus routes have been created (such as those highlighted to the North of St Albans and the East of Stevenage (Figure 6.5). The spatial analysis tool can perform any number of spatial queries. The example below illustrates a computer query; it relates to the number of University employees (and students) that live within 500 meters of bus stop that is served by a Uno bus. The query plots home postcodes against Hertfordshire bus stops (note: this layer cannot be made out here due to it being concealed by other data layers), as opposed to just bus routes. This query indicates that just over a quarter of the University population could catch a bus at some point for their journey to work. At present just over ten per cent of staff and around twenty three per cent of students of the total of these groups choose to do so.

There has also been a focus for the TP in working with UNO to increase service frequency to better meet the requirements of employees and students. This has resulted in an overall growth of Uno bus user patronage between 2002 and 2009 (see Figures 6.6 & 6.7). There has been a recorded decline in employee bus use between 2009 and 2011, although trends indicate that these groups have returned to using the car, or even the train as their main mode. Both trends may well be the result of the increased parking supply seen at this time (see Table 6.4). The increase in train use may be as a direct result of a soft measure being implemented as part of the TP.

In partnership with the mainline train company (First Capital Connect), a joint train and bus ticket offer was developed as a multi-mode through ticket solution. This measure allows University commuters to buy a ticket directly to the University as a destination from all First Capital Connect ticket machines locations. A ticket machine is located on campus (See Plate 6.1), which allows for reverse ticket purchases. This TP measure, in effect includes a bus ticket as an addition to the train journey, which has the added benefit of reducing boarding times when catching a bus (more details relating to this TP measure are outlined within Chapter 7, Section 7.5.5).

From the perspective of my research, this measure provided an insight into how best to implement a specific measure through partnership. The train operator wanted to grow patronage from North London into Hertfordshire and Cambridgeshire. Most of their passengers commute the opposite direction. Through working together to develop a simple means for commuters to buy a train ticket that included a bus ticket (and vice versa), a ticket machine was

situated on campus at the expense of the train operator. Station ticket machines were also programmed to effectively add the University as a train destination. This immediately removed a real barrier to public transport users purchasing tickets for one mode, and then having to purchase a ticket for the other. From the start of discussions to tickets being bought, took around four months, which in the period in which this research is set, can be considered a quick win.

Reflective Diary Box 6.7 Multi-modal Ticketing

Plate 6.1   First Capital Connect (FCC) Multi-modal Ticket Machine - located on campus which allows for joint train and bus inter-ticketing to both mainline train stations that serve the University (Source: Author, 2012)
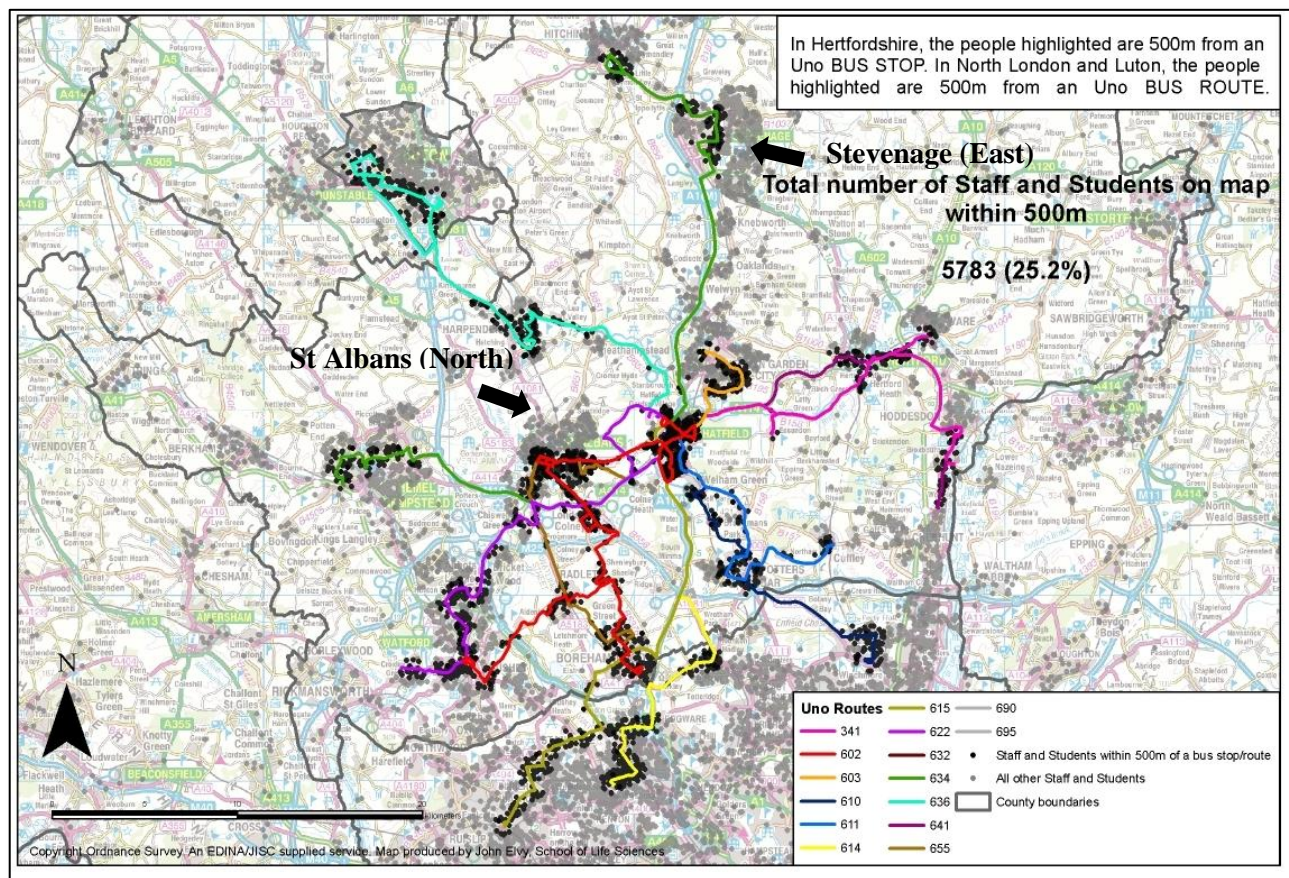
Figure 6.5 Home Locations of University of Hertfordshire Employees & Students Living within 500 metres of University Bus Routes (note: additional routes in North St Albans and East Stevenage developed as part of TP route development) (Source: Author, 2010)

6.4.1   UNO Charging Structure & Patronage

Often the costs of alternative modes (specifically public transport) are quoted as being too high to be viable as an alternative to the car. Here, an overview of the fare charging structure of UNO is outlined and considered in relation to its impact as a TP measure for the University.

UNO is the second largest commercial operator in Hertfordshire (after Arriva – the Shires) (pers. comm. Waters 2011). It operates a two zone fare system, with Welwyn and Hatfield providing the core for zone one and all remaining areas outside this core, charged at zone 2 rates (Table 6.7-8). This pricing structure is important to informing the TP and to it working, as prices are comparatively high when compared with car parking charges. A daily return ticket is typically £4 for an employee/student. The highest charge for a car park space is £2 - many pay less than this. If an individual chooses to purchase an annual bus pass, the cost reduces to circa £1.80 if used daily. Whilst this begins to compete with a £2 charge, it is based on the assumption that the bus user commutes every day.

This approach does not seem to provide the flexibility to travel and does not effectively provide individual choice to the user on a daily basis. Through the development of a workable solution, the issue of bringing together an organisational transport strategy, that merges car parking charges with that of charges for other modes, has been at the fore front of the TP. With the research being able to draw upon its direct involvement in working with a bus operator, this was made easier when informing the TP.

Table 6.7 UNO Public Fare Rates (UNO, 2011)

Adult Fare	Concessions	Period
£5	£3	UNO day
£20	£10	UNO Week (return)
£65	£33	UNO Month

Table 6.8 Staff & Student Bus Charges (UNO, 2011)

Adult Fare	Concessions	Period
£4	£3	UNO day
£20	£10	UNO Week (return)
£400	£400	UNO Annual

In terms of University bus user patronage, the present break down for University (staff and student) and public use is estimated as 34 and 66 per cent respectively. The current total annual patronage is circa 6.5 million (of which over 2 million are staff and students). This equates to about 18,000 passenger journeys per day on the UNO network. It is worth noting that of these 6.5 million journeys, approximately one million result from the University Park & Ride (which result from mainly students initially commuting to the facility by car). This therefore reduces the overall modal split and carbon impact of the bus operation in this particular respect. If a Park & Ride charging regime reflects the cost of parking, then if even a percentage of these car users could be encouraged to move onto the bus, this would help achieve TP targets, and increase the usage of UNO. Building more parking capacity detrimentally affects the bus operation. Therefore, if the TP can work with University Estates and UNO when setting charging rates both could benefit. The Estates Department would directly benefit from reduced parking demand (particularly on street parking), and the bus company from increased patronage and income.

The Park & Ride facility is presently at operating capacity at peak times, but its demand is mostly restricted by the capacity of vehicles at the facility. Presently car sharing at the Park & Ride is negligible, which could be encouraged through incentives. However, increasing the use of car sharing among users at the facility, whilst having a positive environmental impact, would have a negative impact on the capacity of the shuttles to take the additional passengers. The TP has to encourage behaviour change, but at the same time it has to recognise that capacity constraints can limit its impact. The aim would be to look at a daily charging regime that could be administered when using the shuttles. If the cost is set too high it may encourage greater on street parking, and if individuals each pay to board the shuttle, car sharing would be discouraged. Charging for parking would solve this issue, but charging by car reduces the likely income for contributing to shuttle bus costs. These contradictory issues have to be considered, and the best-fit solution developed to meet the requirements for changing behaviour.

The majority of UNO services operate at around 90 per cent, with three routes at full capacity (pers. comm., Waters, 2011). From a Travel Planning perspective, the UNO operation provides a real opportunity for targeting additional numbers for daily commuters to the University to a less environmentally impacting mode to the car. In addition, if car drivers could be encouraged into using this mode, then this has the added bonus of helping work towards achieving TP targets. Further work on the potential to move SOV users towards using this unique TP organisation initiative, is outlined later in this chapter. However, such a network does have its constraints, which are worth outlining here.

6.4.2   Route Development, Procurement & Marketing

UNO operates in a commercial environment that means it has to compete with other operators (outside of the University) to develop and operate on a specific corridor or route. These routes can be purely commercial, tendered services or the routes are subsidised by an organisation on their behalf (pers. comm., Waters, 2009). Whilst the University is the main organisation for the latter, other (local) organisations provide subsidies for their employees to use the UNO network. This is subsidised by the employer and paid to the operator. UNO provides a number of routes specifically for other organisations. North Hertfordshire College (NHC) is an example where this occurs, results of which are outlined later. This is an example where UNO, and the University benefits by being able to operate additional routes, at the expense of other organisations. This approach benefits the University's TP, as employees and students are able to take advantage of these additional routes that are subsidised externally by other organisations. This is a beneficial situation for the operation of the TP, in that developing and expanding the University's bus network on the back of other organisations, has the potential to enhance the future viability of the TP and its viability in achieving its own modal targets.

As of early 2012, the whole UNO fleet was fitted with a new digital ticket machine (provide by a German company, INIT). This digital system also operates a real time information system via street screens, but more importantly smart mobile devices. As a travel planning tool, this will enhance the user experience in terms of both real time information and reporting back delays to the operator to its operation. Whilst too late to report in detail the impact on modal use within this thesis, it is worth noting that the work of the researcher up to this stage involved developing on site screens for the dissemination of real time information (see Plate 6.2) as part of the TP development phase. The system began implementation in October 2012, starting with the University Park & Ride facility.

Plate 6.2   Real Time Ready Digital Screen - all on campus University Bus Stops have been installed with Real-Time 'ready' screens, as part of the county wide scheme to introduce this digital technology, from October 2012. (Source: Author, 2012)

This complex and technical TP measure has evolved over a period of six years from being involved from the early stages of the research. It outlines two important things; that TP measures can be simple or complex, but through perseverance and working in partnership, such issues can be worked through to develop real change. Whether individual's within organisations are around for this extent of time to develop such measures, is not always likely, and therefore this may indicate how robust a TP can be in implementing time consuming initiatives such as real time systems.

The approach adopted within this thesis, has been to make use of existing organisational management and reporting structures. This has added much needed robustness to the TP process, and has added a timescale against which projects can be reported. Even if a TP

measure is not progressing, it has been recorded against which progress can be reported.

Reflective Diary Box 6.8 Real Time Information Systems

In the spring of 2012, UNO procured two hybrid buses through the Green Bus fund. This fund was applied for and secured to help reduce particulate matter within its St Albans operation. These vehicles use a dual diesel and battery operated system, which reduces overall emissions. Whilst too late to report the operation performance of these vehicles within the thesis, it goes someway to outline the future success of the University TP in securing external funding for developing specific 'soft' measures to work towards a 'Smarter Choices' framework. Key to these public transport specific measures has been the TP coordinator working in close partnership with the University bus company and with wider local transport partners and delivery agents.

As a main operator within Hertfordshire, UNO is a primary and establishing partner of the Quality Partnership (Network St Albans) based in the City after which it was named (see Section 6.6). The development of this partnership has formed a large part of the researcher's work and the direction in which the thesis has emerged. The partnership has secured circa £11.5million of funding to further develop its success, in addition to its work on real time, mobile phone m-ticketing, route and bus stop specific information, a multi-operator ticket (which from the University TP perspective, includes Hatfield), a public transport INTALINK information app (launched November 2011), public transport infrastructure improvements, as well as QR codes at bus stops (for reading with smart phones and other devices). Further detail on Network St Albans is outlined in following sections.

A key understanding to emerge from the research outlined in the above section was the University seeking to increase car park capacity (which was the stated aim of the Local Authority and Estates management) without fully understanding the empirical evidence. Throughout my research, this almost panic response to a perceived issue (i.e. not enough parking to meet demand), was the key factor to undermine the work of the developing TP.

Internal funding sources for soft measures were highly limited throughout the research process. In order to secure funding, a great deal of partnership work had to be undertaken. My direct involvement in establishing the Network St Albans partnership was based on the fact that funding would be sought by the partners in order to implement area wide local transport initiatives, such as the ones outlined above. Without this approach, the extent of the work

> *presented within the thesis, would have been restricted to a limited amount of 'soft' measures that, in my mind would have achieved little in terms of behaviour change or modal split away from that of single occupancy car use.*

Reflective Diary Box 6.9 Impact of Funding Travel Plan Inititiaves

6. 5   University (2002 -2011) & St Albans Commuter Survey (2008)

6.5a   University Results

Modal split data is the primary source at monitoring and evaluating a TP. In terms of the University, Figures 6.6-7 provide a graphical account of current (2011) and historic longitudinal data (2002 – 2009) relating to primary modes used by University employees and students. These data are important, as they provide an indicative understanding of modal split trends. Whilst they cannot be assumed to be one hundred per cent accurate (Denscombe, 2007), they are the prime source of data available to a TP Coordinator for informing on the progress of a TP. Whilst only general interpretations can be made from the data sets, these data help to inform the future development of the TP and its measures, but do not provide specific interpretations on the success of specific measures. This is a major limitation on using this type of quantitative data collection method. Whilst this data collection technique is a cheap option for gathering a large amount of categorical data relating to travel trends, data interpretation tends to be highly deductive, meaning it is difficult to build theory and make specific recommendations from. In terms of informing a TP the data is limited in that it is more appropriate for reporting on the trends observed, than understanding why they occur.

In terms of the University survey data, currently just over two thirds (68 per cent) of staff and a third of students commuted alone by car in 2011. Eight per cent of employees commuted by bus, down from eleven per cent in 2009. The overall trend for employees indicates that SOV use declined from a high of eighty-two per cent in 2002, reaching a low of sixty four per cent in 2009. This figure has since increased back to a relatively normal level of circa sixty-eight per cent (where it was in 2005-7). The decline in 2009, excluding the issue of data reliability, could be attributed to the economic downturn (i.e. the credit crunch), as well as a number of employees (about 200) being made redundant around this period. The resulting increases in bus and walking as primary modes in 2009 may indicate that more employees opted to use these modes at the expense of the car. In terms of informing the TP, these figures cannot be relied upon for total accuracy in reporting success of specific TP measures. They are indicative of trends occurring due to the limited response rates and issue with collecting such data. However, they do provide a useful insight into the process of monitoring TP targets. The only data that the LA requires, as part of a biennial update, is based on such data.

To this day, neither the process of designing, administrating the survey or analysing the data has been independently or externally verified. This begs the question, how reliable are TPs if the empirical evidence provided for their monitoring is not verified by either local authority. There is nothing to stop data presented being manipulated to show targets being met. Certainly, as an embedded Travel Plan Coordinator, I have not been asked internally or externally to provide justification for this process. Surely, if TPs are going to provide a local transport planning tool for modal shift, greater external analysis and a critical review of the data on which they are monitored needs to be considered. From my perspective, if my wages were based on achieving targets, with no external verification there is nothing stopping data being falsified. To date, there has been no external verification, but then targets are not directly related to income, and data has not been falsified.

Reflective Diary Box 6.10 External Validation of Travel Plan Successes/Failures

In terms of the data, all modes for both stakeholder groups have witnessed fluctuations between 2002 through to 2011. These could be attributed to numerous factors impacting on individual choice. The biggest impact on modal change away from car use was observed for both staff and employees between 2002 and 2005. The intervening years saw the opening of the new de Havilland Campus, which centralised the University's geographical location. Subsequently increases in bus use, car sharing and walking by staff and student were recorded, as well as increases in cycling and train use by the latter demographic. A decline in bicycle and train commuting by staff were observed between 2002 and 2005, although both modes have since increased slightly to circa five per cent and three per cent respectively.

This increase could be a result of TP measures for cycling and train being implemented and marketed for these specific modes (See Chapter 7, Sections 7.5.1 & 7.5.5). From such data it is difficult to attribute such trends to specific initiatives. As mentioned above, with this type of survey data, it is difficult to make specific assumptions as to why trends have altered, or not. The lessons learned from a TP perspective, is that whilst these data sets provide an indication of what is occurring, they cannot be totally relied upon. From a TP monitoring perspective, what needs to be considered is a way of monitoring real time travel data, through the use of a daily charging regime and or digital technology (such as Smart Cards or Automatic Number Plate Recognition) A model of how such an approach could operate is outlined in Appendix Seven.

This would allow for the traditional commuter survey to be triangulated against other data sets. Unfortunately, such expensive data collection tools are likely to be beyond the budget of any Travel Planner. Until such real time data resources are available, it is likely that TPs will continue to be monitored using the limited biennial commuter survey, which constrains their reporting effectiveness.

The student variations reported might also be attributed to many individual and interacting variables that influence personal travel behaviour (as previously outlined by Lyons and Goodwin, 2008). However, the overall trend is that from a high of thirty seven per cent in 2002 and a significant decline observed in 2005 to around a quarter of all modal use, the trend has mostly been positive. SOV use by students in 2011 is recorded at about thirty four per cent. All data for SOV use by employees and students indicate that reaching the sixty and twenty per cent respective TP targets are unlikely, based on current trends. If targets are to be achieved, then the University needs to adopted more interventionist approaches (as discussed by Docherty, 2001), which includes the use of hard and soft measures. As a culmination of the embedded research work, an outcome proposes the implementation of a travel strategy that blends together the car park policy of an organisation, with that of other modes. The proposal outlines a 'charge and reward' model, which is outlined and articulated at the end of Chapter Seven (and in detail within Appendix Seven). This model provides a mechanism that could help lever individual travel behaviour, away from the recent trends observed, towards that of encouraging greater uptake of alternative modes to SOV use.
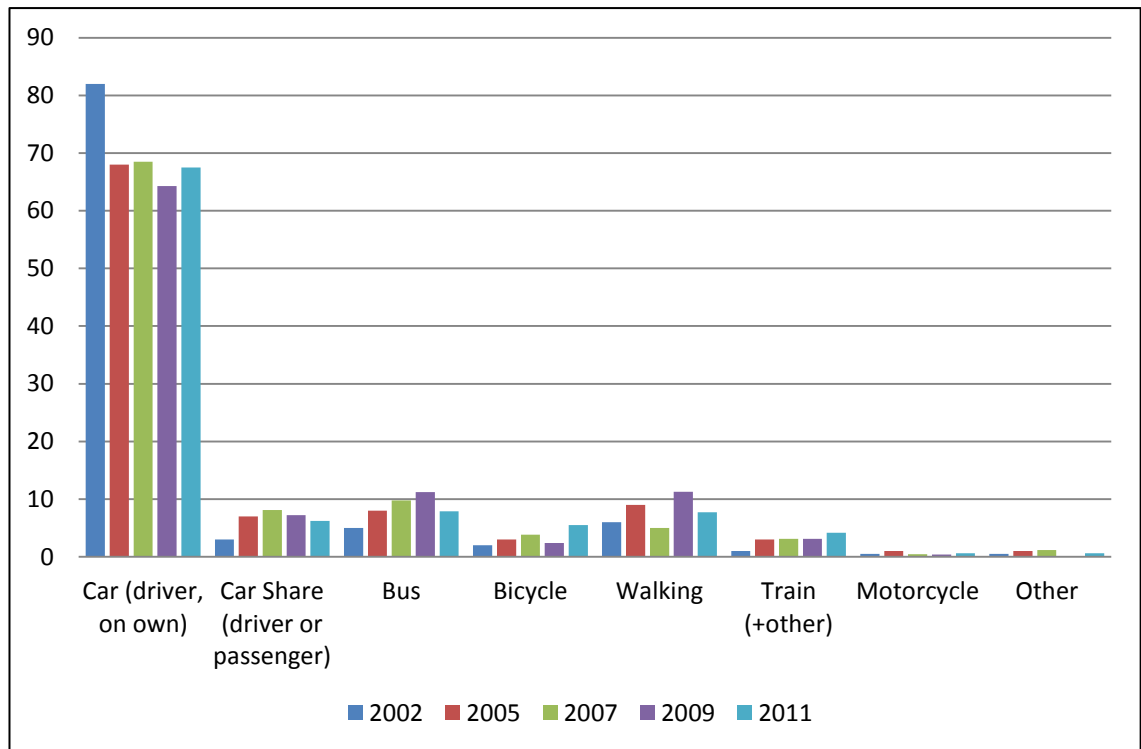
Figure 6.6   University Employee Percentage Model Split Figures (2002-2011)
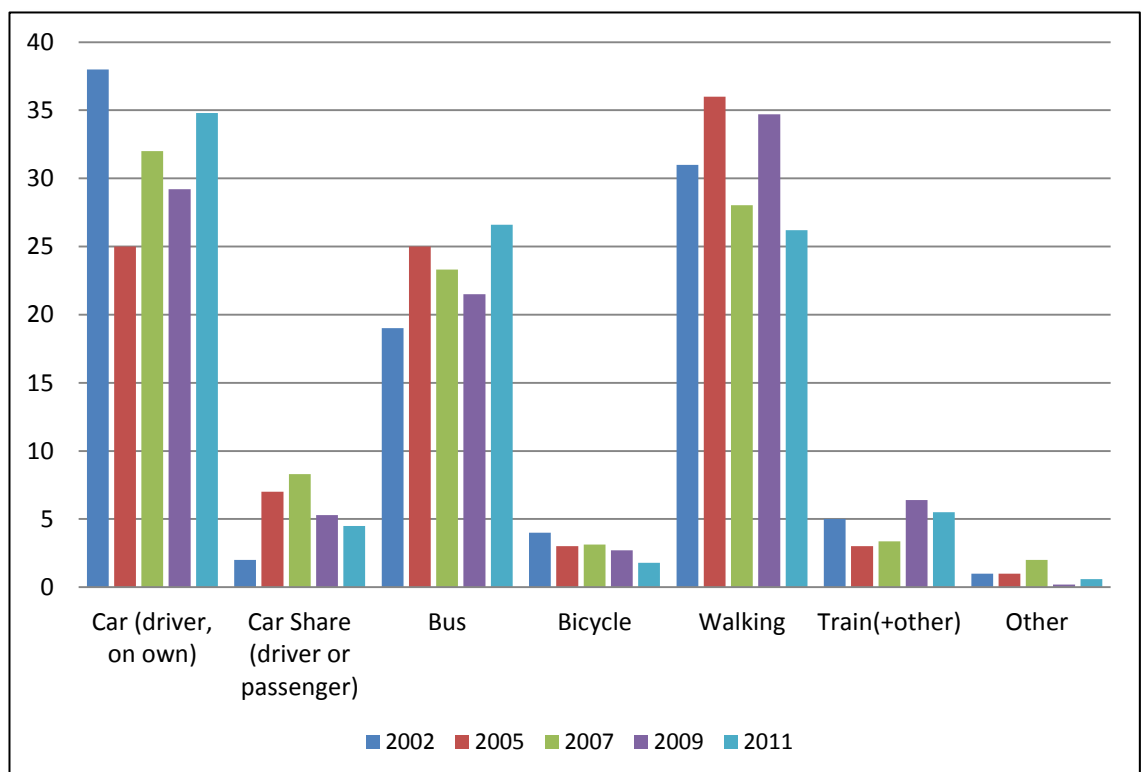
Figure 6.7   University Student Percentage Model Split Figures (2002-2011)

6.5b   St Albans Results (2008)

As outlined in the methodology (Chapter Four, Section 4.2.1), businesses were sampled in St Albans within the central limits of the city, concentrating primarily on the main city thoroughfare (St Peters Street) and surrounding radial routes into and out of the city (Catherine Street, London Road & Victoria Street).

Out of the 2,000 questionnaires sent out, 330 surveys were returned completed. These represented some 117 businesses of differing types and sizes. The response rate was therefore calculated as 16.9 per cent of all surveys sent out. The return ratio indicated that 65 per cent were female, 35 per cent male and that the age range was distributed as roughly 16 per cent under 25, with 26-45 about 45 per cent and over 46 year olds accounted for about 30 per cent.

Commuter modal split for the city of St Albans, as calculated from this sample, indicates a majority (63%) commuted alone by car (or by other type of motor vehicle). The average for the whole of Hertfordshire in 2009, as recorded in the Hertfordshire County Travel Survey, was 69 per cent (HCC, 2011), with the nation average at 61 per cent (Figure 6.8). Therefore this indicates that fewer people in St Albans commute by car alone, than the rest of Hertfordshire, which could be an indication of the limited parking and alternatives available to workers in the city. It is a little higher than the UK average, which provides further evidence that Hertfordshire is seen as a car based county.
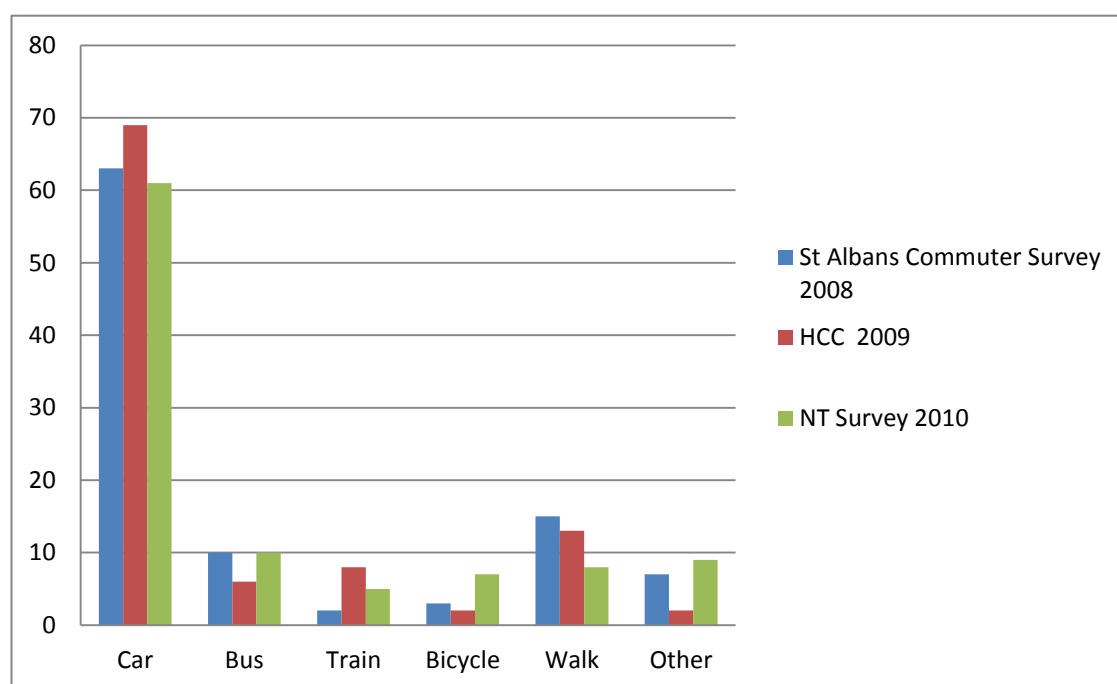
Figure 6.8 Comparison of St Albans, Hertfordshire and United Kingdom Modal Split

In St Albans, cars with more than one person per vehicle accounted for seven per cent of all commuter journeys. An interesting finding was that a considerable minority walked to work (15 per cent) and that a greater than national average (eight per cent) commuted to the city by bus. Both of these figures are greater than the Hertfordshire mean average of 13 per cent and six per cent respectively. From some basic GIS analysis, it was calculated that from the sample population, thirty-one per cent of respondents lived fewer than two miles from their workplace, which naturally leads to the assumption that commuters are less reliant on private motor vehicles. An additional twenty-two per cent of respondents lived within five miles of their workplace, with the next 18 per cent residing up to ten miles away. Nearly one quarter or respondents lived more than ten miles away.

Two-fifths of car drivers lived fewer than five miles away and the overall majority (circa 66 per cent) of SOV commuters resided within ten miles of their work place. Just over half (55 per cent) of all commuter respondents lived within five miles of their workplace, the majority (41 per cent) being SOV users, (nine per cent car sharers), with walkers making up nearly a third (31 per cent) and bus users just over a tenth (11 per cent).

Out of the commuters that lived over five miles away, the vast majority were SOV users (83 per cent), with car sharers, train users and bus commuters (five per cent respectively) making up the remainder. When concentrating on car drivers alone, their mean journey distances were just over ten miles, significantly less than bus users (about 16 miles) and train commuter journeys (about 32 miles). This indicates that if train or bus services were either frequent enough or indeed existed to serve these car drivers, then a large proportion of commuter have the potential to change away from commuting by car, providing sufficient investment in objective or subjective transport alternatives (Sloman, 2006) could be made.

Respondents were posed the question, *'Is there a bus service operating within 500 metres of your home that allows you to travel easily to your workplace?'* The results indicate that just over two-fifths of all commuters and 55 per cent of current car users (about nine per cent of car users didn't know) stated that there were no suitable bus services. This indicates that up to three-fifths of all users and 44 per cent of all current car users have the potential to use a bus, for at least some of their commuter journeys. At present, around 8 per cent make use of a bus for commuting as their main mode, suggesting that using some elementary analysis, an additional 50 per cent growth in bus use for commuting could occur with the right conditions in place.

Hertfordshire has one of the highest car ownership levels in the UK at 82 per cent compared to 73 per cent nationally (HCC, 2011[a]). Within the UK, commuters are as a whole, make up the

lowest vehicle occupancy group per private vehicle (1.2 people per vehicle) when compared with other journey groupings (such as education, shopping, leisure and personal business). As a whole the mean for all journeys is 1.6 occupants per vehicle and declining, meaning that as individuals, people are increasingly travelling alone for their journeys (DfT, 2010). When first considering the potential for modal shift away from car use, SOV users living within 5 miles would be seen as a priority demographic group to focus on, as this group has the greatest impact on traffic within the city and surrounding area. Taking these trends into account, targeting commuters who currently commute alone by private modes, could reduce overall vehicle numbers within the district, leading to a reduction in recorded traffic congestion. Such targeting would have to be accompanied by a city-wide transport strategy that would also target improvements to all other modes, private and public transport infrastructure, public transport network frequency and ticketing. Such improvements could lead to an integrated and structured framework that would create the conditions for reducing both traffic congestion and carbon emissions, set out within SADC Local Development Framework.

As a group, 42 per cent of all SOV users live within five miles of their place of work, of whom one sixth (16 per cent) would be willing to car share, with just over a quarter *'considering'* car sharing in the future. This suggests that between eight and 16 per cent of local SOV users could move to an alternative mode (albeit still car users), providing suitable conditions could be created. Respondents within this target group stated the following as issues that would encourage a change from current SOV use. Help in finding suitable car share partners, preferential parking spaces, financial incentives (details not provided) or a guaranteed lift home in unforeseen circumstances.

A significant minority (37 per cent) of respondents that currently use SOVs for commuting to St Albans stated that they knew that they could use a bus service instead of their current mode. This indicates that there is a considerable potential to move from high carbon modes, to less carbon emitting modes (such as buses). With St Albans, total carbon emissions from transport totalling some 60 per cent, such a move (although difficult to measure) would help deliver National Indicator 186 targets, set out within the Local Area Agreement. However, in order for commuters to make this step change, current behavioural patterns would need to be tackled. Car users stated their current mode was *'most convenient'* or the *'most suitable'* mode available to them. Individual behavioural change is the biggest hurdle for government and transport planners to overcome, if past and current car growth trends are to be reversed.

Possibly reflecting its relatively rural nature, and dispersed settlement pattern with a network of medium-sized cities, transport in the East of England is dominated by the private car. Car

ownership levels are high with 1.29 cars per household. This is significantly higher than the Great Britain average of 1.14 cars per household and is the joint highest nationally along with the South East and South West (DfT, 2011[a]). Trips per person per year by either car or van (as either a passenger or a driver) are also high at 707 trips. Again this is significantly higher than the UK average of 624 trips and second only to the South West (DfT, 2010[b]). In terms of miles travelled per person per year by car (as either a driver or a passenger), this area is the highest in UK at 6,601 miles, with the Great Britain average being just 5,394 miles (DfT, 2011[c]).

Based on a 'business as usual' scenario, assumptions including underlying growth pressures and assumptions on transport investments, forecasts from the East of England Regional Model owned and developed by the Highways Agency suggests this pattern could be exacerbated with the model forecasting a 41 per cent growth (central estimate) in vehicle kilometres between 2006 and 2031 (Atkins, 2009). This clearly has implications for carbon emissions.

The East of England Transport and Carbon Study (TraCS) sought to examine these implications (*ibid.*). The study noted that, in the UK as a whole domestic transport emissions account for around 24 per cent of total CO_2 emissions and that these increased by 11 per cent between 1990 and 2007. In the East of England, road transport emissions accounted for almost one third of local CO_2 emissions in 2007.

Under the 'business as usual' scenario the region's transport emissions are predicted to grow significantly. People are expected to travel further on average each year and this, combined with predicted longer term growth in population, housing and economic activity, will result in additional transport demand only partially being offset by improvements in vehicle efficiency resulting in an overall growth in transport sector CO_2 emissions in the East of England of 33 per cent between 2006 and 2031 (Salter *et al.*, 2010). The study suggested, however, that significant cuts in transport sector emissions in the East of England could be achieved through a mix of interventions including vehicle and fuel efficiency, behaviour change and pricing signals.

Car users, when asked to make an alternative choice for their commute, suggested a large proportion of SOV users could use public transport (35 per cent) or walk (22 per cent). Train (ten per cent), car sharing (nine per cent) and cycling (six per cent) also appear as possible options. Although some commuters could be encouraged to cycle from greater distances, personal choice and distance are more likely factors that would encourage greater uptake of public transport. When asked what public transport initiatives might encourage a change towards their use for commuting, respondents stated greater frequency (44 per cent), direct routes (35 per cent), discounted fares (41 per cent) and improved overall reliability (38 per cent)

as the major improvements they would like to see in place. However nearly one sixth (13 per cent) of respondents stated that not even these improvements would encourage a modal change. Interestingly over one third of all cars users would change over to existing bus services if they no longer had the use of a private car. Therefore if further enhancements suggested by respondents could indeed be implemented by operators, there is potential for significant numbers of car users to make the switch from SOV users to public transport. In general, results indicate that commuters do not see infrastructure or physical changes to public transport network (these include bus lanes (five per cent), improved shelters (12 per cent) rail stations and links (eight per cent) as important as frequency, reliability, direct routes or fare structures.

A large minority (48 per cent) of respondents stated that they would never be encouraged to cycle or walk to work. When solely looking at car users, this figure increases to 58 per cent. Various reasons were given, including health reasons, child care responsibilities, work trips during the course of work or the distance between home and place of work. Out of the 15 per cent of walkers, many stated that they lived close enough to their workplace that they preferred walking and felt safe using it, compared to other modes open to them. In terms of increasing cycling, improvements to cycle facility provision, in the form of improved parking bays and cycle routes into the city were more popular than being provided with financial incentives, such as cycle loans or discounted tax cycle schemes, which can be provided by employers to employees through government tax incentives.

Respondents were asked questions relating to potential future changes in transport provision, and how, if these changes occurred, travel behaviour may alter. Over one third (37 per cent) indicated that they would like to work from home to a greater extent than they currently did. The DfT estimates that three per cent of employees work from home during some period of their employment (2009). This could increase to as much as ten per cent overall, although behaviour change is dependent on individual organisations and the type of employment undertaken.

Discounted fares on public transport (30 per cent) as well as other (unstated) financial incentives (28 per cent) were stated as options in helping individuals change their travel behaviour. Interestingly, with the current focus on increasing fuel prices, nearly a quarter (24 per cent) also stated that the cost of fuel would directly influence their choice. With record high prices at the pumps, it remains to be seen the extent to which real term fuel price and tax increases impact on individual behaviour.

Respondents were asked questions relating to what they felt were the biggest transport related issues facing the City & District of St Albans, the possible demand management of traffic on the

main thoroughfare (St Peters Street), as well as possible restriction on private vehicles within the city centre locations.

In terms of the future issues facing the city, the two largest issues highlighted by far were traffic congestion (74 per cent) and parking provision for cars (59 per cent). Additionally, enforcement of existing transport regulations (31 per cent) (St Albans has a Controlled Parking Zones in operation within residential areas surrounding the city centre), the location of existing car park facilities (21 per cent) and inadequate public transport facilities (18 per cent) were the main concerns. Interestingly the majority of commuters (44 per cent) were in favour of restricting car movements within the city, through some form of demand management on the main retail street in the city. A significant minority (39 per cent) were opposed to this, increasing slightly among car users (41 per cent), which was the largest grouping within the demographic. A majority of walkers (56 per cent) were also in favour. It has to be noted, that this survey does not include the views of retail outlets, local residents and school users, and therefore further research would need to be conducted in order to conclude how such a large intervention would impact upon the city in terms of traffic congestion, carbon reduction or economic benefit.

A large minority (44 per cent) of commuters were in favour of the introduction of staggered opening hours for organisations within the city (such as schools, public sector organisations and retail outlets), as a direct means of managing the traffic generated at peak times. Additional comments of respondents outlined the impact that many commuters felt the school run contributed to the increased peak traffic flows, particularly in the morning rush hour. Again further detailed research would need to be collated on school opening times, travel behaviour and attitudinal data, which currently do not exist within this location.

In terms of wider restrictions being placed on private vehicles within the city, in addition to the possible demand management of the main thoroughfare, this proved less popular among commuters, with a significant minority (48 per cent) showing their opposition, to those in favour (36 per cent). One in ten respondents did not care either way. When considering car users driving alone, a greater proportion (53 per cent) were not in favour of such measures being imposed on their use of the car, although a large minority (31 per cent) were in favour.

The vast majority of respondents felt that the individual (61 per cent) and central government (53 per cent) should be responsible for reducing their personal carbon emissions from transport, as opposed to the County Council (20 per cent) or the District Council (22 per cent). A minority (five per cent) stated that they thought no one was responsible for making such reductions. When asked whether environmental concerns could influence or change respondents future

transport choices, a small majority (52 per cent) indicated in the affirmative. This indicates that individual transport behaviour is to a certain extent within the conscience of half of commuters, in terms of the environmental impact peoples choices have. This figure was slightly smaller for car users (49 per cent), but still made up the largest group.

6.5.1   University & St Albans City Commuters - Time & Distance Travelled

Taking the University population as a whole, males are more likely to use other modes to the car when commuting to the University, whilst females have a higher tendency to drive alone or to car share than to use public transport, cycle or walk (Chi^2 65.689, df5, p<0.001; Table 6.9). Males commute further (14.2 miles) and take significantly longer (36 mins), than females (12.1 miles & 32 mins respectively) (t=2.157, df919, p<0.031; Table 6.10). The same trend was observed when comparing staff and gender against modal choice (Chi^2 71.160, df5, p<0.001 Table 6.11), although males commuted significantly further (16.5 miles) and took longer (38 mins) than their female counterparts (12 miles and 31 minutes respectively) (Time: t=3,094, df470, p<0.002; Distance: t=2.803, df411, p<0.005; Table 6.12).

When comparing the gender of students with their preferred modal choice, no significant difference was observed between males and females (Chi^2 8.326, df5, p<0.139; Table 6.13). The same result was observed for time taken to commute (34 & 35.5 mins) and distance travelled (10.6 & 12.3 miles) (Time: t=-0.603, df483, p<0.547; Distance: t=-1.202, df615, p<0.230).

These data and figures are useful at providing an indicative overview of how individual demographic groups commute by case study. This level and type of data, however, have limitations in providing detailed analytical information in terms of understanding whether or not individual interventions have a direct impact on changing behaviour. This can only be achieved through developing more in depth, personalised travel planning approaches to data collection, which the structures developed within each case study would manage. As both the Smarter Choice agenda and the cycling demonstration town suggest (Cairns *et al.,* 2008), providing travel information to individuals can significantly alter their behaviour. In terms of informing the TP or QP, this is an area that needs to be taken forward in the future, if significant behavioural changes are to be achieved, and sustained. Up until 2011, the financial constraints on the TP budget have limited marketing to providing traditional hard copy and digital information of the alternatives available (see Chapter 5 for examples).

These trends, whilst dependent on personal travel journey could be explained by a number of factors affecting journeys to work. First, males take longer to commute to work than females, because geographically they live further away. In addition, the fact that they are more likely to

use alternative modes to the car, it could be expected that other choices do in fact take longer for the commute journey from origin to destination.

Male employees commute further (16.5 miles) than their student counterparts (10.6 miles), whereas female staff and students commute similar distances (about 12 miles). This finding indicates that males in full time employment are more willing to travel further distances for their work commute than their female full time equivalents. Males in higher education live closer to their education, which could be a result of financial or logistical reasons (i.e. they live closer to where they study because it is cheaper to do so or because they have specifically chosen to study at a local establishment). Students living in halls also affect this trend, because around a third of students live in halls. With the University Estates 2020 Plan aiming to increase on site residential accommodation, this could have a positive impact in reducing daily car commuting to the site. There was no significant difference between St Albans commuters modal choice based on gender (Chi^2 0.355, df1, p<0.552; Table 6.14), although males commuted shorter distances (8.3 miles) and took less time (28 mins) than females, the difference was minimal (9.1 and 29 mins, respectively; Time: t=-0.583, df154, p<0.561; Distance: t=-.0.383, df201, p<0.702; Table 6.15). This specific city commuter group travelled considerably less distance, than either of their University counterparts (staff and students), which could be a result of individual's economic circumstances. Whilst this cannot be directly proved from these studies, privately employed commuters to St Albans can demand higher wages than their University counterparts, and therefore they have the opportunity to locate themselves close to one of the most desirable locations in the United Kingdom (St Albans). University employees, particularly males, may have no choice but to live in cheaper locations and commute. This is a particular issue that needs consideration, when developing urban and travel planning interventions. Asking people to live close to centres of employment to reduce urban sprawl, and thus to alter their modal choice towards less carbon emitting modes (as outlined by both Smart Growth and Smarter Choices agenda), is difficult to achieve when high land prices effectively price out lower earning workers. This particular issue was continually raised by union representatives at the University in terms of bringing in higher parking charges. The Unions argued that lower earners have to live further away from their place of employment, and that any daily charges placed on them would not be fair, compared with higher earners that could afford the extra cost. This element has been important in informing a future approach to TP development (see Chapter 7).

Table 6.9 Gender of University Staff & Students with Modal Choice Preference

			What is your primary (usual) form of transport to the University?						
			Bicycle	Bus	Car (drive, on own)	Car Share (driver or passenger)	Train (+ other from station to University)	Walking	Total
What gender are you?	Male	Count	40	97	266	23	30	89	545
		Expected Count	19.6	79.7	323.0	27.5	23.5	71.7	545.0
	Female	Count	14	123	626	53	35	109	960
		Expected Count	34.4	140.3	569.0	48.5	41.5	126.3	960.0
Total		Count	54	220	892	76	65	198	1505
		Expected Count	54.0	220.0	892.0	76.0	65.0	198.0	1505.0

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	65.689[a]	5	.000
N of Valid Cases	1505		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 19.5

Table 6.10 Gender of University Whole Sample compared with Time / Distance of Commute

	What gender are you?	N	Mean
How long do you spend travelling to the University (i.e. one way) on a usual day, when using your usual form of transport? ("in minutes")	Male	585	36.25
	Female	1028	32.54
How many miles is it between your home and the University? ("one way")	Male	585	14.196
	Female	1028	12.101

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
How long do you spend travelling to the University (i.e. one way) on a usual day, when using your usual form of transport? ("in minutes")	2.156	919.604	.031
How many miles is it between your home and the University? ("one way")	1.864	887.562	.063

Table 6.11 Gender of University Staff & Modal Choice Preference

			What is your primary (usual) form of transport to the University?						
			Bicycle	Bus	Car (drive, on own)	Car Share (driver or passenger)	Train (+ other from station to University)	Walking	Total
What gender are you?	Male	Count	34	35	199	13	22	29	332
		Expected Count	15.1	24.2	240.3	17.9	12.6	21.8	332.0
	Female	Count	9	34	485	38	14	33	613
		Expected Count	27.9	44.8	443.7	33.1	23.4	40.2	613.0
Total		Count	43	69	684	51	36	62	945
		Expected Count	43.0	69.0	684.0	51.0	36.0	62.0	945.0

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	71.160[a]	5	.000
N of Valid Cases	945		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 12.65.

Table 6.12 Gender of University Staff compared with Time / Distance of Commute

	What gender are you?	N	Mean	Std. Deviation	Std. Error Mean
How long do you spend travelling to the University (i.e. one way) on a usual day, when using your usual form of transport? ("in minutes")	Male	353	37.81	39.599	2.108
	Female	640	30.77	21.615	.854
How many miles is it between your home and the University? ("one way")	Male	353	16.549	29.3561	1.5625
	Female	640	11.992	11.3962	.4505

		t-test for Equality of Means		
		t	df	Sig. (2-tailed)
How long do you spend travelling to the University (i.e. one way) on a usual day, when using your usual form of transport? ("in minutes")	Equal variances not assumed	3.094	470.207	.002
How many miles is it between your home and the University? ("one way")	Equal variances not assumed	2.803	411.385	.005

Table 6.13 Gender of University Students & Modal Choice Preference

| | | | What is your primary (usual) form of transport to the University? | | | | | | |
			Bicycle	Bus	Car (drive, on own)	Car Share (driver or passenger)	Train (+ other from station to University)	Walking	Total
What gender are you?	Male	Count	17	62	67	10	8	60	224
		Expected Count	20.7	55.9	77.0	9.3	10.7	50.4	224.0
	Female	Count	39	89	141	15	21	76	381
		Expected Count	35.3	95.1	131.0	15.7	18.3	85.6	381.0
Total		Count	56	151	208	25	29	136	605
		Expected Count	56.0	151.0	208.0	25.0	29.0	136.0	605.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.326[a]	5	.139
N of Valid Cases	605		

0 cells (.0%) have expected count fewer than five. The minimum expected count is 9.26.

Table 6.14 Gender of St Albans Commuters & Modal Choice Preference

| | | | What is your usual form of transport when commuting to work? | | |
			Car based travel	Public Transport	Total
What is your gender? Male		Count	59	12	71
		Expected Count	57.4	13.6	71.0
	Female	Count	126	32	158
		Expected Count	127.6	30.4	158.0
Total		Count	185	44	229
		Expected Count	185.0	44.0	229.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.355[a]	1	.552
N of Valid Cases	229		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 13.64.

Table 6.15 University Staff and Student Awareness Levels of Environmental and Sustainability Marketing Material

			Did you know there is an Environment Team website and dedicated email for information on environmental and sustainability issues at the University?		Total
			Yes	No	
What is your role at the University?	Staff	Count	649	262	911
		Expected Count	492.7	418.3	911.0
	Undergraduate	Count	90	334	424
		Expected Count	229.3	194.7	424.0
	Postgraduate	Count	29	56	85
		Expected Count	46.0	39.0	85.0
Total		Count	768	652	1420
		Expected Count	768.0	652.0	1420.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	305.958[a]	2	.000

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 39.03.

6.5.2   Single Occupancy Vehicle Users & Alternative Modes

University SOV users were asked what alternatives they could use on days when they did not use the car, and how often they used this alternative. A similar question for the St Albans commuter survey was not posed and therefore a similar comparison could not be attempted. This is a weakness of using a secondary dataset and reworking it for comparison reasons. If a future city based survey is conducted, then ensuring it poses questions similar to the University survey, will allow for directed variable comparison.

In terms of the University dataset, forty-nine per cent replied that they had a viable alternative available to them, which equates to about 8,100 individuals out of the total 16,600 people that

commuted alone by car. This group of 8,100 individuals need to be targeted for marketing in order to change their preferred mode choice away from the car, towards other viable modes. When asked what alternative mode was available to them and how often they used it, around eleven per cent car shared (890 individuals) at least once a month. In terms of public transport, just over five per cent (400) commuted by bus and fewer than three per cent (240) used the train.

When considering 'green' modes (cycling and walking), just over four per cent cycled (324) and less than one per cent walked (60) to work. Out of the total 8,100 individuals that have an available alternative mode to their car, employees numbered about 900 and students 7,200. These two figures represent just over twenty five per cent of total University stakeholders (staff and students together). Therefore, in terms of meeting the stated University TP targets, there is clearly a large pool of cars commuters with the potential to use other modes. This means that the University TP measures need to specifically consider this group to address the barriers to them changing behaviour.

Personalised Travel Planning, which works on the 'Smarter Choices' agenda, would be an ideal TP measure to employ for both the University and QNP area. This resource intensive approach provides the individual with information relating to their own travel choices, based on their origin and destination. Results from similar work undertaken in cycle demonstration towns (Peterborough, Worcester and Darlington), indicated that up to a third of local trips could be modified through this approach (pers. comm., Sloman, 2012).

In terms of national trends for commuting journeys, the University commuting trends are not exceptional in terms of its geographical location. Commuting by car to work accounts for around sixty-one per cent of journeys in the UK. Eighty per cent of all car commuter journeys are single occupancy (DfT, 2010). Compared to this, the University's comparative employee modal split of sixty-eight, can be seen as a success. Walking and cycling comprise thirteen per cent of commuter journeys, which is similar to University employees (accounting for five and eight per cent, or thirteen per cent when combined). In terms of public transport (bus and train), nationally these comprise fifteen per cent between them, but this includes urban centres within these figures. Bus use for the University is perhaps still a relatively good exception (outside of London) in that employee commuting constitutes just fewer than ten per cent for staff and over a third for students. For a relatively rural location, this can be seen as a TP success.

The average person commutes 12.8 miles to work nationally (DfT, 2010), therefore female University employees fit closely with this trend, whereas male employees are significantly

higher. Again, without sampling individuals, it is difficult to determine why this is observed. St Albans commuters, both male and female commute significantly less distances (<10 miles), compared with the national level.

These data trends are again useful at understanding the underlying patterns behind behaviour. The have helped inform both the development of the University TP and the QP, in the broadest sense. A great deal of further analysis can be undertaken on these data sets to inform specific initiatives prior to their development and are presented here to provide broader context for this research. However, without speaking directly to individuals about the psychological reasons and barriers changing their behaviour, it is difficult to construct complex models that would help change their behaviour. Simple categorical survey data provides some trend data concerning a particular population, but it limits what the TP can do. Again, as mentioned previously, further in depth before and after studies, that collected data on individuals involved in personalised travel planning, is an aspect of further research that is being considered within the QP study area, as part of the LSTF Phase Two bid to the Department for Transport.

6.5.3 On Street Parking

In terms of on-street parking, the 2011 University commuter survey asked respondents whether they parked in local streets. Around thirteen per cent of students (900) admitted to doing so at some point. If the University is going to reduce the negative social impact (perceived or real) relating to on-street parking, then measures designed to encourage this group to use on campus parking, or even alternative modes need to be developed. Without tackling this issue, the University risks having future planning applications called in or rejected by the local planning authority (which could be contested in court). However, the University wishes to work with the authority to tackle the worst offenders, because of its interest to appear to do so. In addition, if this 'free at point of use' parking capacity is managed effectively it could benefit the implementation of an effective TP strategy. This is because it would reduce the likelihood of people circumventing a charge. If a daily charge scheme, or any meaningful charge is able to be brought in to affect travel behaviour (using a 'stick' approach to supplement 'smarter choices' TP initiatives), then this alternative parking supply needs to be managed through reducing capacity or removed altogether as an alternative to people avoiding charges. If no change is made to the current on street parking supply situation, even a limited Controlled Parking Zone (CPZ) in selected streets may be a suitable option for the local authority and University to take forward in the interim. Any travel planning measure that pushes SOV users towards using University parking brings these individuals under the auspices of the TP. This increases the

potential for greater numbers of individuals using alternative modes, because limiting supply makes them at least consider alternatives (including car share options).

6.5.4   Car Users Reasons for Commuting by Car

Car users in both case study areas were asked the main reasons for using the car for their commute. All three groups rated 'no viable alternative' mode high (between 39 and 52 per cent), with 'comfort' seen as more important for the St Albans and University student commuter groups (50 of car users stated this option). These reasons are similar to the barriers suggested by Lyons and Goodwin (2008). He suggests that individuals' attitudes towards public transport are generally negative and that attitudes towards perceived health risks and the true impact of CO_2 on global warming of car use are highly sceptical (Lyons & Goodwin, 2008). Therefore, the results of the commuter survey results suggest a similar trend. However, in terms of carbon emissions, 58 per cent of University car users and 51 per cent of St Albans car commuters stated that they could reduce the amount they used their car in order to reduce their carbon footprint (Table 6.16). Employees and postgraduates were statistically more likely to agree that using their cars less would reduce their carbon footprint, when compared to undergraduates. The reasons behind this are unclear, other than to suggest that undergraduates are more sceptical on global warming, than employees and postgraduate students, as in Lyons and Goodwin's findings outline previously (2008). It is worth noting, that the majority of car users in all groups did agree that this was an option for them.

Table 6.16   University stakeholders compared against whether individuals would be willing to reducing their car use

			Reducing the amount you use your car		
			No	Yes	Total
What is your role at the University?	Staff	Count	285	399	684
		Expected Count	290.6	393.4	684.0
	Undergraduate	Count	86	86	172
		Expected Count	73.1	98.9	172.0
	Postgraduate	Count	8	28	36
		Expected Count	15.3	20.7	36.0
Total		Count	379	513	892
		Expected Count	379.0	513.0	892.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.212[a]	2	.006
N of Valid Cases	892		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 15.30.

In addition, commuters were asked the reasons for using a car to commute (Figure 6.9). 'Cost of alternative' modes available rated highly, specifically among student car drivers. This trend could well be expected among a low wage earning group because of the perceived (and often real) cost of public transport when compared to car use (Whitelegg, 2011; Lyons & Goodwin, 2008). This group could be being subsidised to use their own or their parents' cars, and therefore see the alternative as an unattractive alternative. Other reasons important to both University groups were personal trips during the day, and after work (with both rated over 40 per cent of all car drivers). Status was rated low by all three demographics, between the study areas, which may indicate that car use for commuting is seen as a necessity rather than a status symbol. What these findings suggests, is that inversely, around half of St Albans that commute by car, and between half to sixty per cent of University stakeholders, suggest they have alternative modes to commute to their respective destinations. In terms of future travel planning research these groups need to be targeted for personal travel planning advice, to further understand their subjective and underlying reasons for their current use of the car for commuting. Whilst comfort, cost of alternatives and personal trips during and after work rate highly, being able to further qualify individual behaviour and develop research around personal

travel planning options would be an ideal way forward beyond the quantitative data collection undertaken within Travel Plan surveys (as outlined by the Smarter Choices agenda by Cairns *et al.*, 2004 & 2008).

The above trends are useful for informing a TP. However, it must be accepted that changing some factors that influence an individual's commuter habits, will necessarily change their behaviour. Push and pull factors all have an impact, and certainly with the current economic climate leading to current high fuel prices, there is a greater need for TP and city wide strategies for implementing affordable alternatives to the car.
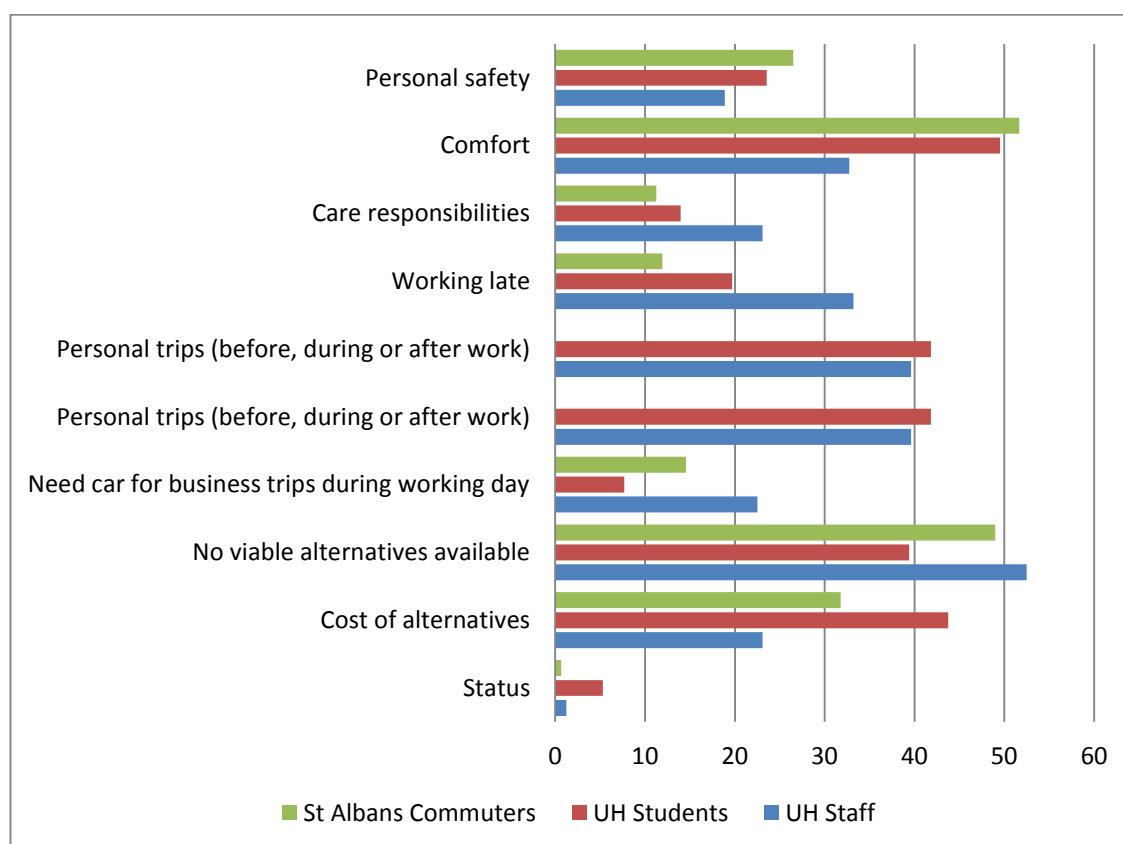
Figure 6.9 University & St Albans Commuters Reasons for Commuting by Car

6.5.5   Carbon Emissions

Since 2007, the University commuter survey collects data that allows for the calculation of carbon emission by mode and vehicle engine size (see Question 8 & 14 respectively, Appendix 1). At present the Higher Education Funding Council for England (HEFCE) set carbon reduction targets that only include Scope 1 and 2 emissions (Estates & Fleet Vehicles, See Table 6.17). However, the carbon reduction policy document recognises the need to develop consistent methodology for reporting Scope 3 (which includes commuter and business travel)

emissions and commits to measuring a baseline by December 2012 and setting target(s) for these emissions by December 2013 (UH, 2011[d]). Therefore, as part of the University wider CSR and environmental agendas, the Travel Plan commuter survey has developed these questions as part of a future methodology for calculating commuter carbon emissions.

In addition to being affected by the HEFCE targets, the University is also obligated to take part in the Government's Carbon Reduction Commitment (CRC) Energy Efficiency Scheme, which is designed to assist the organisation to reduce its carbon emissions (DECC, 2009). From April 2012 the University will be required to purchase carbon credits equivalent to the building energy carbon footprint. At present the cost of credits is set at £12/tonne and therefore in April 2012, when the University will have to pay for the baseline year, the total cost will be about £360,000. The cost of credits is likely to continue to increase and as such this provides a further incentive for the University to reduce carbon emissions (UH, 2011[d]).

The Climate Change Act (2008), and therefore the HEFCE targets, are based on Scope 1 and 2 emissions. In addition to Scope 1 and 2 emissions all organisations release greenhouse gases through other indirect activities and these are termed Scope 3 emissions. Further information on the activities covered in Scope 1, 2 and 3 emissions is detailed in Table 6.17.

Table 6.17   Activities of Scope 1, 2 & 3 Carbon Emissions (DECC, 2009)

Scope	Activities covered
1	Direct emissions that occur from sources owned or controlled by the organisation including combustion in owned or controlled boilers, furnaces and vehicles
2	Emissions from the generation of purchased electricity consumed by the organisation
3	Other indirect emissions that are a consequence of the activities of the organisation but occur from sources not owned or controlled by the University including commuting, procurement, waste and water

The University's original CMP outlined the baseline for Scope 1, 2 and 3 emissions and HEFCE have also provided institutions with a baseline for Scope 1 and 2 emissions. Due to variations in emissions factors used to calculate these baselines there is some variance in the Scope 1 and 2 baselines provided by these two reports and therefore for the purpose of this revised CMP the University has adopted the baseline provided by HEFCE. Therefore, in an attempt to place University commuter travel related emissions into context for the organisation, an initial attempt at calculating them has been presented for discussion purposes.

The University is in a unique position within the HEI sector in owning a bus company. As outlined previously, the company provides a viable bus service to staff, students and the local community. The company has grown considerably in recent years and in 2008/09 it doubled its bus fleet to 95 buses taking carbon emissions from University owned transport up from *c*. 2,600 tonnes in 2005/06 to *c*. 5,300 tonnes in 2008/09 (when it purchased the St Albans City bus network from Centrebus). This is compared to 622 tonnes, which were the second largest transport related emissions in the sector from University owned transport in 2005/06 (UH, 2011[d]).

Table 6.18 has been collated using data from the biennial transport commuter surveys. When Scope 3 is included with Scope 1 & 2 (33k tonnes of carbon in 2009/10), commuter travel increases the University carbon emissions by about 75 per cent (85,286). The increase in emissions from 2005/6 to 2009/10 is a direct result of developing the methodology behind the data collection. In 2005 a general factor was applied to the data set (i.e. all car commuters used a medium sized car). After 2007, a range of engine sizes and engine type were developed (Question 14). Therefore, although this is an indicative figure, Scope 3 emissions, would appear from a University perspective to be an important environmental aspect to tackle within future TP initiative development for developing mitigating measures. HEFCE are due to publish a methodological paper in 2012 that will provide an appropriate tool for calculating Scope 3 emissions. The University, through integrating carbon emission questions within its biennial survey, will be in a strong position owing to it already applying a simple methodology for calculating these emissions.

Similar calculation for St Albans commuters has not been calculated, as no questions were asked in relation to carbon emissions. This is a gap that will need to be developed in terms of quantifying carbon emissions, and initiatives implemented by the Quality Partnership. Quantifying either total carbon emissions within the city and the impact on reduction is beyond the reach of this particular research project, but will need to be considered under the Local Strategic Transport Fund, that the partnership in St Albans has secured. At present, the TP reports the extent of Scope 3 emissions from commuter travel as 69,208 tonnes of carbon, equating to fifty eight per cent of all emissions. However, as part of the CRC- energy efficiency scheme, there is currently no legislative imperative to include carbon reductions measures as part of a TP. Having said that in 2012 HEFCE is publishing a guide to aid the sector in measuring their emissions from Scope 3 Emissions. This methodology can be included in the commuter survey for reporting. As part of the University TP, electric vehicle (EV) charging points are being installed across the site, as part of an East of England (Source East)

infrastructure project. Once operational, the TP aims to encourage the uptake of EV through a reduced daily parking charge or incentive (see Chapter Seven).

Table 6.18 Summary of Scope 1, 2 & 3 carbon emissions in 2005/06 & 2009/10

Scope	Carbon emissions			
	2005/06		**2009/10**	
	Tonnes	**Per cent**	**Tonnes**	**Per cent**
Scope 1 & 2				
Building energy use	19,485	27	27,640	23
Uno fleet fuel	3,821	5	5,479	5
Total Scope 1 and 2 (A)	**23,306**	32	**33,119**	28
Scope 3				
Daily staff and student commuting	47,739	66	69,208	58
Business travel	1,058	1	1,091	1
International students commuting at the start and end of term	No data available	0	14,000	12
Other (including waste and water)	504	1	987	1
Total Scope 3 (B)	**49,301**	68	**85,286**	72
Total emissions (A+B)	**72,607**	**100**	**118,405**	**100**

6.5.6   University Travel Plan Awareness

University staff and students were asked about their awareness of the organisations environmental policy and practices, as an indication as to the effectiveness of marketing measures. A significant majority of staff (71 per cent) that responded stated that they were aware, against a minority of students that responded (21 per cent) (Chi^2 305.958, df2, p<0.001; Table 6.15). When asked specifically about their awareness of the Travel Plan, just over a third of employees and less than a quarter of students knew of its existence.

The difference in awareness between employees for environmental issues and the TP is difficult to explain, because the Travel Plan is incorporated within the wider environmental marketing material. The student result is indicative of the difficulty in reaching the student population within the University, whereas employees are provided with a detailed induction when they started their employment. Interestingly, as part of the Environment Teams marketing strategy, a multi-media approach is used, which includes on screen, hard copy leaflets as well as student induction by the Team (see Chapter Seven for TP marketing). Clearly, the message is getting through to staff groups for wider environmental issues, but the challenge will be to increase awareness among both staff and student groups for transport. Developing individual

personalised travel planning is one area of work where further research can be undertaken. This has implications for the way in which information is being distributed relating to the TP. Clearly greater investment in time and effort, to get the message across is required, despite the efforts already made. If this cannot be resolved effectively, then implementing effective travel interventions will not deliver a behavioural change. Certainly greater understanding of the impact when marketing specific measures is required, although making use of digital media, through mobile phone 'apps' is likely to begin to provide a digital use footprint. An INTALINK public transport information campaign on campus, using an 'app' is planned. In addition promotion of real time information and mobile m-ticketing products on the Park & Ride are planned. The effectiveness of these campaigns can be recorded through a digital footprint, therefore success rates can be monitored.

6.5.7   Bus & Car Users Perceptions of Public Transport

The results from the following section (and their associated Tables), provide further insight into the differences and similarities of current bus users, set against car users. Such data are useful to a Travel Planner, in that it provides an indication of the types of issues that could to be addressed to encourage greater uptake of public transport within a specific area, or for an organisation. Bus users were directly compared with car drivers in order to understand what issues would encourage SOV users to use buses to a greater extent for their commute. Less than five per cent wanted through ticketing, with no significant difference seen between current bus or car users (Chi^2 1.424, df1, $p<0.233$; Table 6.19). A significantly large minority of car users (37 per cent) wanted to see better located bus stops compared with current bus users (Chi^2 6.153, df1, $p<0.013$; Table 6.20), whereas cleaner and more comfortable buses were not important for either group (Chi^2 1.910, df1, $p<0.167$; Table 6.21). A majority wanted to see higher service frequency, but this was significantly greater among bus users (Chi^2 3.934, df1, $p<0.047$; Table 6.22). Although a minority issue, bus users were significantly more likely to ask for improved shelters (Chi^2 9.385, df1, $p<0.002$; Table 6.23), whilst car drivers wanted to see better connections between services (Chi^2 3.586, df1, $p<0.058$; Table 6.24). Just over a third of respondents wanted to have discounted or annual passes, with significantly more bus users asking for this as an option (Chi^2 14.762, df1, $p<0.001$; Table 6.25). A minority of both bus and car users (twenty-one per cent) wanted to see improvements to bus timetables and route information (Chi^2 1.941, df1, $p<0.164$; Table 6.26). 40 per cent wanted to see more reliable bus services, but current users significantly more so (Chi^2 12.861, df1, $p<0.001$; Table 6.27). Less than seven per cent asked for improved security (Chi^2 0.820, df1, $p<0.365$; Table 6.28). These results are interesting, in that they indicate that in many instances only a minority of respondents wanted to see specific improvements, they do however represent a significant

number of individuals. If improvements could indeed result in a modal change (based on the fact that people do not always do what they indicate they would), this could result in a significant on-road impact.

Table 6.19   A Comparison of Bus & Car Users and their preference for 'through ticketing' as a measure to increase bus usage

			Through ticketing		Total
			No	Yes	
What is your primary (usual) form of transport to the University?	Bus	Count	205	15	220
		Expected Count	208.5	11.5	220.0
	Car (drive, on own)	Count	849	43	892
		Expected Count	845.5	46.5	892.0
Total		Count	1054	58	1112
		Expected Count	1054.0	58.0	1112.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.424[a]	1	.233
N of Valid Cases	1112		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 11.47.

Table 6.20   A Comparison of Bus & Car users and their preference for 'more convenient bus stops' as a measure to increase bus usage

			More conveniently located bus stops		
			No	Yes	Total
What is your primary (usual) form of transport to the University?	Bus	Count	158	62	220
		Expected Count	142.2	77.8	220.0
	Car (drive, on own)	Count	561	331	892
		Expected Count	576.8	315.2	892.0
Total		Count	719	393	1112
		Expected Count	719.0	393.0	1112.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.153[a]	1	.013
N of Valid Cases	1112		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 77.75.

Table 6.21 A Comparison of Bus & Car Users and their preference for 'more cleaner and comfortable buses' as a measure to increase bus usage

			Cleaner and more comfortable buses		
			No	Yes	Total
What is your primary (usual) form of transport to the University?	Bus	Count	191	29	220
		Expected Count	196.7	23.3	220.0
	Car (drive, on own)	Count	803	89	892
		Expected Count	797.3	94.7	892.0
Total		Count	994	118	1112
		Expected Count	994.0	118.0	1112.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.910[a]	1	.167
N of Valid Cases	1112		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 23.35.

Table 6.22   A Comparison of Bus & Car Users and their preference for 'more frequent buses' as a measure to increase bus usage

			More frequent services		
			No	Yes	Total
What is your primary (usual) form of transport to the University?	Bus	Count	79	141	220
		Expected Count	92.0	128.0	220.0
	Car (drive, on own)	Count	386	506	892
		Expected Count	373.0	519.0	892.0
Total		Count	465	647	1112
		Expected Count	465.0	647.0	1112.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.934[a]	1	.047
N of Valid Cases	1112		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 92.00

Table 6.23   A Comparison of Bus & Car Users and their preference for 'improved bus shelters' as a measure to increase bus usage

			Improved shelters		
			No	Yes	Total
What is your primary (usual) form of transport to the University?	Bus	Count	180	40	220
		Expected Count	193.3	26.7	220.0
	Car (drive, on own)	Count	797	95	892
		Expected Count	783.7	108.3	892.0
Total		Count	977	135	1112
		Expected Count	977.0	135.0	1112.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.385[a]	1	.002
N of Valid Cases	1112		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 26.71.

Table 6.24   A Comparison of Bus & Car Users and their preference for 'better connections between services' as a measure to increase bus usage

			Better connections between services		Total
			No	Yes	Total
What is your primary (usual) form of transport to the University?	Bus	Count	177	43	220
		Expected Count	166.2	53.8	220.0
	Car (drive, on own)	Count	663	229	892
		Expected Count	673.8	218.2	892.0
Total		Count	840	272	1112
		Expected Count	840.0	272.0	1112.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.586[a]	1	.058
N of Valid Cases	1112		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 53.81.

Table 6.25   A Comparison of Bus & Car Users and their preference for 'discounted and annual tickets' as a measure to increase bus usage

			Discount tickets and annual passes		Total
			No	Yes	Total
What is your primary (usual) form of transport to the University?	Bus	Count	113	107	220
		Expected Count	137.7	82.3	220.0
	Car (drive, on own)	Count	583	309	892
		Expected Count	558.3	333.7	892.0
Total		Count	696	416	1112
		Expected Count	696.0	416.0	1112.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.762[a]	1	.000
N of Valid Cases	1112		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 82

Table 6.26 A Comparison of Bus & Car Users and their preference for 'more timetable and route information' as a measure to increase bus usage

			More timetable and route information on bus services Express services (limited stops)		Total
			No	Yes	
What is your primary (usual) form of transport to the University?	Bus	Count	167	53	220
		Expected Count	174.5	45.5	220.0
	Car (drive, on own)	Count	715	177	892
		Expected Count	707.5	184.5	892.0
Total		Count	882	230	1112
		Expected Count	882.0	230.0	1112.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.941[a]	1	.164
N of Valid Cases	1112		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 45.50

Table 6.27   A Comparison of Bus & Car Users and their preference for 'more reliable services' as a measure to increase bus usage

| | | | More reliable services | | |
			No	Yes	Total
What is your primary (usual) form of transport to the University?	Bus	Count	108	112	220
		Expected Count	131.4	88.6	220.0
	Car (drive, on own)	Count	556	336	892
		Expected Count	532.6	359.4	892.0
Total		Count	664	448	1112
		Expected Count	664.0	448.0	1112.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.861[a]	1	.000
N of Valid Cases	1112		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 8&

Table 6.28   A Comparison of Bus & Car Users and their preference for 'improved security on buses' as a measure to increase bus usage

| | | | Improved security on buses | | |
			No	Yes	Total
What is your primary (usual) form of transport to the University?	Bus	Count	208	12	220
		Expected Count	205.0	15.0	220.0
	Car (drive, on own)	Count	828	64	892
		Expected Count	831.0	61.0	892.0
Total		Count	1036	76	1112
		Expected Count	1036.0	76.0	1112.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.820[a]	1	.365
N of Valid Cases	1112		

a. 0 cells (.0%) have expected count fewer than five. The minimum expected count is 15.(

6.6   Quality Network Partnership (Network St Albans) - An Embedded Perspective

As my role and research themes emerged, working within the local community alongside Local Authorities, public transport operators became a large aspect of my work. It was apparent that many of the barriers to successfully implementing TP initiatives at the organisational level were influenced by external objective and subjective issues.

One of the most important travel planning initiatives to have emerged from this research, was the process of my involvement in developing a Quality Partnership in the city of St Albans [see Figure 1.1].

Reflective Diary Box 6.11 Exernal and Internal Factors

The overall process and delivery structures for the development and implementation of the Quality Partnership are presented in the following section. The aim is to use insights from this to inform Chapter Seven, for the wider development of the TP.

The case study area for this partnership was developed within the historic Cathedral City of St Albans, which is approximately 10 kilometres North West of the London boundary and 30 kilometres from Central London. St Albans City is one of a series of settlements in South Hertfordshire, all of which have a per capita of between 30,000 and 100,000. They include the towns of Watford, Hatfield, Hertford, Hemel Hempstead, St Albans and Welwyn Garden City (St Albans Urban Plan, 2010).

There is extensive travel between these various towns and with the outer London suburbs just to the South (DfT, 2010). There is an extensive motorway network including the M25 and radial motorways to the rest of the country through the area (Figure 1.1), together with variable and widespread traffic congestion (HCC, 2011). There are also the main line railway lines to the Midlands, the North and Scotland. Apart from the high frequency train services to Central London, Harpenden, Luton and Bedford there is relatively limited public transport. In particular the bus services available have been shaped over recent years by U.K. legislation on how the bus industry works and how bus services can be provided (Transport Act, 1985).

A working relationship was developed with the SADC Local Strategic Partnership (LSP), as a result of the University's work in their TP. The leader of the council wanted to develop an approach to dealing with the specific transport related issues (local traffic congestion and air quality). The basis for this partnership work was the LSP. The LSP had developed specific aims for partnership work in St Albans. The partnership identified the following areas for consideration.

1. Providing accessible facilities and activities for young people

2. Helping to build the capacity of the voluntary and community sector to provide preventative and support services

3. Encouraging and promoting community engagement and participation

4. Promoting sustainable local economic development

5. Meeting the needs of an ageing population

6. Reducing our impact on the environment

7. Reducing inequalities

 (Source; SADC Local Strategic Partnership, 2008)

After initial discussions were held between the University, District and LAs, the main public transport operators, a forum partnership was proposed that would take on a voluntary status (as opposed to a statutory one) (QNP Minutes, 2008a). Quality contracts have been seen as difficult and expensive and likely to generate conflict with operators, while statutory partnerships have been seen to be complex and legalistic (pers. comm., Joseph, 2008). It was felt by all partners that a statutory partnership would impose too many rigid legal guidelines and therefore a less structured and flexible voluntary partnership was deemed more suitable for this case study (QNP Minutes, 2008). Voluntary partnerships allow for discussion between the partners without the setting up of a legal, statutory body.

> *This initial meeting provided some structure to what was being proposed. As the TP Coordinator, I was interested to let my role develop along this route, due to the fact that any measures developed through this partnership would potentially be able to be implemented at the University. As such I further embedded myself within this partnership as the Executive Assistant to the Chair. This role would enable a direct involvement in all aspects of the emerging partnership.*

Reflective Diary Box 6.12 Embedding a Travel Plan within a Quality Partnership Framework

In order to structure the partnership a Memorandum of Understanding (MoU) was drawn up by the local authorities' legal departments. Once a suitable version was drafted and agreed, representatives of SADC and HCC, train (First Capital Connect and Midland Mainline) and bus operators (Arriva, Centrebus, Metroline and UNO) and representatives from the University of Hertfordshire signed up to this non-binding document. This group became known as primary partners (a copy of this MoU can be viewed in Appendix Four).

Owing to the QP not possessing either legal powers of its own, nor a permanent legal status, it was designed to act as an organisation administered by one of the primary partners, in this case the University of Hertfordshire, who provided some funding and a base for the Executive Assistant role. This document became of great importance later on in the partnership when securing government and European funding. The MoU provided the contractual framework from which the different partners could work together when making joint funding bids, although additional formal contracts between the Local Authority and partners would have to be drawn up for delivering specific travel projects if they were deemed in the public interest (such as the multi-operator ticketing product and specific improvements through the Local Sustainable Transport Fund).

The QNP, through working with Hertfordshire County Council (HCC) as primary partners, are actively looking to provide enhancements to core bus routes within St Albans through the use of the Department for Transport Local Sustainable Transport Fund (LSTF). Initially the QP was funded by contributions in-kind from all partners and funding for the QP coordinator was provided by the University of Hertfordshire, Hertfordshire County Council and St Albans City and District Council. Funding is being sought for city-wide travel plan initiatives from the European regional development Funding (ERDF) as well as Growth Area Funding (GAF) from central government. In the longer term the aim is for the partnership to be funded from increased revenue obtained through sustained growth of the network and Section 106 contributions through planning.

6.6.1   Network St Albans Memorandum of Understanding

The MoU introduces the overall aim of the partnership, its stakeholders and the status of the agreement. In addition it sets out how the partnership is organised and its broad objectives. In addition, the area of operation and the duration of the agreement are included in the document.

Table 6.29   Network St Albans (QP) Aims (QP MoU, 2009/10)

The aim of the St Albans Quality Network Partnership is that of creating an integrated public transport network' through partnership, to provide residents of and visitors to St Albans with a real and attractive alternative for many of the journeys currently made by private car. This will help SADC and HCC to cut traffic related road congestion, air and noise pollution, help businesses in the city recruit and retain staff, and maintain the city's position as an attractive visitor destination.

The fully integrated approach being adopted by the QNP is to develop a network to include at

least the following.

i.   Routes and corridors designated with a minimum service level based on demand, with integration between rail and bus (where feasible)

ii.   Real Time/Automatic Vehicle Location (AVL) information on all routes serving the QNP area, with public display using screens, mobile and internet technology (where suitable)

iii.   A common and interchangeable ticketing scheme, possibly incorporating smartcard technology, for integrated ticketing between services and operators

iv.   Traffic management schemes, parking controls, street works orders and bus priority schemes, supported by strong enforcement measures that allow buses to offer quick and punctual services at all times

v.   Route specific marketing

vi.   Introduction of a wider city Travel Plan Strategy, which will develop an on-going set of measures aimed at enhancing the QNP

vii.   Working with and integrating the new initiative for developing and implementing railway station Travel Plan Strategies at both the St Albans and Hatfield stations.

Partnership members are broken into two distinct groupings, primary and associate partners. The former are responsible for directly implementing QNP objectives, and are the signatories to the "Memorandum of Understanding." Associate Partners are each represented on the Wider Reference Group by a designated representative. Primary Partners consist of the two Local Authorities of Hertfordshire County Council, St Albans City and District Council, operators are represented by First Capital Connect and London Midland and the four bus operators. Finally the University of Hertfordshire is also represented in the board. Associate Partners are made up of representatives from Further Education establishments, Hertfordshire Constabulary, The National Health Service, Primary Care Trust(s)/ Strategic Health Authority, Businesses, Transport Users Representative and Co-Opted Members (Local Strategic Partnership (LSP).

The QP is made up of a Partnership Board (Figure 6.10) comprising of one representative from each of the Primary Partners. The Partnership Board elected a Chair, in this case a co-opted member to the partnership. The Board and Chair are supported by an Executive Assistant. This role (termed QP Coordinator) was jointly funded by both the University and the District Council

LSP. This role was vital to the research process, because it allowed for the whole process of the partnership being developed to be reported as part of this thesis.
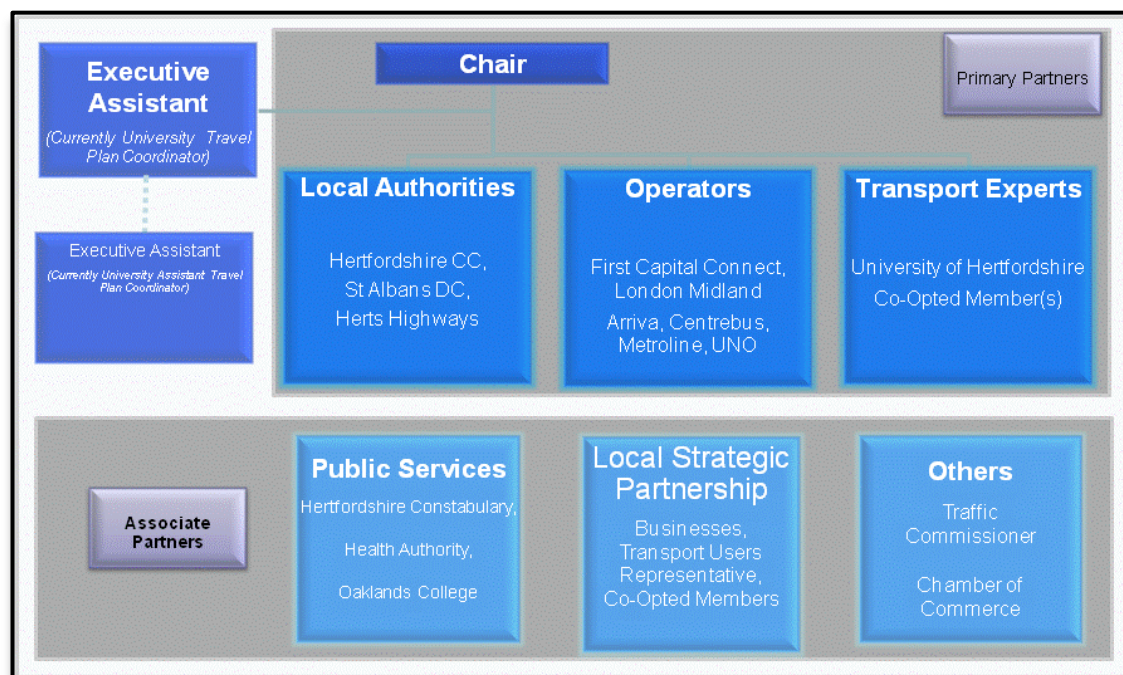

Figure 6.10 Network St Albans (QNP) Board Structure

This QP Coordinator role provided a resource for communication and the overall running of the QP. This was a CSF to the initial stages of bringing the different members of the partnership together. It also provided a main point of contact for any issues or questions.

The QP board formed sub-groups that were appropriate to consider particular issues. Membership for these sub-groups was drawn from associate as well as primary partners. Sub-groups report back to the Partnership Board with the aim to arrive at decisions by consensus. This recognises that, given the numerical strength of the particular groupings represented on the Board, any form of voting by majority would (or potentially could) disadvantage individual members.

In addition, the Wider Reference Group includes a representative from each of the associated partners and up to three (3) other co-opted members. These members are of distinction in the transport field, an appointed representative of bus/train users and/or a person who is able to represent the interests of the business, commercial and industrial communities within the partnership area. All partners were involved with the set-up process of the QP as their differing fields of expertise were invaluable to overcoming initial obstacles. Bus operators in particular were initially concerned with the Competition Act and were not willing to enter into any negotiations that could jeopardise their organisations interest. Therefore, all documents

(including the MoU) and relative measures were put in place for when the Local Transport Act 2008 took effect in December 2008. Once this process was completed, the partnership could proceed without the threat of being prosecuted for attempting to create a public transport monopoly.

Owing to the varying issues from infrastructure challenges to non-integrated ticketing, it was decided that, when the QP was initially launched, it would be necessary to set up four working groups (Figure 6.11). They would be for addressing the problems and solutions in their relevant areas as below. An additional travel planning group has been added to incorporate a successful ERDF bid secured by the partnership for delivering Travel Planning to Small and Medium Sized Enterprises (SMEs).
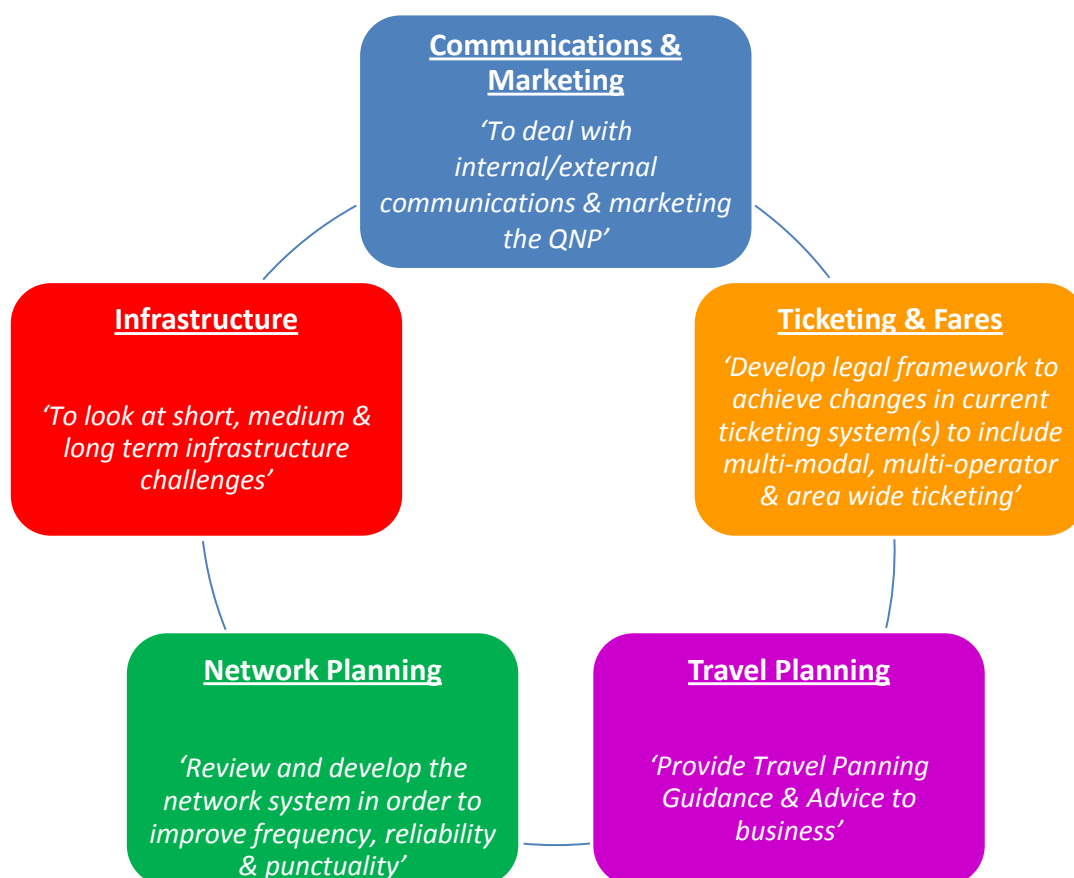

Figure 6.11 Network St Albans (QNP) Working Groups

The working groups are supported by terms of reference that outline the roles and responsibilities and leader of each group as described below (Table 6.30).

Table 6.30   Network St Albans Working Groups & Terms of Reference (QP MoU, 2009/10)

(1) Communications and Marketing Group

This will be broken down into two sub-groups, Communications and Marketing, however each feed into each other and therefore make up one main working group.

    <u>Group Members</u>

- **Executive Assistant (Communications Group Lead)**
- **Intalink (Marketing Group Lead)**
- HCC
- SADC
- Public Transport Operators (to be defined, smaller operators to have one representative, link in with operator's communication departments)

<u>Aim</u>

This group will deal with internal and external Communications and Marketing/Branding of the QNP.

The Communications Group will develop a three (3) year strategy for the creation of external communications to and from the QP. This will be led by the QNP Executive Assistant, however all external communications must be agreed by the QNP Chair prior to being sent out.

The Marketing Group will deal with the development of branding strategy of the QP. This will be led by the HCC INTALINK Group feeding into the overall communications strategy for the QP. The group will also look at ways of marketing the network or parts of it, including to current non-users

Quick Win - Its first role is to investigate the development of a "London Underground Style" map and stop specific information for the QP area.

- N.B. £1,000 provided by University of Hertfordshire for developing 'Network St Albans' integrated map

(2) Infrastructure

    <u>Group Members</u>

- **HCC - Rupert Thacker (Group Lead),** Daniel Tancock
- SADC
- Public Transport Operators (to be defined, Infrastructure controlled mainly by UNO and Arriva)

<u>Aim</u>

This group will look at short, medium and long term infrastructure challenges to help improve

the passenger transport network provision for the QP area, including both highway and public transport infrastructure. This group will liaise with existing projects and promote infrastructure initiatives as a QP to improve facilities as a whole.

(3) Network Planning

Group Members

- **University of Hertfordshire (Philip Waters)**
- HCC (PTU: Keith White)
- Public Transport Operators (to be defined)

Aim

Review and develop the network system in the QP area in order to improve frequency, reliability and punctuality of the public transport network. To use existing data with the possibility of commissioning the collection of new data in order to develop a comprehensive network plan including regular interval services on key corridors.

(4) Ticketing & Fares

Group Members

- Public Transport Operators - **Metroline** (others to be defined)
- HCC (Intalink)
- SADC

Aim

To develop the necessary legal framework in order to achieve changes in the current ticketing system, including multi-modal, multi-operator and area wide ticketing.

(5) Transport Planning

Group Members

- **University of Hertfordshire**
- HCC
- SADC

Aim

Set up on the basis of the QP securing ERDF funding for working on developing TP for 80 SMEs, to back up the work of the QP. This group will work alongside the QP in promoting public transport to 80 SMEs in St Albans. The working group provides assistance to SMEs in developing their own TP.

The over-arching principle of the QP is to allow the transport operators to improve operating frequency and reliability. If this were achieved, this would help resource efficiency to improve frequencies at no additional cost and deliver higher punctuality and efficiency. The LAs and others are to provide infrastructure, traffic management, parking restrictions, bus priority schemes and an enforcement regime to assist this. In exchange, the bus and train operators will invest in modern vehicles, staff training, information services and improved standards of service. In addition they will consult the other partners on fares and service frequencies where appropriate.

Table 6.31 Network St Albans (QP) Objectives (QNP MoU, 2009/10)

This partnership's objectives will thus include, but will not be restricted to:

i. establishing what bus network is appropriate to the partnership area including routing, frequency, ticketing and bus priority, based on careful market research of users and potential users, and co-ordination of bus and train timetabling

ii. using the expertise of the transport operators to determine the measures needed to make the network commercially sustainable into the longer term

iii. negotiating within the partners and with other stakeholders an implementation plan for the creation of the network that takes into account the delivery constraints on each partner's input. The general principle should be that the transport operators should not be required to deliver their service improvements until such time as the other parties have provided the appropriate infrastructure, resources and enforcement that are required to facilitate improvements to bus and train services

iv. agreeing an appropriate ticketing strategy to encourage optimal use and modal shift (with the benefit of market research data)

v. working with INTALINK over branding and publicising the partnership and the services to customers

vi. assembling the resources required to facilitate the creation and sustainability of the network whether from statutory sources, Section 106 Agreements or voluntary commitment

vii. developing and then entering into the Agreements with the transport operators for the provision of the network in the expectation that the network, properly planned and launched, is commercially sustainable in the long term and takes into account funding of socially necessary services

viii. establishing mechanisms for funding network wide travel schemes, including partnership travel cards, 16-19 travel schemes, University travel schemes and the fair distribution of revenues to operators

ix. considering any other measures as may be requested by the statutory bodies and members of the partnership to enhance the activities of the partnership and the benefit of the wider community (adopted from MoU 2009)

It is recognised that to bring the objectives described above about will require funding sources. The QP did not initially have funds of its own so the intention is that each QP member will be responsible for funding its own work within the QP agreed plans.

In order to fulfil the aims and objectives set out in the MoU, all primary partners have met with the Executive Assistant in order to develop a timeline of activities. This timeline includes all short, medium and long term measures relating to Infrastructure, Network Planning, Ticketing and Fares, Marketing and Communications. It also includes the Transport Working Group Fresh Ways to Work travel planning project, as part of the ERDF.

The timeline is set out using these broad headlines against which specific tasks to be completed are outlined. The success of the QP will be measured against the delivery of these projects. Set against these deliverables, KPIs will be developed that will include metrics on environmental, social and economic issues.

The QP was formally launched in the April of 2009. No overarching target driven objectives have been set for the project; however each party has objectives that they are seeking to use the QP to realise.

    i)   Operators see the QP has growing the market and contributing to their bottom line.

    ii)   The QP is also seen as contributing to objectives in a number of other statutory processes, including St Albans 'City Vision' (SADC), Local Sustainable Communities Development Framework (SADC), the Local Transport Plan and Urban Plan (HCC).

At this stage within the project, it is not considered feasible to calculate realistic cost benefit ratios, this is because the specific enhancements, to various aspects of passenger infrastructure which may be undertaken as part of this project, has not yet been fully assessed. However, once a full programme has been prepared, it will be possible to calculate the overall level of passenger benefits delivered by the project.

Whilst it is not easily possible to differentiate precisely amongst society groups, it is generally accepted that bus users for example have lower than average incomes, as such investment in bus services such as this are more likely to benefit particular groups.

Her Majesty's Treasury Green Book (HMRC, 2009) highlights the need to consider distributional issues of benefits and drawbacks with a view to enabling the promotion of social inclusion. In accord with this it is considered that the scheme will positively encourage social

inclusion and in doing so provide a higher quality of life for some less advantaged society groups in particular. The improved linkages formed by the revised network, coupled with the increased frequencies and consistency of routings will make the network more understandable and user friendly - this could be core to winning over potential new customers, for whom the network is currently too confusing.

 The success of the scheme will represent the first step in a move to help reduce the effects of congestion, carbon levels, and noise and improve air quality within the city centre area in particular. The extent and degree to which it will achieve this will be dependent upon the ability of the respective authorities to identify and implement measures to ensure that this quality service benefits from increased passenger accessibility and the possible introduction of encompassing citywide information points. The QP is managed on a bi-annual basis through the board meeting with the primary partners. Updates are provided from leads of the five working groups from which further actions are agreed and signed off by the Chair.

The individual working groups then work on the agreed actions set by the board and feedback directly any progress and findings to the Executive Assistant who relays these to the Chair of the QP. The QP has official documentation where Minutes of board meetings are taken and actions agreed by the primary partners. These actions feed directly into a project "timeline", which is a key outcome in the project management of individual QP projects. The project timeline is then developed between the working groups in partnership with the Executive Assistant. This timeline is vital to the overall structure and progress of set measures to be delivered and provides a focus for communication between the Chair, Executive Assistant(s) and primary partners.

6.6.2   European & Governmental Funding

Network St Albans has secured European Regional Development Funding (ERDF), through the East of England Development Agency (EEDA) for what is called the 'Fresh Ways to Work' project. The project was jointly developed by Network St Albans (QP) & Suffolk County Council, plus local and regional business networks and government agencies. Fresh Ways to Work is a free travel planning advice service specially tailored for SMEs, providing an innovative package of monitoring, information, ticketing and tax concessions.

Businesses in the East of England enjoy the benefits of free travel planning support from local authorities. However, this type of service is mainly used by larger organisations and until now has not been adopted by SMEs. The low carbon business growth potential of the project has

enabled the leverage of this European Union funding, which affords new ways of the public sector reaching SMEs as well as and individuals.

The joint project objectives include; delivering a successful behaviour change campaign to 160 SMEs in Ipswich and St Albans; to aim to reduce each SMEs transport CO_2 emissions by ten per cent over a two year period including an annual saving thereafter of around £10k per annum; and to share research into travel behaviours and measures that successfully influence SME/individual travel choice, across the East of England and beyond.

Table 6.32   Fresh Ways to Work Project Objectives (Source: Fresh ways to Work, 2010)

- Develop research to understand how to influence behaviour change by local population, and by Small & Medium Size Enterprises (SMEs), can be made through marketing, information systems and technologies.
- Delivery of workplace TP consultancy.
- Facilitate SME growth though efficiency savings, improved accessibility for staff and customers, and income generated by TP implementation.
- Development of brokerage services to advise SMEs about salary sacrifice schemes, the related mobile ticketing/tracking service and incentives to stimulate the local economy and ease congestion.
- Measuring success of SME engagement, take up of salary sacrifice, mobile ticketing/tracking and incentives schemes.
- Strengthen existing business partnerships and develop an Ipswich voluntary quality partnership with transport operators. To support business growth through reliable and easy-to-use public transport services.
- Reduce congestion and CO_2 emissions.
- Share findings of the project regionally and nationally.

The Network St Albans partnership (QP) is currently reviewing the use of its working brand 'Network St Albans' identity for use in its communications and marketing materials (Appendix 5). The partnership is keen to develop a City-wide TP identity, for which this 'new' brand identity can be utilised. 'INTALINK' is an existing and established brand identity managed by Hertfordshire County Council, Public Transport Unit (PTU) for the provision of passenger transport information and bus tickets. The funding obtained from the Fresh Ways project provides the opportunity to develop a brand identity that links the existing and new identities and partnerships together.

6.6.3 Communications & Marketing

The creation of a final 'Network St Albans' brand identity and the design and production of materials required from the development of travel measures on the ground within the QP case study area will be an on-going process. Marketing the QP and fresh Ways to Work project to business as well as individuals, requires the development of a multi user functionality and mixed media marketing campaign to influence behaviour change of employees within businesses, as well as encouraging employers to firstly adopt and then begin to develop their own business TP, to feed into the developing city wide TP. Such a marketing mix will need to include an array of commuting to work and business travel options and other incentives. Furthermore the campaign will need to support digital information developments via internet and mobile phone portals.

Once a marketing framework has been agreed, and marketing company taken on to deliver the agreed objectives for a travel awareness campaign, market segmentation will need to be explored in greater detail, to that undertaken in commuter surveys outlined previously in this thesis. As part of the Fresh Ways bid, HCC will have access to a piece of marketing segmentation software, called Mosaic. This software allows for localised lifestyle behaviour, such as transport behaviour to be input into the marketing tool, and for different marketing messages to the extracted for different demographic cohorts. Such a tool, allows for personalised or individual travel planning to be undertaken to a high level, and specific targeting of groups with differencing needs, in terms of their requirements of local transport provision.

Where SMEs are willing to share staff addresses using the iTRACE travel planning tool, there will be potential to use the Mosaic segmentation to provide additional insights to inform localised marketing and direct marketing at individuals specifically. This projects allows for the potential development of a range of transport and travel planning measures, products and services to be generated and delivered, either through or as a result of this project, including new organisations and future area wide partnerships.

6.7 Discussion & Conclusions

Taking both the University and city wide commuter surveys of employees clearly has limitations imposed on it, both in terms of the limited number of respondents, its geographical extent, as well as any meaningful results in terms of significance. However, what the surveys provide are an indication of broader commuter travel patterns and the issues that help influence these trends within these specific areas. In order to obtain a more in-depth and holistic picture of trends and attitudes, future research on other transport user trends, including the school run, city

employers, retailers, residents, as well as visitors to the city would need to be measured, in order to better inform local transport planners and policy makers.

Having said that, from the findings of these surveys, it is evident that there is room for significant improvements to be implemented that would encourage a move towards greater use of sustainable modes, away from the high SOV use, currently seen.

Responses from those surveyed, suggest a greater need for integration of public transport services for commuters change their behaviour, with responses leaning towards integration, reliability and cost as more important to structural (objective) improvements, such as bus lanes. Such infrastructure improvements would not be viable in a medieval city as St Albans, as the road network is based on narrow corridors and concentrated radial routes into a congested city centre. In terms of providing a greater level of integration of existing public transport service within the district, the idea of developing a QP (bus) is apparent from these data. Such a partnership would need to consider how it would operate within a non-regulated, non-metropolitan area, in terms of developing a public transport network that could provide integrated routes, timetables based on high frequency corridors with interchangeable tickets between the four main bus operators, as well as potentially train services, perhaps developing upon the existing oyster card style cards used within the regulated London environment.

A city wide TP strategy would need to incorporate commuter data from individual organisational TPs, such as the University and other large city based companies such as the District Council, National Health Trust, Faber Maunsell (a travel consultancy), Murco Petroleum, among others could themselves undertake to develop an organisational TP. In addition, Small and Medium Enterprises (SMEs), who traditionally have not developed TP under Planning Policy Guidelines 13, Section 106 agreements, could also help to collate employee travel behaviour, to feed into a city wide transport strategy. The Fresh Ways to Work project is an example, where local travel planning projects can overlap and feed into an area wide strategy, such as that proposed as an outcome from this research. This pooling of resources in partnership between regional and district authorities, as well as working alongside businesses of all sizes in developing individual TPs would aid first in collating commuter travel patterns, and then bringing the results together as a city-wide or regional area. Such data, when collated, would bring together travel behaviour and trends between organisations, which would help coordinate local authorities and councils transport policy, in essence providing TP measures for cities and regions in an integrated and coordinated manner, for all organisations, businesses and individuals to make better use of the modal options available to them, which currently, all too often are provided by the private motor car.

Proving incentives for different modes, (such as providing Smarter Choice - the Network St Albans network and route specific maps, as well as the introduction of the BusNet Multi - operator ticket are such examples) and marketing these to both business and individuals would be the initial stages of developing a city-wide TP strategy for St Albans. Introducing input from SMEs through providing direct support from the 'Fresh Ways to Work' project can help to development and implement their individual TPs that feed into a wider strategy. This is the focus of the next chapter, which presents a TP for a large organisation, taking into account a holistic multi sector complex partnership approach, such as that being undertaken in St Albans.

Chapter Seven - Travel Plan

7.0   Introduction

This thesis has involved researching the processes in the development of a Travel Plan (TP) for a major HEI organisation. The preceding chapters have shown the stages of this development, and the methods and approaches adopted set within the context of previous research and wider policy debates. What follows in this chapter is the 'final output' of this thesis, namely a TP for a large HEI organisation, set within a wider Quality Partnership. Owing to the nature of the research being embedded within a specific case study organisation, it seems appropriate that the culmination of the work should present a TP that has emerged from that particular case setting (as previously discussed by Creswell, 2007 & Denscombe, 2007). As such this chapter will simply relay the TP of the University of Hertfordshire in full, following the iterative and emergent outcomes processes detailed in previous chapters, and illustrated below (Figure 7.1).

Table 7.1 provides reflective overview of the outcome themes that emerged from the qualitative analysis using Burnard's (1991) fourteen stage framework for analysis. These outcomes provide a link between the TP that has emerged using an iterative process of analysis in the proceeding empirical chapters. Some of the outcomes achieved overlap in terms of the achievement within the TP.

Table 7.1   Reflective Outcome Themes

Outcome: 5a

The role of individuals, their perceptions and knowledge all have potential to impact on the direction of a specific organisational TP.

This particular outcome has to be considered throughout the process of development and implementation phase. Therefore from my perspective as a Travel Planner, the key issue here was to consider developing a TP within the existing structures of the University. This sounds simple, but if such structures are not in place this can delay embedding the TP within the culture of an organisation. This was the case with the University, in that although an EMS was itself being developed, it had not fully been integrated and roles defined. This provided an opportunity to merge the TP with the University EMS.

As such, the TP is recorded within the University's 'Aspects and Impacts Register', which is a key document when implementing an EMS. This document is key to both internal and external auditing processes, as this provides the baseline evidence against which auditors can ensure the University is fulfilling is commitments, made within its Environment and Sustainability Policy

(see Appendix 6 for University 'Aspects & Impacts' Register, that incorporates the University's Travel Plan).

Outcome: 5b

Develop an organisational Travel Plan that introduces behavioural change through a 'stick and carrot' approach. Such an approach should reflect the cost of car parking management, charges that are not seen as 'anti car' and are politically acceptable to the organisation, whilst promoting and developing affordable and realistic alternative modes to the car.

This outcome was to prove the most challenging, as it had to bring together a lot of the elements discussed throughout the policy and empirical chapters. As such I have developed a draft mechanism, termed a 'Charge- Reward Scheme' (Appendix 7), that attempts to bring in a daily charge for SOV users, but that is not detrimental to either low paid employees or to individuals that do not have viable alternatives. In addition, bringing a daily reward is the innovative element to the design.

A paper has been draft that is being submitted through the reporting structure (see Figure 7.2) to the Chief Executive Group (CEG). The interesting outcome of this paper is that it includes input from the Estates Dept. and Finance (which are key area to achieve buy in from). This paper is going to CEG in March 2013 (See Appendix 7), and can be seen as a major outcome of the research process, to incorporate car parking charges within the structure of a TP.

Outcome: 5c

Develop a TP within the context of an Environmental Management System (EMS) or a Corporate Social Responsibility (CSR) strategy. Either approach should reflect a process of continual improvement and target setting within organisational Key Performance Indicators (KPIs).

See result of Outcome 5a and Appendix 6.

Outcome 5d

Develop a justification for the TP to include costs savings; legal requirements; organisational and cultural understanding; national and local transport policy; investment in alternatives to local transport services and infrastructure.

See result of Outcome 5a and 5b (Appendix Six and Seven) for relevant development of initiatives that deal with this specific outcome.

Outcome: 5e

To develop SMART targets for a TP.

SMART Targets have formed the basis for all the TP measures develop within the framework of this project. Without this framework approach to managing this significant environmental aspect, it would not have been incorporated within the University EMS. Therefore, adopting this SMART approach was essential to TP development.

Outcome: 5f

To develop the TP taking into consideration a partnership approach to wider community travel issues [such as a QNP].

What I feel is unique to my embedded research case study, is that it has looked beyond a specific case study and developed solutions that make use of a partnership approach. The concurrent development of the Network St Albans Quality Network Partnership has meant that the University TP, researcher and organisation have benefitted from input from external experts and practitioners. This has led to TP measures that I could not have developed in isolation, either through funding or expertise. These include real time information, the Network St Albans Multi-operator Ticket as well as the network and route specific map. The Fresh Ways to Work Project brought in funding to develop mobile m-ticketing that has been implemented in the University's Park & Ride Shuttle. Without the partnership being able to jointly bid for such funding, then I would not have been able to implement it solely from working at the University, due to the lack of funding available for such Digital Information Technology projects.

See Appendix 5 for marketing material relating to the Network St Albans multi-operator ticket and associated network and route specific map

Outcome: 5g

Link the long terms survival of a TP to gaining planning consent.

Through developing internal relationships with the Estates Department, the TP has been able to prove its worth in delivering planning consent for past and proposed planning applications. The

Estates 2020 Vision requires a TP before any work can be taken forward. The Travel Plan has also provided the evidence required for a reduction in car parking spaces. This element has proved to the University Estates Department the worth of the TP, as it will ultimately save capital spending for additional parking it does not need (See Chapter 6).

Outcome: 5h

Develop a TP that considers the business climate, developing SMART initiatives to be implemented within an appropriate timeframe.

Outcome: 5i

Developing a cultural and organisational shift for funding SMART Travel Plan initiatives.

This is an area that will be on-going. To expect that an organisation and individuals within it will accept a TP and its measures is not realistic. What my research has shown, is that persistence, a long term view and a desire to look for alternative solutions to a problem are the only subjective tools available to a TP. Without these, a prospective Travel Planner will achieve very little in a short time.

Outcome: 5j

Develop a TP that considers low wage earners.

See Outcome 5b & Appendix 7 for TP measure to be taken forward.

The TP development process makes use of a systems approach to management, based on a continual improvement Environmental Management Model (as discussed by Staib, 2005; Gilbert & Gould, 1998). The TP uses a pre-defined framework to developing TPs, as outlined by Steer, Davis & Gleave's publication '*A Travel Plan Resource Pack for Employers*' (first published in 1999, on behalf of the now Department for Transport). For purposes of presentation, the framework set out by this publication has been rework by the researcher into a graphical representation (Figure 7.1) showing the eight stages involved in the development of the TP.

Stage One: Introduction - sets out the organisations background and its business as well as highlighting what a TP is, its benefits to the company and what it can achieve. It is important at this stage for central and local government transport policy to be outlined in order to provide a

context for the organisations' representatives and stakeholders to understand the importance and role of the document within the wider political environment.

Stage Two: Roles & Responsibilities – this stage sets out who is ultimately responsible for delivery within the company and how the TP works with respect to the implementation and maintenance of individual transport interventions.

Stage Three: Transport Reviews (& Monitoring*) – at the development stage of a TP, this phase provides a description of current employee modal split, business travel and freight/fleet activities. It also highlights current (best practice) initiatives that may be in operation within the organisation, but that had not previously been part of a systems approach. This stage involves collecting and collating baseline empirical data against which TP targets can first be set and then compared against in future years. (*This stage is vital for developing a continual improvement systems approach to TPs, and will form part of the monitoring of TP initiatives, and therefore also forms Stage Eight in the monitoring of a TP.)

Stage Four: Recommendations – as a direct result of empirical data obtained from Stage Three, the TP will be informed by these data, from which recommendations for setting objectives, modal split or other transport related targets and specific measures/initiatives proposed.

Stage Five: Objectives, Targets & Measures - this stage outlines broad objectives of the TP. It sets headline targets and specific transport measures or initiatives, which must be understood and agreed by the company.

Stage Six: Travel Plan (Generic or Site Specific) – once transport data relating to the relevant aspects of an organisation (commuter, business or freight/fleet) have been collected, recommendations can be made and then broad targets set. These can be used to form a written TP document. At this stage, this can be either a generic TP for a multi-site operation, or developed in the future to consider site-specific requirements (such as geographical characteristics, employee demographics and local planning requirements, etc.).
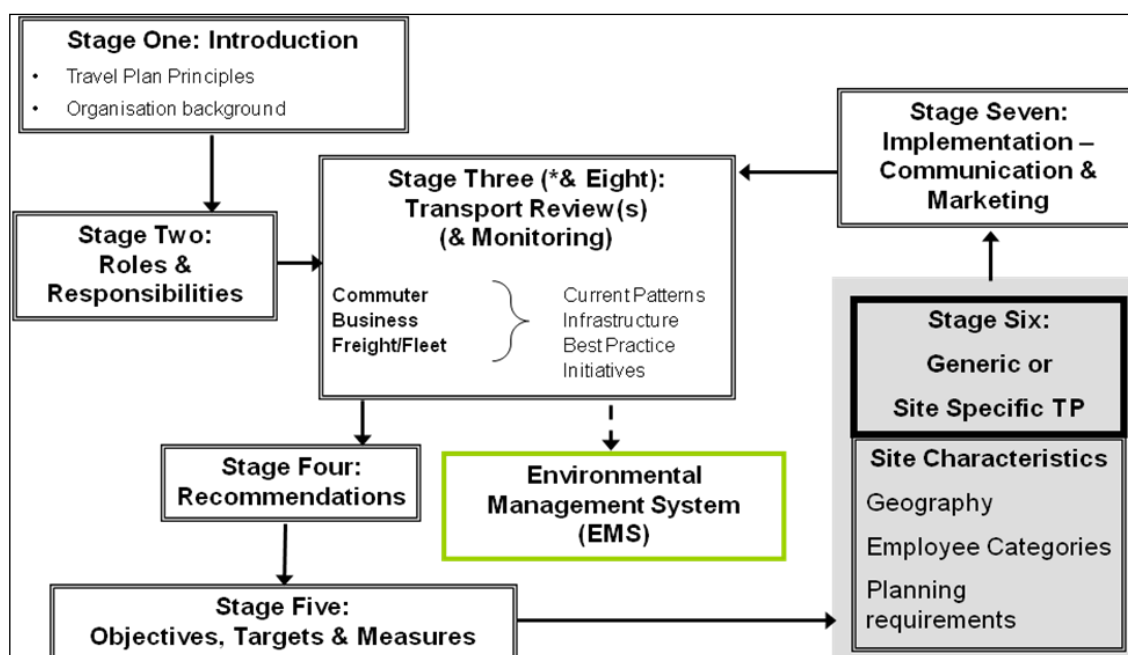
Figure 7.1 Systematic Stages of Developing & Implementing a Travel Plan

Stage Seven: Implementation: Awareness Raising & Marketing – once a TP has been developed, raising awareness of its broad targets, aims and specific objectives (initial and future measures) to employees is vital if targets set are to be achieved over a period.

Stage Eight: Monitoring – as set out in Stage Three, this completes the continual improvement process as part of a fully working systems approach to TPs. Adopting such an approach enables transport issues to be embraced and integrated within an organisations Environmental Management System (EMS) (as outlined in Section 2.8).

Following this chapter, a conclusion will be drawn reflecting on the development process of this TP and the research undertaken, as well as providing a critical overview of the TP itself.

7.1   Travel Plan Principles & Organisation Background (Stage One)

This section is primarily written to explain the principles and thought processes behind TPs to company staff and management and as a basis for any new considerations by the TP Co-ordinator, which emerged from the analysis of the interview process undertaken with internal and external individual involved with TPs. In addition, insights from work undertaken in developing the University of Hertfordshire's own TP have been incorporated into this broad document.

For Travel Plans to work effectively there are five key issues to drive the required changes, these are:

1) Achieving a *culture or behavioural change* in the organisation and amongst people.

2) Providing real incentives or *sticks and carrots* to encourage changes in travel behaviour and to ensure that these are continued.

3) An *integrated holistic approach* to ensure that all measures work in the same direction and are fully joined up.

4) Total *management support* for both the measures and to provide leadership example to others.

5) A *clear and continued objective* to achieve for a clear purpose to maintain focus for the future.

In achieving a change of behaviour the stages can be described in seven steps:

1) Awareness of a problem, e.g. traffic congestion, pollution, environmental damage, example to the community, etc.

2) Accepting responsibility at an individual and corporate level that everybody and every organisation has its part to play.

3) A perception that alternatives are possible.

4) Evaluation, personally and for an organisation, to find which are the viable alternatives.

5) Making a choice, with the intention to modify behaviour.

6) Experimental behaviour, trying out new travel choices.

7) Habitual behaviour, long term adoption of sustainable modes.

Increasingly organisations and individuals are becoming increasingly aware of the environmental issues that traffic growth and traffic congestion causes. Often management and employees of an organisation may fail to make the connection between every parking space that is used resulting in extra trips on the road network. Each extra vehicle causes a disproportionate amount of congestion. A small reduction in traffic can reduce traffic congestion considerably. That is not to say that the problems of environmental damage and global warming are solely achieved by a small reduction in traffic, but a small reduction is a good start, with immediate and visible benefits.

Without a full understanding of the 'why' a TP is required, the progress with its implementation, on the cultural side, and on the acceptance of the need for incentives and

disincentives will not be recognised by staff or management. It also has to be recognised that not everybody can change and not everybody can change for all of the time. Small changes can have big benefits; a sense of direction and what is trying to be achieved is essential. A transport hierarchy is helpful. This can be expressed in the following table (7.2) supported by the image of traffic lights. A small change from red towards amber or green on any day that anybody can make a contribution is worthwhile.
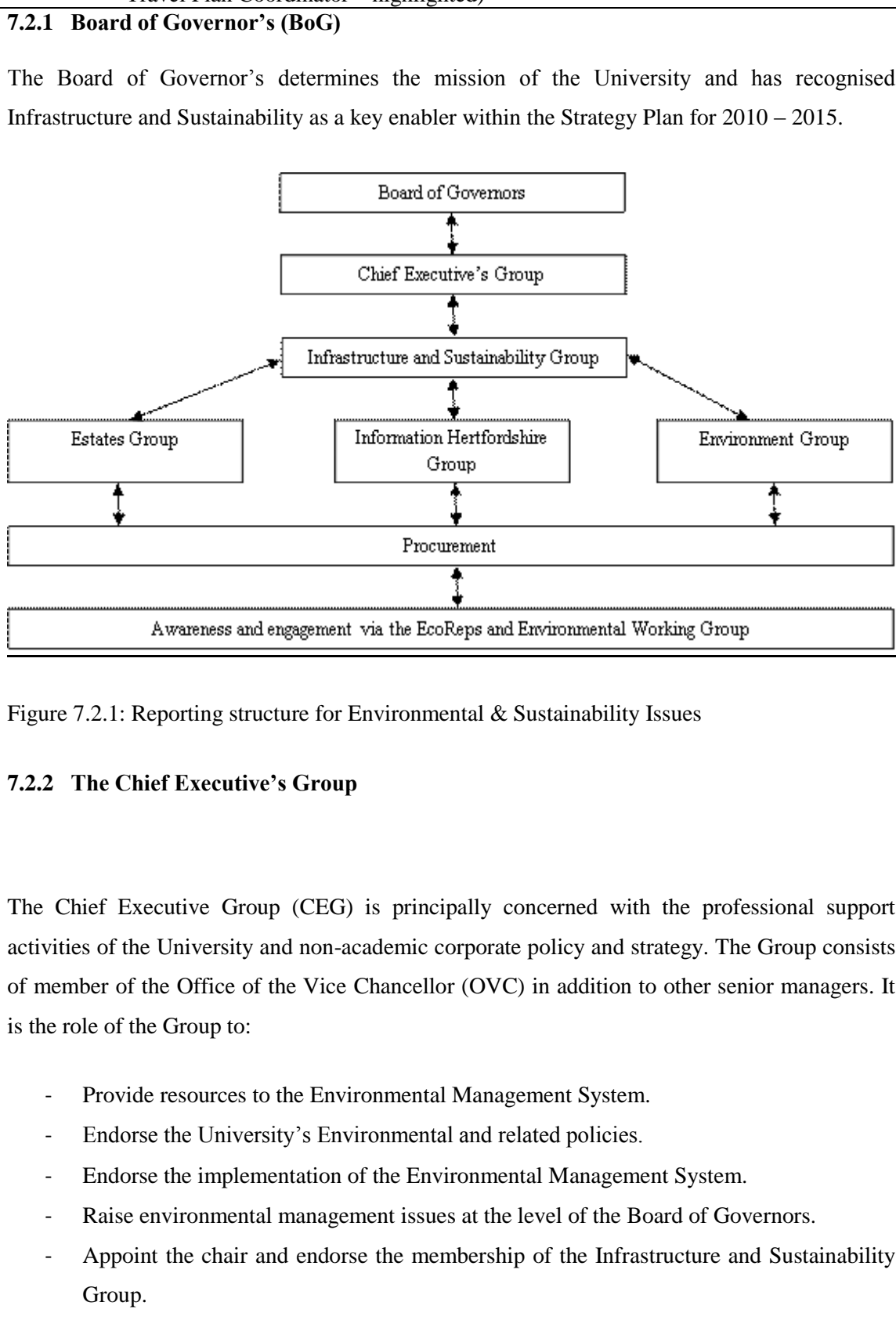
7.2 Roles & Responsibilities (Stage Two)

This document outlines the individuals and committees responsible for implementing the University of Hertfordshire's Environmental Management System (EMS). This is provided through the structures put in place for the University's Environmental Management System, and signed off by the Director for the Centre for Sustainable Communities (CSC). Under section 106, the University employs a Full Time Travel Plan Coordinator, based within the CSC. The scope of this role is outlined in Table 7.2 and includes;

Table 7.2 Role & Responsibilities of a Travel Plan Coordinator

- Overseeing the development and implementation of the plan
- Obtain and retain senior management commitment and support from senior managers, staff, unions and students.
- Design and implement effective marketing and awareness campaigns to promote travel initiatives, including web site and other technology management.
- Report to the Infrastructure and Sustainability Group.
- Data collection, monitoring and measurement of travel habits and attitudes to assess the achievement of targets set as well as identifying new ones.
- Act as a point of contact or provide a 'one stop shop' for staff, students and visitors requiring travel information.
- Co-ordinate management of different aspects of the travel plan by working closely with different departments such as personnel, estates, marketing and UNO.
- Represent the University and lease with external organisations and groups such as Goodmans, Welwyn & Hatfield Council, Hertfordshire Business Travel Wise and local transport operators.
- Present a business case to secure a budget for the travel plan development as well as securing resources and funding from external sources.
- Recommend improvements for business travel to reduce economic and environmental costs.
- Recommend a car parking strategy which is self-funding to ensure car parking is not being subsidised by core business as at present.

The reporting structure for environmental aspects (including Transport), is included within the overall Environmental Management System. The TP has been incorporated within the organisations overall reporting structure for the EMS. This allows for the TP Coordinator to feed directly into reporting to an Estates and Environment reporting Group these groups report to what is known as the Infrastructure and Sustainability Group (made up of organisational finance managers, estates directors, information officers and the Environment Team (to which the TP Coordinator is based). These working group structures are important, as this is where TP ideas and measures are formulated, prior to being reported up the management chain to the Chief Executive Group (CEG). This is where decisions are made on major transport related issues (such as the proposed Charge Reward Scheme). This structure has taken a long time to develop, in terms of incorporating Environmental Reporting within the organisation. The EMS and TP have evolved together, which has aided in developing the roles and reporting structures set out in Table 7.3.

Table 7.3   University Environmental Management System Reporting Structure (inclusive of
            Travel Plan Coordinator – highlighted)

7.2.1   Board of Governor's (BoG)

The Board of Governor's determines the mission of the University and has recognised Infrastructure and Sustainability as a key enabler within the Strategy Plan for 2010 – 2015.

Figure 7.2.1: Reporting structure for Environmental & Sustainability Issues

7.2.2   The Chief Executive's Group

The Chief Executive Group (CEG) is principally concerned with the professional support activities of the University and non-academic corporate policy and strategy. The Group consists of member of the Office of the Vice Chancellor (OVC) in addition to other senior managers. It is the role of the Group to:

-   Provide resources to the Environmental Management System.
-   Endorse the University's Environmental and related policies.
-   Endorse the implementation of the Environmental Management System.
-   Raise environmental management issues at the level of the Board of Governors.
-   Appoint the chair and endorse the membership of the Infrastructure and Sustainability Group.

Members of the CEG
Vice Chancellor (Chair)
Deputy Vice Chancellor
Group Finance Director
Secretary and Registrar
Director of Marketing and Communications
Director of Human Resources
Academic Registrar
Director of Estates
Chief Information Officer
Pro Vice Chancellors (x5)

7.2.3 Infrastructure & Sustainability Group

The Infrastructure and Sustainability Group (ISG) is the Management Review Committee of the Environmental Management System and is chaired by the Group Director of Finance. It is this Group's responsibility to:

- identify the resources required to maintain the EMS
- ensure the EMS is established, implemented and maintained
- monitor the performance of the EMS
- establish, review and revise the institution's Environmental and associated policies and objectives and other elements of the EMS.

Members of the ISG
Group Director of Finance (Chair)
Director of Estates, Hospitality and Contract Services OR Deputy Director Capital Projects
Chief Information Officer
Director of the Centre for Sustainable Communities (PVC Regional Affairs acting)
Head of the Improvement and Planning Office
Sustainability Manager
Environmental Coordinator (by invitation)
Travel Plan Coordinator (by invitation)
Energy Manager (by invitation)
Procurement Manager (by invitation)

7.2.4   Estates Group, Information Hertfordshire Group & Environment Group

The Estates, Information Hertfordshire and Environment sub-groups work together to implement the Environmental Management System across the University. The EMS Manager (Environmental Coordinator) leads on the implementation of the EMS with support from the Estates Group. Along with the members of the Environment Working Group there are a number of key employees who are involved with the delivery of the TP. This includes representatives from the Environmental Strategy, the Estates Department, External Relations and the Personnel Department. Specific tasks include developing the Travel Plan and raising awareness through the Environmental Strategy, management of car parking through Estates and staff, student and local community awareness through External Relations and consideration of staffing and union implications through the Personnel Department.

The EMS Manager:

- Reports to the ISG on the functioning of the EMS.
- Implements the recommendations/corrective actions from audits and the ISG meetings.
- Coordinates environmental reviews.
- Identifies and prioritising environmental aspects and impacts.
- Coordinates the setting of environmental objectives and targets.
- Organises the environmental management programme.
- Assigns roles, responsibility and authority.
- Informs individuals about their environmental obligations, including suppliers and contractors.
- Manages the environmental training programme.
- Deals with internal and external communications.
- Compiles, updates, approves, controls, stores and distributes documents, such as procedures, to those involved including suppliers and contractors.
- Ensures all relevant legislation and requirements are identified, listed and updated.
- Checks that the institution complies with relevant legislation and requirements.
- Organises the programme of internal audits and management reviews.
- Ensures internal EMS auditors are appropriately trained.
- Coordinates external audits as required.

Members of the Environmental Working Group are drawn from all areas of the institution. The EWG meets three times a year to:

- Discuss the implementation and maintenance of the EMS.
- Devise and promote initiatives to inform interested parties about environmental aspects at the University.
- Help the EMS Manager to regularly audit the EMS.

Members of the Estates Group	Members of the Information Hertfordshire Group (reporting to the IH Senior Monthly Management Group)	Members of the Environment Group
Deputy Director Capital Projects	Chief Information Officer (Chair)	Director Centre for Sustainable Communities
Deputy Director Facilities	Data Centres Manager	Environmental Coordinator
Sustainability Manager (Chair)	Chief Technology Officer	Travel Plan Coordinator
Energy Manager	Head of Operations and Customer Service	Assistant Environmental and Travel Plan Coordinator
Facilities Manager (de Havilland & satellite sites)	Head of Planning and Administration	EcoRep (by invitation)
Facilities Manager (College Lane)		Sustainability Manager (by invitation)
Environmental Coordinator (by invitation)		
Travel Plan Coordinator (by invitation)		

7.3   Review & Monitoring (Stage Three & Eight)

The development stages of a TP involve collecting data for employee commuting patterns for reporting against targets. These data can also be used to help set appropriate targets at the initial stages of development. Such quantitative data can be collected using pre-defined quantitative mechanisms outlined in government publications (DETR, 2000; DLTR, 2002), although tools

can be altered where appropriate. An employee commuter questionnaire (Appendix One) was developed using of the DETR (now DfT) sponsored *'Travel Plan Resource Pack for Employers'* (published by Steer Davies Gleave in 2000, updated 2006). The publishers intended the pack to be a 'one-stop' resource for organisations looking to develop and implement their own TP. The aim of the data collection was to set a baseline from which a TP could develop a strategy that looks to monitor, reduce and manage the impact from transport, within the context of a continual improvement EMS (as proposed by Staib, 2005; Gilbert & Gould, 1998).

The Continual Improvement Programme sets out the next steps towards sustainable travel, building on what has already been achieved to reduce the University's impact on transport. This section outlines the actions, initiatives and measures that the organisation is committed to implementing as well as detailing recommendations and improvements that will further enhance the TP. Since the adoption of the University's TP in July 2003, there has been significant progress towards achieving the objectives of the TP, if not the targets set (see Figures 6.6 & 6.7).

In order to measure the success of the TP it is essential to monitor changes in travel behaviour towards the objectives and targets set by the University. The baseline information required to measure progress for staff and students is collected through the staff/student travel surveys in March /April biennially.

Additional spot check in terms of monitoring are conducted for on street parking as well as car parking observation by security to assess use. These are reported to Estates in terms of formal reporting. A report of the results will be submitted to both the Planning and Highways Authorities by June of each year the survey is conducted.

The University intends to monitor change against the objectives and targets set out in sections five and six. Key indicators have been identified that will enable the University to measure its success against these objectives and targets:

- number of people driving alone to the University campuses
- number of people travelling by alternatives modes
- number of bikes parked on the University campuses
- number of people registered on the car sharing database (when established)
- number of people boarding and disembarking at the bus stops on the University campuses
- number of staff who have taken up flexi-working

- number of staff days spent tele-working
- number of business miles claimed.

Completed and On-going

- A detailed travel survey of staff and students conducted every two years, to be undertaken at the same time of year on each occasion.
- Biennial audits of the car park and cycle parking facilities to see how many bikes are on site.
- Working with UNO (hire car use), the Purchasing and Finance departments to conduct an annual audit of business miles travelled.
- Working with UNO to monitor quarterly passenger levels on different routes to be reported as percentages.

7.4   Objectives & Targets (Stage Five)

Set objectives for the TP are set out for the organisation in order to provide a broad set or overarching themes against which a TP can be monitored and specific tasks set. For the University these objectives include the following.

- Reduce environmental, social and business impacts associated with transport use by reducing unnecessary journeys to and from University campuses made by single occupancy passenger vehicles.
- Implement measures which will maximise the number of people choosing to walk, cycle, travel by public transport, car share or use other alternatives.
- Make the campuses of the University more accessible, both physically and perceptually.
- Seek opportunities to reduce the impact of transport associated with the delivery of goods.
- Promote sustainable integrated transport and raise awareness of travel choices.
- Work with, lobby and support our partners to seek alternative travel opportunities and solutions.
- Monitor and measure progress towards targets.

The key headline targets have been set in line with the five year target for employment-related trips related to the Hatfield BAe redevelopment site Green Transport Master Plan. Car reduction is the most important with the other categories being more flexible in terms of actual modal split.

7.4.1   Travel Plan Targets

The University TP targets have been based on the need to reduce SOV use from the current level of circa sixty eight per cent for employees and thirty five per cent for students. Original targets set in 2002, were achieved prior to the University moving to its de Havilland Campus (owing to a consolidation of its campuses into Hatfield). More appropriate targets have been set, which would see a reduction in SOV by about 500 vehicles, if these revised targets can be achieved.

Employee Journeys

Table 7.4 Travel Plan Targets & Current Modal Split

Mode	Target Modal Split	Time	Modal Split (2011)
Car	70% (60%)	By 2007 (by 2013)	68%
Other modes (including car passenger, pedestrians, cycles, public transport)	30% (40%)	By 2007 (by 2013)	32%

Student Journeys

Mode	Target Modal Split	Time	Modal Split (2011)
Car	27% (20%)	By 2007 (by 2013)	35%
Other modes (including car passenger, pedestrians, cycles, public transport)	73% (80%)	By 2007 (by 2013)	65%

7.5   Travel Plan Recommendations, Measures & Progress (Stage Four & Six)

7.5.1   Cycling & Walking

Targets to improve walking and cycling rates were set in relation to improving facilities, routes and information.

Completed and On-going

- Construction of a new cycle and walking route between College Lane and Roehyde Way in conjunction with Welwyn Hatfield Council completed in 2006
- The provision of University Cycle (Uni-Cycle) and accessories to both staff and students by local supplier with a 10 per cent negotiated discount, with 140 cycles purchased since this was launched in Oct 2010.
- Cycle showers, lockers and shelters were reviewed and mapped for user information, and supplied on the intranet site.
- Six health walks for staff and students have been led by the Environment Team in association with Health and Safety and are conducted each year of part of Healthy living on campus campaign.
- The University runs a cycle scheme (called cyclescheme.com), to which employees can purchase tax reduced cycles. As of October 2012, 267 employees had purchased a cycle, since launch in 2008.
- Twice annually a Doctor Bike event is run for staff and students to have a free service on their bike (conducted October and April of each year).
- Additional covered shelters (120 spaces) are being provided as part of the Forum and Law Development

Future Work

- The production of a cycle leaflet is being produced to be launched in 2012

7.5.2 Motorcycles

The University has continued to encourage safe motorcycling.

Completed

- Free designated parking provides a financial incentive for motorcycles.
- New motorcycle parking facilities (sheltered) have been provided at the Forum
- New designated parking spaces provided at College Lane and de Havilland

Future Work

- Identifying areas and funding for additional sheltered parking

7.5.3 Passenger Transport - Providing Integrated Transport

The Travel Plan Coordinator works closely with UNO and other public transport providers to ensure information about improvements to bus services and facilities are kept up to date.

7.5.4 Buses

Completed & on-going

- The University provides discounted bus tickets on all UNO services to its staff and students, as well as annual passes that are heavily subsidised.

- The distribution of timetables at key points around the University such as receptions and LRCs.

- In order to achieve efficient transport links to de Havilland from the Hatfield Campus a shuttle bus service has been implemented between College Lane and de Havilland. The service between the sites runs every 7.5 minutes between the hours of 07:00 – 18:00 and from 18:00 – 23:00 every 15 minutes. This journey uses College Lane to link the two sites.

- The addition of a new low floor double deck bus to provide the majority of journeys on the busy 644 route.

- New bus livery launched in Summer 2005 (launch of the UNO Brand completed)

- The University has invested in a flat screen to display real time information provided by bus operators as a trial in the College Lane Forum and de Havilland Campuses (Oct 2012).

- The University is represented at the local Hatbus group.

- University helped develop the Network St Albans Quality Network Partnership in the City and District of St Albans (launched Nov 2009).

- New bus shelters at the Forum and de Havilland site are provided with information screens in partnership with Herts Highways. These screens will allow Real Time Information to be displayed, once this project has been signed off by Hertfordshire County Council. The University is a full partner in the scheme, and has installed screens at all shelters under its control (these include College Lane, de Havilland and the Park & Ride) in order to provide this information once it comes on line (Launched in Oct 2012).

- As the majority of student socialising facilities are located on the Hatfield campus a late night student service is provided. A late night bus service to ferry students in halls of residents between the sites has been in operation since the opening of the student

Forum. Figures for the use of the shuttle are at present not accurate, but anecdotal evidence proves it is heavily used. With the introduction of m-ticketing on the Park & Ride, an electronic footprint of ticket purchases will help to better understand the use of the shuttle from the Park & Ride.

Future

- The introduction of m-ticketing on the Park & Ride will be preceded by its roll out to the whole of the UNO network throughout 2012. The introduction of this technology to the University community, can lead to reduced boarding times and thus increase the reliability of the bus network. This in itself will help promote the services provided by UNO.
- Purchase of two 'Green Buses' for the St Albans Area (completed July 2012).
- Real Time on Park and Ride being investigated (Initiated October 2012).

7.5.5   Train

The University TP and UNO work with other public transport operators to improve integrated transport. Specific annual improvements include:

Completed and on-going

- The successful negotiation with Transport for London (TfL) of a 30 per cent discount on public transport for students that reside within the M25 (known as Photo-card), has circa 5,000 students take this offer up annually.
- Continuation of UNO/University support of the INTALINK initiative.
- New availability of integrated train and bus tickets on the rail network (known as Plus Bus) for staff and students.
- In 2009, the train operator First Capital Connect and the University developed a partnership, which led to the introduction of a ticket machine on College Lane for purchasing train tickets, which incorporated an UNO bus ticket to both Hatfield and St Albans Train Stations. The uptake of this facility varies throughout the year, due to the nature of the University terms (i.e. the summer holidays reduces sales). At present, on average 39 tickets are sold per month, although this figure is likely to increase with further marketing of the service, which has taken place in the form of hard copy and electronic posters and email adverts.

Future

- In March 2011, a new ticket machine will replace the existing one, currently located on the bus terminal outside the Forum terminal. The new machine will be a card only machine and be located within the Forum building to improve security for the user and reduce the chance of vandalism. In addition, a screen showing train times to both Hatfield and St Albans Train Stations will be installed over the machine, as part of the overall marketing of the machine.

- Investigating the use of smart and/or cashless m-ticketing for train and bus tickets, as part of the successful LSTF bid secured in July 2012.

7.5.6 Park & Ride

Completed and on-going

- The park and ride facility is now built and well established on Angerland Common. This comprises of 800 car parking spaces and parking is currently a fixed charge to staff and students of 70 pence for parking. A dedicated shuttle bus service, comprising of five vehicles at peak periods, runs every 5-7 minutes and links to Hatfield and de Havilland Campuses.

Future

- From February 2011, in order to encourage the use of alternatives to the Park and Ride, as well as to reduce the financial burden to the University, a charge will be introduced for users of the facility who wish to use the shuttle service to the College Lane and de Havilland Campus. The charge will be levied via mobile phone (known as m-ticketing), with users able to purchase daily or carnet tickets. Charges for daily tickets will be 50p, with carnet tickets being available only as m-tickets for £2.5 (for five tickets) and £10 (for 20 tickets).

7.5.7 Car Sharing

Completed and on-going

- The University purchased and now runs a car share database through the company liftshare.com. The software is introduced to staff at their induction, and is available through the University Intranet (Studynet) software. Currently (as of Oct 2012) one hundred and twenty eight employees are registered on the scheme.

Future

- In order to try and increase registration and uptake of car sharing, the current car parking policy is being reviewed, and ways to encourage car sharing will be developed from this. At present a car share package is not offered as part of the University package to the student body. This is will looked into and offered if deemed suitable. Other measures, such as designated spaces and financial incentives to encourage further car sharing will be considered.

7.5.8 Car Users with Disabilities

Car users with disabilities would be exempt from this process but will still have to apply for their free parking permit from the car parking management office. The promotion and implementation of alternatives will include access considerations and integration for users with disabilities. These considerations will be coordinated with the University's Equality Unit.

7.5.9 Taxis

During the staff travel survey 2009, one per cent of the respondents said that they use taxis for work related journeys. The option of using a taxi means that employees do not have to bring their car to work and where possible employees should be encouraged to share taxis. The University should review this option as an alternative. It may be possible to reduce costs by negotiating with UNO or a local taxi company to gain preferential rates through a business contract. This company may also provide the guaranteed ride home for car sharers.

7.5.10 Tele-working, Flexitime & Timetabling

Completed

- UH staff and students can access files and information via the Intranet site Studynet, which allows for tele-working remotely
- Flexi-time is available to all staff on the discretion of the line manager.
- In addition with the introduction of StudyNet and remote access to the Learning Resources Centre, more students now take advantage of the new information technology resources to conduct research and submit assignments without the need to travel to the University campus.
- Distance learning is becoming available to students

7.5.11 Business Travel

During the 2011 staff survey, 24 per cent of staff said that they used the car during the day to perform their job. In order to identify cost savings and environmental improvements a business travel audit needs to be conducted. In order to reduce the proportion of car use for business, UH will conduct a business travel audit to identify cost savings and environmental benefits including:

- All use of company/private vehicles used for business purposes
- Use of other modes for business travel
- Identification of common journeys
- Mileage and fuel consumption
- Expenditure on business mileage in vehicles
- Insurance costs associated to travel (including premiums and claims made)
- Fares for public transport
- Mileage and time spent for any walking and cycling business mileage

Future

- In the 2013 survey, business travel questions will be incorporated in order to better qualify the extent of business travel.

7.5.12 Visitors

It is essential that the University promotes itself as accessible to visitors through the use of alternative transport and to make visitors aware of limited car parking availability. Visitors should easily be able to access information, for example through the UH website to allow them to plan their journey especially through the promotion of public transport links to the campus they are visiting. Where a large influx of visitors is expected, for example, on open days and conferences, the promotion of other modes of travel is essential to reduce the impact from car use. Publicising transport routes and visitor maps is critical to assist people with planning their trip and to show that the University is easily accessible and proactive in protecting the environment.

7.5.13 New Recruits

It is vital that new staff and students are made aware of the University's commitment to reduce single occupancy car use and are provided with information on alternative travel. This is

particularly important to help overcome problems that arise at the beginning of the new term as students come to register for the new academic year. Currently, there is severe congestion of local roads and frustration of staff and students queuing to enter or leave University campuses at this time each year.

The Environmental Strategy already provides some information through Staff Induction and Fresher's Fair although this should be reinforced at a departmental level and through the Students Union when new students and staff join the University.

Travel Data on 'Freshers' are not available at this stage, due to the Student Centre not wanting the additional burden of collecting such data at this time of year.

7.5.14 Deliveries

In order to assist this process the University will establish baseline data on the number of deliveries/freight movements to review how the level of transport movements could be rationalised (Aug 2012). This is going to be undertaken as part of the overall review of access and car parking strategy.

7.5.15 Parking Management Strategy

The University already has a parking permit system in place for staff and students while visitors can park for free provided they receive a parking pass from main reception. This is managed by the Estates Department and is enforced by a dedicated parking officer.

However, the University is among one of the lowest charging organisations for parking charges compared to other institutions. The rates do not reflect the actual cost of car parking such as maintenance and administration costs and the lost opportunity cost of the land. This in effect means that the University is subsidising car parking which is outside the core business interests of the organisation. In addition, the present system favours driving to work every day once the parking permit has been paid for and any increase in charges is met with resistance from staff.

Charges should be made to reflect the actual use of car parks as well as being self-funding, representing the true cost of parking such as maintenance and management costs. Any excess revenue made from parking should be used to fund alternatives. Under the current system, once a person has received a car parking permit, they are inclined to use it as often as possible in order to make full use of their purchase. Under an integrated system, the mode of travel would reflect the use of transport required for that individual on a daily basis. For instance, one day they may require their car and the rest of the week would be free to cycle, catch a bus or work at

home. In comparison, the cost of the average car parking permit is significantly lower than the cost of the annual bus pass.

For many other Universities with successful TPs, excess funds from car parking charges have been ring-fenced to provide an income stream to promote and implement alternatives. There are also many opportunities for the University to update its parking system in line with technological developments to provide integrated travel, for instance through daily charging by use of the smart cards or by number plate identification systems. These schemes would also allow a variety of data to be captured including daily car park use.

The parking management strategy should aim to provide disincentives to travel by car every day when alternatives are available therefore creating choice. However the system will allow car parking if the person must drive or is prepared to pay the appropriate charge.

7.6   Implementation, Communication & Marketing (Stage Seven)

The profile of the Travel Plan has been raised over the years to ensure that the University's stakeholders, who include staff, students and the local community, are aware that the organisation is investing in improving its environmental performance in relation to transport. Specific achievements include:

- The adoption of a successful email service in 2006 (travel@herts.ac.uk) for personalised travel advice for staff and students to make suggestions/comments.
- A travel website with new updated web pages launched in autumn 2004 (www.herts.ac.uk/traveltouni).
- University representation at the new Welwyn Hatfield Transportation Forum and St Albans Local Strategic Partnership.
- Lectures delivered to undergraduate and postgraduate students concerning TPs.
- University representation at the Association of Commuter Travel (ACT-Travelwise) and Environmental Association of Universities and Colleges.
- One stop shop for Travel Information is provided at the University's Student Centre (started 2007), where information on car parking policy, permits, bus passes, student photo-card scheme and public transport information is provided.
- Employees are inducted at the beginning of their employment, at which presentations and information are provided to them on their option for travel.
- Student Eco-reps man monthly stalls (aimed at students) with all transport information available.

7.6.1   Staff, Student Consultation & Working with Partners

Consultation with staff and students on a regular basis is essential to help to raise awareness of transport issues as well as overcoming resistance to change. Already a number of campaigns, surveys and press releases have taken place that has increased awareness and consultation of staff and students as to their views and travel habits. In order to keep staff and students interested, this must be maintained to help sustain enthusiasm and momentum.

In order to contend with sensitive issues such as restrictions on car parking spaces, the University will ensure that incentives and alternatives are in place to help reduce car use. Opportunities to promote the alternatives will be taken so that staff and students are aware of their realistic and affordable travel choices.

The University recognises the significant contribution it can make to reduce the transport impact in its area and working with its partners will seek joint solutions and opportunities to help solve the transport problem. For example the University attends the Hatfield Business Park Transport Forum where it was recognised that there are many opportunities to pool resources in order to implement initiatives that would be beneficial to all organisations involved.

The University is also seeking joint solutions with local communities and authorities over on-street parking, and provides £30K funding *per annum* to Welwyn Hatfield Council for managing illegal parking.

The University regularly consults and works with other members of the Environmental Association of Universities and Colleges (EAUC) and the Higher Education Sustainability Partnership (HESP) in order to establish best practice in finding solutions to the transport problems facing the sector. The recently published HEPS Travel Plan Guidance for H&FEE, sited UH as a best practice case study.

7.7   Conclusion

From the analysis conducted into current travel patterns including modal split, people's attitudes and the evaluation of public transport routes and facilities, it is clear that there is significant scope to promote and improve opportunities for sustainable travel to the University of Hertfordshire and the wider community. Through implementing a combination of incentives and disincentives through the development of the TP, a co-ordinated approach to reducing SOV use and meeting planning obligations can be achieved without detrimentally affecting the financial operation of on organisation. The proposed Charge- Reward Scheme (see Appendix 7)

is a culmination of the embedded and emergent approach that this research process set out to achieve. As outlined in the continual improvement action plan, many of these initiatives need to be in place for the redevelopment of the University campuses, under it 2020 vision.

An essential part of the TP includes marketing alternative transport to staff, students and visitors to raise awareness of travel choices across the University's community, and this continues to be undertaken.

By working in partnership at a local level on transport issues and communicating with stakeholders the University receives support to reduce its environmental impact as well as gaining cost efficiencies through reduced congestion and possible funding and sharing of resources to implement common goals. The review indicates that good progress has already been achieved through integrated transport, however this is an on-going process through which the University of Hertfordshire can make a valid contribution towards sustainable development.

The TP is presented as a flexible working document for continual improvement and follows a management system framework. This requires regular monitoring and reviews in order to check progress towards targets set. The implementation of the University of Hertfordshire's TP will continue to provide the opportunity for modal change and help to ensure that the traffic impact is minimised to all its campuses. This plan will continue to work alongside the Estates 2020 vision in terms of developing a daily Charge and reward Scheme (as outlined in Appendix Seven)

The bulk of this chapter has been to detail a working TP, and as such marks in many ways the culmination of this research project. The TP although specific to the University of Hertfordshire, with modification can be used for any large institution of comparable size and complexity. For instance, the CEG could quite easily be replaced with a Board of Directors, etc. in another large organisation. So rather than produce a generic TP, it was felt that as the researcher was fully embedded in the TP process at the University of Hertfordshire, it was more appropriate to detail a TP specific to the organisation within which he was working and researching. In the remaining chapter (Chapter 8), an evaluation and self-reflection of the TP and the development process is undertaken to bring the whole thesis to its conclusion.

Chapter Eight – Evaluation, Recommendations & Conclusions

8.0   Introduction

The aim of the research undertaken in this thesis was to explore the development process of TPs from different contexts and circumstances in order to draw together common and differing factors that influence them. This will form the basis of a set of recommendations that could be applied to improve the design and development of future TPs in order to refine the process and make them more effective in achieving their aims. Although TPs have been in existence in the UK since the late 1990s, they are increasing in complexity and in terms of reporting requirements, as there is now a greater understanding of the need to plan for and provide alternative modal choices at the local level. The intention is that the contribution to knowledge made by this thesis will inform those responsible for developing TPs to meet the current and future requirements placed upon them for delivering local travel solutions as part of the new planning framework and localism agenda.

This chapter draws together the evidence obtained from three specific case studies in the development and implementation of TPs/QPs, but also uses insights from additional external data sources. The development of the thesis has used an embedded researcher approach to data collection, focussing on an emergent outcomes approach to analysis of the data sources. As such an evaluation matrix (Table 3.1) was developed for reporting on the analysis of the multi-methods employed in the collection of quantitative and qualitative data. The philosophical underpinning to the research employs a critical realist approach, which will be reflected upon in this conclusion in terms of its contribution to the overall outcomes of this research. The extent to which this research has achieved its aims and objectives will be explored and discussed in terms of their relative success or failure. This then leads on to the original contribution that the thesis makes to further knowledge and understanding of TPs in delivering behavioural change at the local level. Finally, the lessons learned and good practices that can be taken forward for future research are outlined in light of the latest publications and funding opportunities.

8.1   Evaluation Matrix

An evaluation matrix developed for reporting the complexity of issues impacting on both the development and implementation of TPs, builds on the critical realist conceptual framework developed for the reporting of mixed methods. The interaction of key 'contextual' drivers, delivery 'mechanisms', and the reporting of 'outcomes', using this critical realist approach has helped identify CSF and KPIs to understand better the dynamic interactions between these three elements. The evaluation matrix forms an important link for reporting the mixed methodological

approaches adopted in the data collection. In terms of both quantitative and qualitative data analysis, there was a diverse array of broad themes to have emerged with the potential to impact on success of TPs. These are summarised and evaluated through discussion below.

Developing a TP strategy differed greatly between each of the case studies researched as a direct result of the context in which each was studied. At the outset, the University's primary driver for developing a TP was to obtain planning consent and in doing so develop a TP strategy that managed demand for parking, both on site and within the local community. In comparison, Vauxhall's initial driver was to demonstrate good corporate governance, but as economic circumstances altered, so did its drive and requirement for a TP. However, both of these case studies were suited to developing their respective TPs within internal EMS, which was a shared key critical success factor determined from the research delivery mechanism. As a result of embedding its TP within an EMS structure, an outcome for the University was the setting of SMART TP targets (KPI); an approach that Vauxhall could also have adopted had their circumstances not changed. In terms of embedding TPs within the structure of organisations, EMS (or CSR) was seen as the most appropriate mechanism for achieving this within large organisations from the participants interviewed. This theme to emerge from the interview process was developed further in the University's case, with the TP firmly embedded within the organisations EMS (Appendix 6). This process has allowed for appropriate TP targets to be set and reported on a biennial basis to internal and external stakeholders. However, whilst local reporting against TP targets to internal and external stakeholders were regarded as important to the structure of EMS, it was felt that there was a lack of legal or financial enforcement in support of TP interventions. This was evident throughout the research by the fact that both the delivery of interventions and their impact on achieving set TP targets have never been independently verified by LA officers. This seems in part to be to be related to the loss of skills and resources at the LA level. This research provided a unique opportunity to embed the TP within the organisation that otherwise would have been restricted to a paper exercise or a box ticking planning application without any external or indeed internal monitoring.

The QP developed from the embedded and emergent element of the research process, as part of the critical realist approach. The QP drivers for developing this transport strategy across a complex multi-sector network were more diverse than either of the organisational case studies. This was in part owing to the multitude of stakeholders that were to be engaged in the partnership. Local issues provided the key drivers for change, with air quality, local traffic congestion and their resulting social and economic implications acting as the main contextual issues for developing the partnership. Chatterjee (2009), in his review of implementing large

scale travel planning projects, provided a list much like the one generated from this specific case study. Unlike the two organisational case studies, an EMS was not suited to this specific case study.

The QP tested existing legislation relating to transport partnerships. It had previously been assumed that such a formation would be deemed to be anti-competitive under the Competition Act (1998). The initial stages of developing the QP helped inform and revise legislation provided by the Transport Act (2008), in order to establish itself as a voluntary QP. This revised legal position was a critical success factor to setting up the partnership. The revision was directly informed by the Campaign for Better Transport who sought legal opinion to help demonstrate that such partnerships could be formed with the aim of improving local transport, provided that they were supported by the LAs, in terms of competition law impacting on the multi-operator aspect of the partnership. Once established, the QP was managed through the structure of a Board and Working Groups (Figures 6.10 & 6.11 respectively), a delivery framework (MoU) (Appendix 4) developed in conjunction with, and signed-up to by all of the partners was the main outcome of this work. The MoU formed the basis for the partnership's ability to undertake the on-going delivery of a variety of activities to improve the local public transport services and infrastructure.

In all three case studies these unique, but in some cases overlapping drivers, provided the framework for developing KPIs for reporting structures to internal and external stakeholders through management systems or delivery frameworks. In each case study (excluding Vauxhall), either a TP or QP coordinator role emerged from the process as 'critical success factors' to the development phases and delivery of interventions set out by these two cases. Without either of these roles providing a delivery mechanism for taking on the challenges of delivering interventions, vested interest groups and the perceptions around TPs, it would be unlikely the work would have achieved what it set out to do. The examples demonstrate the importance of having both a guiding role to co-ordinate, support and direct delivery activities and of setting targets for achievement and reporting progress. These targets form a sub-set of KPIs that are applicable to their respective organisational/partnership contexts. These should develop and change over time so that, as progress is made, new targets are set and achieved making the TP a dynamic document. This was the case for the University.

Perceptions and knowledge of TPs varied greatly among those engaged as part of the research process, with a broad array of views presented. Whilst commuting was viewed as the main focus of a TP, freight, logistics and business travel also featured through discussion, as these

were seen as key business drivers for specific case studies such as Vauxhall. Views and attitudes of individuals engaged with throughout the research had great influence on what has emerged for the output. The research found that the knowledge of the individuals involved greatly influences the development of specific TP interventions, particularly those that have impacted directly on those individuals themselves. Attempting to promote alternatives to the car, through applying hard measures to car use was often rejected or barriers were inserted to their development and implementation. Historical factors were also seen to underpin current behaviour observed. As in the case of both the University and Vauxhall, for example, the longstanding absence of significant charging regimes reinforced the travel behaviour reported. In the case of the University an annual permit scheme heavily subsidised car drivers through one annual payment, encouraging individuals to drive rather than to seek alternatives. Replacing such unbalanced incentives presents difficulties for any Travel Planner trying to promote alternatives to the private car, when the proposal is likely to cost individuals more (see Appendix 7). However, without removing these barriers, it is difficult for TPs with only 'soft' measures to achieve set targets.

Government policy was also seen to have a major influence on the success or failure of TPs, with past and contemporary policies often contradicting each other. The examples cited included promoting the DfT 'Smarter Choice' agenda, which includes TPs and/or partnership solutions, but at the same time central government encouraging greater use of the car through road building programmes. At the local level, LAs place great emphasis on target driven TPs in order for organisations to achieve planning consent, but then also push for more parking provision, often against their own parking standards. This was witnessed and recorded within the University, when it was suggested an additional 500 spaces should be created even though the local authority's own parking standards suggested a decrease was more appropriate. This highlights a critical issue that organisational priorities are often highly influenced by both internal and external stakeholders failing to recognise or understand the impacts on transport behaviour that such objective infrastructure projects can have on subjective behaviour (Sloman, 2006) and thus TP targets. This can be reinforced by local politicians' desire to solve on street parking issues within their constituency by suggesting increased parking supply as a solution. Such a position has been proved false within this research with the construction of the University's Park and Ride actually increasing the number of vehicles from students. Empirical data demonstrates an increase from 25 per cent SOV users in 2005 prior to the Park and Ride opening, compared to 34 per cent in 2011 (Figure 6.7). Staff figures have remained relatively static during this period (Figure 6.6), although employees rarely use this particular facility

owing to its marginal location. Failing to connect TP targets to that of car park provision, acts as a major barrier to their successful implementation.

Economic circumstances impacting on businesses and organisations were another major motivation in delivering TP interventions. In the case of Vauxhall, the TP was seen as a potential driver for making economic savings at a time when that organisation was going through a major upheaval, but did not have the management support to deliver them, and as such was dissolved early on in the research. With businesses having to change and evolve their structures within their respective business cycles it was difficult to embed TPs as strategic tools for change due to lack of management sign-up and support. Often TP interventions were seen as something that other organisations should adopt, or that it was the responsibility of other departments within an organisation. There was certainly a view that organisations could 'pass the buck', when it came to tackling local transport related issues.

When considering TPs, both organisational representatives and individuals, portrayed a silo mentality when considering interventions that would necessitate a change in their behaviour. Both cohorts had their own priorities and perceptions of change that led to a lack of individual or cross-departmental engagement in either developing or implementing TPs. If interventions were seen as anti-car through the application of 'sticks', they were difficult to progress. This was a theme observed across the case studies. For example, at Vauxhall, the case for implementing a daily charge was rejected outright by senior management on the basis that it was seen as anti-car (a difficult position for a car manufacturer to promote). Similarly at the University, vested interest groups such as unions and individuals in key positions of influence were opposed to such interventions, citing that any daily charge regime would compound the on street parking issue and therefore should be avoided. Without tackling cheap and heavily subsidised car parking, or promoting a similar subsidy for other modal users, TP targets are unlikely to alter significantly (as is seen with the University modal split figures from 2005-2011). If soft or 'carrot' interventions are proposed, these are seen to be ignored by individuals and organisations, as people are not motivated into having to change their behaviour, without supplementary 'stick' interventions.

There was a view generally that alternatives to the car were often supported by poor quality infrastructure and marketing. Certainly in the cases presented, good quality and a high level of parking supply for car users were always promoted within the case studies to the detriment of other modal users. At the University, it took nearly six years to secure funding for sheltered cycle parking as a cheaper alternative to providing car parking. During the same period, over

£9million was spent on providing increased parking capacity, which again works against the successful delivery of TP interventions and the targets that underpin them. Controlling ever increasing car parking supply, without a proper charge (ideally a daily charge) is a critical success factor for any TP or area wide TP strategy to challenge car use. The impact of such behaviours are also noted and addressed within the DfT's recently published Behavioural Insights Toolkit (2011[b]), which proposes Personal Travel Planning as one means of addressing these individual concerns.

In terms of communicating and marketing interventions, it was clear from the quantitative commuter survey data that organisations needed to be more proactive and not just reactive to providing local transport solutions. At the University, employees were more aware than students of environmental issues, but only a minority of employees and students were aware that the organisation had a TP. This indicates that greater marketing and awareness of specific interventions is required. Although it should be noted, that in both cases significant numbers of staff and students (32 and 65 per cent respectively), used alternatives to SOVs, suggesting some awareness of specific interventions, rather than the TP itself. In terms of the QP, an array of marketing material has been developed (see Appendix 5) relating to the interventions being developed in that location. It is too early to quantify the success of such interventions, but with proposed evaluation of the LSTF that has been secured, there is the potential to develop monitoring and evaluation methods in order to provide greater certainty of the partnership's success.

Funding for local public transport solutions was in issue raised throughout the research. In the University's case, no specific funding was made available for interventions with the TP coordinator/researcher having to develop external partnership based funding opportunities. This culminated in the QP securing phase one and two LSTF. The University has the potential to benefit from such funding, as a direct result of interventions developed in the QP being taken up by users of the University. An example of this cross-pollination of TP interventions between case studies was the introduction of a multi-operator ticket in St Albans, benefitting the University. Funding has been made available to research cashless and/or smart ticketing as a result of phase two LSTF funding. This phase also provides a future opportunity for integrating this and other operator ticket offers across an area, to the benefit of the QP and University TP (and other organisations in the immediate Hertfordshire vicinity). This joint partnership approach to applying for and securing funding, began to unlock the barrier to delivering interventions, which was highlighted through the participant interviews.

8.2   Critical Realist Approach and Reflection

The critical realist multi methods approach adopted within the thesis provides a unique perspective of organisational TPs, which offers a real and distinctive contribution to knowledge through combining comparative case study settings within a reflective, embedded narrative. Researching a TP in detail involves engaging a diverse set of stakeholders, situations and events. Therefore a case study approach was selected in order to provide an embedded setting for the thesis. Making use of wider cases provided the basis for a comparative study. An evaluation framework has been developed (Table 3.1) to provide an essential link between the mixed methodologies adopted in the research as outlined by Pawson (2000). This provided the thesis with a generic reporting framework to outline the diverse and complex social strata to better understand the complex issues involved in developing and implementing TPs. This framework also provided the tool to build patterns, categories and themes from a 'bottom up' perspective for reporting. This flexible reporting process reflected the nature of the emergent research approach. With multiple processes, participants as well as the researcher's own interpretations, the thesis has had to report multiple views of events, motivations and attempts to outline complex interconnections and actions. Developing and applying the evaluation framework has allowed for a structured approach to reporting.

The critical realist approach was adopted as a direct result of using a triangulated approach to data collection. The mixed type of data collected using both quantitative and qualitative approaches lent itself to the critical realist approach for the reporting of themed findings. A critical realist attempts to identify and report the missing links observed between empirical research and the complex social setting in which data is collected. This thesis presents the key issues that underpin TPs using an array of sources, in order to build a bottom up view of the phenomena.

By the flexible and iterative nature of the research, work has had to be revisable in the light of changes to the process and experiences of the embedded researcher within the real world setting. The critical realist approach requires that a lens be used to construct a view of the constantly changing society and economy that a travel planner must work within. This means that the TP by necessity must be flexible enough in its structure, to be able to deconstruct and then reconstruct explanations and insights from this process. For example, breaking down mixed method data into component parts and themes, and from this construct meaning within the context of the constant changes. This process of analysis has been applied in order to obtain knowledge as close to reality as possible in order for this research to achieve its aim and objectives. Adopting this critical realist approach using a case study has led to the construction

of a reporting evaluation matrix (the lens). This aids in understanding the complexity of issues that underpin the relative success or indeed failure of the TPs as individual or organisational behavioural change tools. Applying the critical realist approach was most suited to the embedded nature adopted, in that it provided the flexibility for researching the phenomena (of TPs) using different data collection methods, and then feeding these into the reporting matrix. The investigation of TPs using solely empirically based research approaches (as opposed to a flexible, iterative approach) would have rendered it difficult to explore the multiple factors that underpin TPs. The lens itself was iteratively developed using a matrix to encapsulate the structuring of key themes and ideas to have emerged during the analysis. The embedded reflectivity within the research has provided additional validation of the critical realist process through the eyes of a practitioner, by adding in comment and reflection of the issues, as they impacted on the research. Without this added reflective element, real life impacts of events and issues experience by a TP coordinator would have been overlooked and not reported. This unique perspective adds richness and depth to the analysis that otherwise would not have been captured. The lens has been invaluable in focusing the presentation of the main themes, issues and processes to have emerged from the research.

8.3   Achieving the Research Aim and Objectives

Applied research aims to discover solutions to specific problems with an explanation of what is happening. This approach was adopted with the aim of furthering the understanding of the complexity in delivering TPs through an embedded and emergent approach. Specific objectives of the research were to undertake a review of transport related data using the collection and reporting of employee modal split data alongside that of additional qualitative data sources analysis. This approach has lent itself to developing an evaluation matrix in order to understand better and report phenomena. Developing this matrix has been useful in providing both a structure for reporting the evidence, but also in demonstrating to whom, what, when and how TPs (and latterly QPs) are best suited. In addition, the identification of CSF and their related KPI have been outlined and connections demonstrated as to the motivations and polices that underpin them. In this regard, because of the complex nature in obtaining and then presenting mixed methods data, this approach has been effective in drawing out the key contextual drivers for TP, the appropriate mechanisms for their delivery, and the reporting of the outcomes achieved from this research process. This embedded, critical approach has therefore contributed to the original aim of the research to understand more usefully the processes that underpin TP development within large organisations.

With the research spanning a number of years, modal split data over a nine-year period has been able to be utilised and reported. These empirical data indicate that over this period, the University has made some considerable impacts on reducing the number of its employees that commute by car (a reduction of 17 per cent), less so for students, although quantifying this impact in respect to the TP is difficult from such data sets. In this sense, these quantitative data collection tools are limited in their scope for allocating cause and effect when considering commuter behaviour. This area therefore warrants further research.

The first research objective was to determine the alternative options in developing and implementing TPs. The analysis of data determined that for both organisational cases, embedding a TP within EMS (or wider CSR) was the most appropriate option. The EMS provides a structure against which SMART TP targets can be set, monitored and reported to both key internal and external stakeholder groups. In terms of the QP that emerged from the research process, owing to its complex multi-stakeholder and partnership structure, an EMS was not appropriate for this model. Using the powers set out in the revised Transport Act (2008), a more appropriate tool was to establish the partnership as a voluntary QP. This voluntary structure resulted from the composition of the initial primary partners. Operators involved in the partnership were not used to working in a statutory environment that would not have provided the flexibility to develop ideas and solutions for the locality that a non-statutory partnership necessitated. Forcing change on operators would not have provided the environment for cooperation that has thus far proved successful to developing the QP that has ultimately emerged through this embedded process. The administrative structures for the agreed model eventually adopted were written into a MoU, which determined the key drivers through aims and objectives set out by the primary partners.

The second research objective had been to identify KPI and CSFs for a specific travel plan (namely the University of Hertfordshire). CSFs were identified primarily within the delivery mechanisms, as TP and QP coordinators within the University (and initially Vauxhall) and Network St Albans respectively. Without these coordinating roles, work and agreed actions from the working groups developed by each of the respective cases would be unlikely to have achieved set aims and objectives. This is because without the delivery mechanism that these respective roles provided, there would not have been the leadership or support to push agreed actions through to their outcome delivery (i.e. without ownership, actions are easily ignored or responsibility placed either on other organisations or departments as the case may be).

The research pointed to EMS (or CSR) as CSF mechanisms and significantly the continual improvements structures for reporting KPIs. For the QP the setting up of the partnership within

a legal framework was a CSF in its initial success. For each location a number of KPIs were identified, notably in the reporting outcomes through modal split targets for the organisational TP, with its knock on effect in reducing parking demand, and thus achieving planning consent requirements. For the QP, the KPI was that of having a MoU. This was essential to setting out the aims and objectives of the partnership for achieving broader environmental, social as well as economic KPI (as set out in Table 3.1).

These CSFs and KPIs provide the initial framework against which both TP and QP will be reported as success or failures. In light of the TP targets for the University being reached for 2003/8 for staff (not students), this could be reported as a success. However, as this thesis demonstrates (see Section 6.3), TP targets have to be set appropriately. Through the revision of its TP targets for the 2008/13 period, these are unlikely to be achieved for either demographic, and therefore the interventions currently being implemented under its TP could prove unsuccessful. In this particular case, without tackling the barrier to implementing a proper 'stick' through daily car park charges, TP interventions are unlikely to deliver on set targets. For the QP, individual, or indeed a package of interventions needs to be properly measured, prior to determining the success in achieving desired KPIs. Through securing phase two LSTF, the potential to develop appropriate and robust empirical data sets to assess whether economic and environmental benefits are indeed delivered, provides a useful opportunity in assessing the success of future KPIs. Assessing the impact of individual interventions is difficult in both cases, and therefore is beyond the reporting mechanism of this thesis, and therefore also warrants further investigation.

The research has led to a number of TP/QP KPIs being developed that have the potential to make an assessment of their relative success. In the case of the University, TP targets are formally set within all planning requirements, and a biennial reporting mechanism agreed. The extent to which targets are delivered will continue to be questionable until such a time that planning assessment restricts supply of car parking. The implications of the TP targets not being met are at present unknown, but currently these are certainly to the detriment of providing real and viable interventions for non-car users. The introduction of CRC Scope 1-2 emissions into the reporting mechanisms of the University's EMS provide an opportunity to raise the profile of TPs within large organisations, but until commuter travel is brought into the reporting mechanism, the impact of CRC on achieving modal split will be limited.

The third research objective had been to assess the implementation of individual interventions and then identify factors that affected their development within the QP model. When considering the first element, being able to drilldown specifically to report the effect on

behavioural change impacting on targets, is at this stage not possible. Without implementing expensive before and after control surveys, using personalised travel data collection methods means that this aim was beyond the scope for reporting within this thesis. This element certainly warrants further research work in this field.

The second element of this aim, identifying issues that affected the development of interventions within a wider QP context, has been partially completed through the embedded process that the researcher engaged in. The creation of a delivery MoU framework, QP coordinators and a reporting mechanism via the Board has provided the platform for assessing the success of the parcel of interventions, at least at a later stage. Having attracted LSTF funding that requires an element of evaluation and monitoring of interventions, the QP now provides that structure against which this aim can be achieved to a greater extent, than achieved at this stage in this thesis.

As of November 2012, target setting for the QP is still in its infancy, and is based on broader socio-economic and environmental KPIs. Whilst the research has not been able successfully to implement a set of operational KPIs, the overall QP structure for setting area wide KPIs is now at least provided as a result of this work. Indeed, if economic growth, social impacts and environmental benefits from implementing a set of interventions across a district such as St Albans, these will need to be properly evaluated using appropriate data collection tools relating to economic, social demographic and environmental considerations. To date, these have been far too expensive and beyond the budget in which this research was based, and as such this has limited the research to localised commuter surveys, that would be better served by resource intensive personalised travel planning for setting KPIs and assessing their overall impact.

8.5   Successes and Future of Travel Plans

The overall aim of this thesis was to investigate the development and implementation process of a TP within the context of a large organisation. Clearly part of this aim is to evaluate the success of this process. This section attempts to do this.

If the initial success reported within this thesis is continued into the future, in terms of securing funding (particularly LSTF) and in continuing to develop and then deliver a variety of smarter choice interventions, the QP has the potential to provide a real and viable alternative from which employees within districts, or even counties could benefit. This would have the added benefit for large organisations within these areas being able to potentially achieve their modal split

targets that many (including the case of the University) are failing to deliver (as outlined by Rye *et al.*, 2008; Roby, 2008).

In terms of progressing development of TPs within organisations, setting their reporting structures within EMS is crucial in providing the basis for reporting their relative success or failure (in terms of achieving their targets). Whilst achieving their TP targets is at this stage questionable, researching the University TP over an extended period has provided useful insights. Achieving the outcome for embedding the TP within the EMS has provided the organisation with the opportunity to position itself as an environmental champion within its local community, which has primarily been built on evolving the UNO Bus network and its involvement in the QP. As TP Coordinator, the art of compromise, understanding a holistic approach to developing TPs beyond individual organisations, through developing stakeholder engagement and local partnership building have all been CSFs in progressing the work. These have all been important lessons learned from the embedded approach adopted.

The success of TPs in achieving their aims for reducing the impact of SOV use and promoting integrated alternatives in order to reach their modal split targets varies greatly by organisation and by sector (as outlined by Whitelegg, 2011; Roby, 2008; Cairns *et al.*, 2008). Recently the impacts of social media travel campaigns have been highlighted as key to interventions achieving behavioural change (Davies, 2012). Recent work on delivering government policy through stakeholder engagement, also indicate this as a way forward to achieving greater choice for all modal users within urban settings (Baumann & White, 2012).

In terms of their impact at the macro level, particularly over time, this is greatly limited by the localised sample commuter surveys analysis against which targets are reported. Professional travel planners aim to collate data that accurately assesses the impact of individual TPs on the wider road network. At present this is most usefully achieved through the publication of LTP data (usually undertaken every two to three year, depending on the authority). Whilst there has been a slight decrease in SOV use throughout the UK and in Hertfordshire since the later part of the last decade, assessing the extent to which TPs have contributed to this recent trend is uncertain. Wider economic issues, such as the downturn are likely to have some influence on these figures. One of the assessment tools likely to provide improved understanding on the impacts of TPs, or other interventionist approaches such as the QP, is the use of personalised travel planning for detailed assessment of before and after interventions, in terms of their impact on behaviour change, and linked to this their associated carbon emissions. Such detailed, and resource intensive assessments allow the professional travel planner/researcher to sample a

population by demographic background (age, gender, socio economic status), thus allowing a greater understanding of the market segmentation that specific interventions can have impact upon. At present, the tools of the organisational travel planner are often restricted to local sample commuter surveys, which provide indicative trends, but not a detailed understanding of the issues that impact on the TPs targets.

The limited success of the case study TP within this thesis in terms of it achieving its targets can be attributed to varying organisational and individual barriers to TPs. These are outline throughout the thesis, and have been focused through applying the critical realist lens. What the embedded aspect of this thesis has helped achieve, is begin to draw out and to understand better the multitude of motivations and varied factors that have ultimately restricted the impact that behavioural change interventions, both organisational and over larger geographical areas, can impact on. The research outcomes that have been achieved should in the future be applied to bridging the gap between applied and academic research approaches, such as the embedded approach adopted in this thesis.

The overall aim of this thesis has been met, albeit with one objective only partially so. In order to achieve meet this fully, further work is needed. Specifically there needs to be the development of evaluative and monitoring frameworks through using case studies such as the QP with data collection tools, like that of personalised travel planning, whilst also improving on existing LTP travel survey data.

8.6   Recent Changes and Future Work

With recent success in Hertfordshire regarding LSTF, there are new opportunities to progress further the research reported in this thesis. The economic case for the proposed package of interventions (already being developed in St Albans under the auspices of the QP), suggests that the package being proposed for the two neighbouring districts in support of the Network St Albans model, has the potential to reduce significantly traffic congestion and carbon emissions across this bid area. The bid outline suggests that economic growth will be delivered primarily through traffic reduction benefits to business and freight, resulting from the forecast removal of over 5,500 trips by car each day in 2015, rising to nearly 6,000 by 2030 (HCC, 2011[b]). The reduction in car trips has the potential to deliver a reduction in carbon of more than 18,000 tonnes over the 30-year appraisal period. The modelled economic benefits have a net present value of £116m. The package delivers a strong benefit-cost ratio of 6.6:1 (a BCR of above 2:1 is considered to represent 'high' value for money) (*ibid.*). The package also levers an additional £3.4m of local contributions, primarily from local operators. For these projections to be

properly evaluated and monitored, the large bids are expected to provide case studies relevant to their work. The QP has been provided as this case study for evaluating the economic (GDP) benefits and environmental (carbon) benefits.

In support of this bid, an additional tool, outlined previously within the thesis is the publication of the DfT Behavioural Insights Toolkit (DfT, 2011[b]). The toolkit draws on insights from behavioural theory in order to provide guidance on designing transport initiatives that enable behavioural choices that support policy objectives. The approach identifies that policy-making involves dealing with human behaviour, and that relatively small-scale measures or 'nudges' (i.e. through minor infrastructure, legislation, financial incentives or information provision such as smarter choices (Cairns *et al.,* 2004)) can achieve modal shift through travel behaviour change. This is the approach already being adopted by the QP prior to the publication of the toolkit. This thesis has therefore contributed to the current local transport agenda, under the auspices of a smarter choice approach, making use of LSTF.

In light of the attraction of recent LSTF resources, and with the publication of the DfT behavioural tool kit, there is the possibility for elements of the thesis (i.e. the QP) to apply for collaborative Research Council funding with that of other large successful LSTF bids that involve HEIs. This provides further opportunities for in depth research into smarter choice interventions across and between larger spatial locations. This thesis has sought to provide the background to undertake an applied and emergent approach, which has ultimately positioned itself at the forefront for researching alternative local transport intervention agenda.

In terms of the latest government transport policy drivers, at a meeting of the Universities Transport Study Group (UTSG) in November 2012, the focus was towards the impact of bio-fuel energy, transport's wider impact on climate change, adaption of local transport networks and their resilience as well as local air quality issues. Economic growth and how local transport can drive this is also on the agenda, particularly through using existing infrastructure. From the social perspective, the impact of TPs on multi-modal behaviour and linking this to social media are still seen as important mechanisms to drive government policy, with a particular focus on demographics and demand for electric vehicles and car clubs within local communities. Linking the LSTF evaluation and monitoring to the successful large bids, was also raised as an important aspect of recent DfT policy. To illustrate this, at a specific level the outcome of the implementation of a multi-operator ticket in the St Albans QP (and key aspect of the recommendations of this research) has contributed to current guidance by the DfT (DfT, 2012). Multi-operator and fare integration has been proved to increase ridership in the international

arena (Sharaby *et al.,* 2012), and therefore has the potential to work to increase ridership in the UK if such policy drivers are able to be delivered.

From the academic aspect, the Royal Geographical Society (with the Institute of British Geographers) 2012 Conference had a focus on peak oil and its various implications. A follow up event held with Transport Scotland, aimed at 'bridging the gap' between the policy and academic field, where the St Albans case study was reported, ideally placed this research in meeting the aim of this event. At the European Transport Conference in Glasgow 2012, a main thread through the array of issues presented, was that of the extent to which electric vehicles uptake in the UK was being achieved, and how the apparent low uptake will impact on the government's aim to reduce car related CO_2.

These latest policy drivers, academic research and conference proceedings, point to the fact that this research is firmly up to date in terms of addressing government policy drivers, whilst at the same time contributing new research perspectives, insights and understanding of local TPs and QPs within the wider policy and academic agenda. In terms of the thesis contribution, first adopting an embedded research approach has added richness and depth to the process of reporting the success of organisational TPs. Secondly, the use of a critical realist approach to reporting and evaluating the success and failures of TPs using a lens to provide detailed focus on the CSFs / KPIs and the motivations and polices that drive them, is unique in its application. Finally, the development of the St Albans QP, as an outcome of this research, and placing this within current macro-scale government funding, as well as working towards developing improved metrics for the evaluation and monitoring for future success, is a key outcome for the research process adopted. If the model developed, and reported within this thesis is proved successful as a working and applied QP, then it provides the opportunity to extend into other counties and local authorities, and thus provide the platform for large organisations (both public and private sector) as well as SMEs to develop their own TP within similar structures.

Appendices

Appendix 1   University of Hertfordshire Commuter Survey
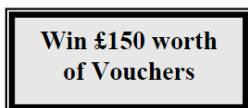
Win £150 worth of Vouchers	**University of Hertfordshire** **UNIVERSITY TRAVEL SURVEY 2011**	U H University of Hertfordshire

The University of Hertfordshire is committed to reducing the proportion of staff travelling alone to its campuses by car and aims to encourage the use of alternatives such as public transport, walking, cycling and car sharing. It is essential that we look at how staff travel to the University and assess views about transport issues. The questionnaire takes about 10 minutes to complete, therefore we would be grateful if you could take this time in order to help to inform future travel strategy.

All information will be stored on a password protected database and will be treated in the strictest confidence. To enter the **prize draw for £150 worth of vouchers** for a shop of your choice, please complete the survey and fill in your details at the end.
Please return your completed questionnaire to either your line manager or through internal mail to Scott Copsey, Care of Environment Team.
Thank you for your co-operation

Your Travel

1) What is your primary (usual) form of transport to the University? (Please select **one**)

☐ Car (driver, on own)
☐ Car Share (driver or passenger)
☐ Bus
☐ Bicycle
☐ Walking
☐ Train (+ other from station to uni)
☐ Motorcycle
☐ Park & Ride
☐ Other (please specify)

....

2) How long do you spend travelling **to** the University each day using your primary form of transport?

..............minutes

3) How many miles is it between your home and the University (**one** way)?

..............miles

4) Which if any, of the following do you use as secondary forms of transport to travel to the University and how often? (Please select **all** that apply)

	1-2 times a week	1-2 times a month
Car (driver, on own)	☐	☐
Car Share (driver or passenger)	☐	☐
Bus	☐	☐
Bicycle	☐	☐
Walking	☐	☐
Train (+other from station to uni)	☐	☐
Motorcycle	☐	☐
Park & Ride	☐	☐
Don't use secondary form	☐	☐
Other (please specify)…………	☐	☐

....

If you never commute by car, please go to Question 8

Car Travel

5) If you ever travel to work by car where do you usually park? (Please select **one**)

☐ Campus car park
☐ Park & Ride (Southway Road, Junction 2)
☐ Park on local street
☐ Other (please specify)

....

6) If your primary travel is by car, what measures do you think would help you to reduce your use of the car for your commute to and from the University? (Please select **all** that apply)

☐ A car sharing scheme (help finding partners)

☐ Pool cars/car club for business travel use

☐ Better public transport (e.g. frequency, network coverage)

☐ Better public transport information (e.g. timetables, discount tickets, real time information at bus stops)

☐ More cycle paths

☐ Better cycle facilities (e.g. showers, lockers, covered cycle racks)

☐ Cycle safety training

☐ Would cycle or walk in better weather (e.g. during summer)

☐ Encouragement to work from home

☐ Financial incentives for other forms of transport

☐ None
☐ Other (please specify)………………………..

....

7) What are your main reasons for using a car to commute to the University? (Please select **all** that apply)

- ☐ Comfort
- ☐ Personal Safety
- ☐ No alternative available
- ☐ Cost of alternatives
- ☐ Child care responsibility
- ☐ Need car for business trips during working day
- ☐ Work late
- ☐ Personal Trips
- ☐ Status
- ☐ Other…………………………………………...

Car Sharing

8) How often do you car share to travel to the University? (Please select **one**)

- ☐ 4-5 times a week (go to question 10a)
- ☐ 2-3 times a week (go to question 10a)
- ☐ 1 or less times a week (go to question 10a)
- ☐ Never (go to question 9)

9) If never, would you be prepared to car share?

- ☐ Yes (go to question 10a)
- ☐ No (please specify why, go to question 11)

…………………………………………………….

10a) How important would the following be in encouraging you to car share? (Please select **all** that apply)

- ☐ Help find car share partners with similar hours
- ☐ Preferential car sharing spaces
- ☐ Free taxi home if let down by driver
- ☐ Does not apply as use other modes than the car
- ☐ Other (please specify)………………………

…………………………………………………….

10b) Are you aware that the University has a car share database that allows potential sharers to find partners?

- ☐ Yes
- ☐ No

Public Transport

11) Is there a bus service within 500 metres of your home that travels to the University? (Please select **one**)

- ☐ Yes
- ☐ No
- ☐ Don't know

12) What changes would most encourage you to use the bus to travel to and from the University? (Please select **all** that apply)

- ☐ More frequent services
- ☐ Express Services
- ☐ Improved security
- ☐ Improved shelters
- ☐ Cleaner and more comfortable buses
- ☐ More reliable services
- ☐ More timetable & route information on bus services
- ☐ More conveniently located bus stops
- ☐ Better connections
- ☐ Discount tickets and annual passes
- ☐ Through ticketing
- ☐ Does not apply as using bus already
- ☐ Other (Please specify)

……………………………………………………..

13) Would you like to know what time your bus will arrive at the bus stop before you get there?

- ☐ Yes
- ☐ No

14) How would you like to obtain up to date information on bus services? (Please select **all** that apply)

- ☐ At the bus stop
- ☐ Mobile phone
- ☐ Internet

15) Do you know what Real-Time Information is?

- ☐ Yes
- ☐ No (if no, please go to question 18a)

16) Would you use Real-Time Information if you had to pay to use it via a mobile phone?

- ☐ Yes
- ☐ No (if no, please go to question 18a)

17) If yes, how much would you be willing to pay to use it? (Please select **one**)

☐ 5 pence

☐ 10 pence

☐ 20 pence

☐ Other (please specify)………………………..

Cycling

18a) Are you aware that UH staff are entitled to a 10% discount on cycles and equipment from a Hertfordshire Supplier?

☐ Yes
☐ No

18b) Do you think the University should provide tax free bicycles through a staff salary sacrifice system?

☐ Yes
☐ No

19a) Are you aware that the University has a staff cycle pool available for all staff to use?

☐ Yes
☐ No

19b) Are you aware that staff can claim a 12 pence per mile cycle rate for business travel?

☐ Yes
☐ No

Park & Ride/Intercampus Shuttle

20) How often do you use the University's New Park & Ride facility on Southway Road? (Junction 2) (Please select **one**)

☐ Less than once a week

☐ Once a week

☐ Twice a week

☐ 3- 4 times a week

☐ Every day you drive to University by car

☐ Never (If never, please state why below and then please go to question 24)

…………………………………………………………

21) How do you rate the quality of the New Park & Ride facility? (i.e. Parking/Bus shelter) (Please select **one**)

☐ Very Good

☐ Above average

☐ Below average

☐ Poor

22) How do you rate the quality of the Shuttle Service between the Park & Ride and University? (Please select **one**)

☐ Very Good

☐ Above average

☐ Below average

☐ Poor

23) What are the main reasons for you using the New Park & Ride? (Please select **all** that apply)

☐ It is close to University and convenient

☐ Stops me parking on the local streets

☐ It is cheaper than on campus parking

☐ Cannot park on campus (therefore don't have other choice)

☐ Shuttle is quick, regular and reliable

☐ Other (Please specify)………………………..

………………………………………………………

General

24) Did you know that there is a dedicated travel web site and e-mail service for the University?

☐ Yes
☐ No

25) Did you know that the University has a Travel Plan and a Full Time Travel Plan Coordinator?

☐ Yes
☐ No

26) If you drive to the University by car, what is the size and type of your engine? (Please select **one**)

☐ Diesel Large (1.6 litres and over)

☐ Diesel Small (Below 1.6 litres)

☐ LPG (Liquid Petroleum Gas)

☐ Petrol Large (over 1.6 litres)

☐ Petrol Medium (1.2 litres to 1.6 litres)

☐ Petrol Small (below 1.2 litres)

☐ Other………………………………………….

27a) What year was your car registered?

☐ Before 2001 (go to question 28)

☐ After 2001 (go to question 27b)

27b) If registered after 2001, please select your tax band? (Please select **one**)

☐ A ☐ E

☐ B ☐ F

☐ C ☐ G

☐ D

(This will allow us to accurately calculate carbon emission's from cars)

About Yourself

28) Please enter your home post code (or at least the first element e.g. AL10)

………………………………………………………..

29) Which campus do you usually work at? (Please select **one**)

☐ College Lane
☐ de Havilland
☐ St Albans
☐ Zenith/Titan
☐ Meridian House
☐ Fielder Centre
☐ Bayfordbury

30) Which faculty or department do you work for? (Please select **one**)

☐ Aerospace, Automotive & Design Engineering
☐ Art and Design
☐ Business
☐ Combined Studies
☐ Computer Science
☐ Continuing & Professional Development
☐ Continuing Education & Partnerships Edu'n
☐ Electronic, Communication & Electrical Engineering
☐ Hertfordshire Higher Education Humanities
☐ Law
☐ Life Sciences
☐ Music
☐ Nursing & Midwifery
☐ Paramedic Sciences, Physiotherapy & Radiography
☐ Physics, Astronomy & Mathematics
☐ Psychology
☐ Social, Health & Community Studies
☐ Other (please specify)………………………
………………………………………………………..

31) What is your occupation? (Please select **one**)

☐ Management
☐ Lecturer
☐ Administration
☐ Research Staff
☐ Retail/Service
☐ Security
☐ Technical
☐ Other (please specify)………………………..

32) What gender are you?

☐ Male
☐ Female

33) How old are you? (Please select an age range)

☐ Under 20
☐ 21 - 30
☐ 31 - 40
☐ 41 - 50
☐ 51 - 60
☐ Over 60

34) Do you have a disability or long term medical condition that restricts how you travel to the University?

☐ No
☐ Yes

35) Do you work Full or Part Time?

☐ Full Time
☐ Part Time

36) How do you rate the University of Hertfordshire's overall travel and transport offering?

☐ Very Good
☐ Above average
☐ Below average
☐ Poor

Snap Shot Question

37) How did you travel to University the week beginning 21st February 2011?

	Mon	Tue	Wed	Thu	Fri
Car (driver, on own)	☐	☐	☐	☐	☐
Car share (driver or passenger)	☐	☐	☐	☐	☐
Bus	☐	☐	☐	☐	☐
Bicycle	☐	☐	☐	☐	☐
Walked	☐	☐	☐	☐	☐
Train (+ other from station to uni)	☐	☐	☐	☐	☐
Motorcycle	☐	☐	☐	☐	☐
Park and Ride	☐	☐	☐	☐	☐
Worked from home	☐	☐	☐	☐	☐
Worked elsewhere	☐	☐	☐	☐	☐
Work part time	☐	☐	☐	☐	☐
Other (please specify)…………………	☐	☐	☐	☐	☐

38) Do you have any comments or suggestions about your travel to and from the University?

Thank you for your time and effort in completing this questionnaire.
Please fill in your details if you wish to be entered into the prize draw.

Name: (please print)……………………………….

E-mail: (please print)…………………………………

Closure Date for Prize Draw 02/04/11

Please return to your **line manager** or to
Scott Copsey, **Care of Health, Safety and Environment**

Appendix 2   St Albans Commuter Survey

ST ALBANS TRAVEL SURVEY

A chance to win £200 of gift vouchers
to spend on a break at Sopwell House Hotel (St Albans) by simply filling out
this questionnaire, to voice your transport concerns for St Albans!!!!

St Albans City & District Council are interested in the travel experience of workers commuting into the city. Traffic issues and congestion as well as broader environmental concerns from the impact of transport are of concern to the council, as well as the local business community and residents. As part of a joint partnership between St Albans City & District Council and the University of Hertfordshire (facilitated through the Local Strategic Partnership, a public, private, voluntary and community organisation), a project aimed at assessing the travelling habits and experience of commuters to the city is being conducted. The results from the study will be used to inform future transport planning within the area, benefiting the city centre as a whole.

Your answers will be treated with the strictest of confidence, and stored in a secure database. The questionnaire will take a maximum of 10 minutes to complete. You will not be contacted or receive any unsolicited mail as a result of taking part in this survey. You are not required to provide any personal details if you do not wish to.

If you wish to be entered into the prize draw we will require your full name and a contact telephone number for yourself (in the space provided on the last page) and that you have filled out the questionnaire in full.

1) What is the full name of the company which you work for?
....

Your Travel

2) What is your primary (usual) form of transport when travelling to work?
- ☐ Car - (as driver, on own)
- ☐ Car share - (as driver/passenger)
- ☐ Train
- ☐ Bus
- ☐ Bicycle
- ☐ Motorcycle
- ☐ Walking
- ☐ Work from home
- ☐ Other

3) How long does your journey to work take in minutes (one way)
Minutes...

4) How many miles is your journey to work? (one way)
Miles...

5) On which days do you commute to St Albans?
- ☐ Monday
- ☐ Tuesday
- ☐ Wednesday
- ☐ Thursday
- ☐ Friday
- ☐ Saturday
- ☐ Sunday

Your Car Travel

If you never Travel to work by car please go straight to question 11

6) What are the main reasons for you to travel to work by car? (Please tick up to 4 boxes)
- ☐ Comfort
- ☐ Personal safety
- ☐ No suitable alternative available
- ☐ Child or person caring responsibilities
- ☐ The prohibitive cost of alternative transport forms
- ☐ Late or antisocial working hours
- ☐ Health reasons or a disability
- ☐ Personal trips during working hours throughout the day
- ☐ Status
- ☐ Other (please specify)...
....
....

7) Where do you usually park your car in St Albans?
- ☐ On the road with parking restrictions
- ☐ Drovers Way
- ☐ St Albans City Station Car Park
- ☐ The Maltings
- ☐ Westminster Lodge
- ☐ A Private Car Park
- ☐ Other (please specify)...
....
....

Car Share

8) How often do you car share for your journey to work? (As passenger or driver)
- ☐ Never
- ☐ Very occasionally (Go to Question 10)
- ☐ Up to once a week (Go to Question 10)
- ☐ Once to three times a week (Go to Question 10)
- ☐ More than three times a week (Go to Question 10)

9) If you answered never to the previous question, would you consider car-sharing as a travel option for yourself in the future?
- ☐ Yes
- ☐ Possibly
- ☐ No
- ☐ Don't know

10) Which of the following criteria would encourage you or others to car share more rather than travelling in a single occupancy car, to travel to work?
(Please tick up to 3 boxes)
- ☐ Assistance in finding suitable car share partners
- ☐ Preferential parking spaces for car sharers
- ☐ Financial incentives
- ☐ Guaranteed lift or taxi home in the event of unforeseen circumstances
- ☐ This does not apply to me as I already use alternative transport modes other than the private car or car sharing
- ☐ None of the above
- ☐ Other (please specify)..

Public Transport
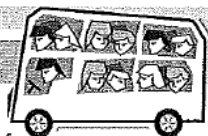
11) Is there a bus service operating within 500 metres of your home that allows you to travel easily to your workplace?
- ☐ Yes
- ☐ No
- ☐ Don't know

12) What changes do you think would most encourage you to use public transport more frequently to commute?
(Please tick up to 4 boxes)
- ☐ More frequent services
- ☐ More direct routes
- ☐ Discounted rail/bus fares
- ☐ Dedicated bus lanes
- ☐ Express services
- ☐ More accessible public transport information services
- ☐ Improved security
- ☐ Improved shelters/station facilities
- ☐ Improved reliability
- ☐ More conveniently located bus stops
- ☐ Improved and extended rail links

- ☐ An integrated travel card that can be used on all forms of public transport on all networks (like a London Oyster card)
- ☐ This question does not apply to me as I already frequently use public transport
- ☐ None of the above
- ☐ Other (please specify)..

Cycling & Walking

13) Which of the following changes would most encourage you to cycle to work?
(Please tick up to 3 boxes)
- ☐ Improved bicycle parking facilities
- ☐ More cycle routes that are more conveniently sited
- ☐ Improved changing/showering and storage facilities at your workplace
- ☐ Discounted tax schemes for bicycle and equipment purchase
- ☐ Financial incentives
- ☐ Bicycle loan schemes within the workplace
- ☐ None of the above
- ☐ Other (please specify)..

14) Which of the following changes would encourage you to walk to work more often?
(Please tick up to 4 boxes)
- ☐ Greater priority given to pedestrians
- ☐ Better lighting
- ☐ Better security
- ☐ A walk to work scheme
- ☐ Information of walking routes
- ☐ Financial incentives
- ☐ Information regarding the health benefits of walking
- ☐ This question does not apply to me as I frequently walk to work, where possible
- ☐ None of the above
- ☐ Other (please specify)..

Your Opinions

15) If you had to commute to work tomorrow without the use of a private vehicle (i.e. car/motorbike), which alternative transport would you choose?
- ☐ Bus
- ☐ Taxi
- ☐ Walk
- ☐ Train
- ☐ Cycle
- ☐ Lift from another person/colleague
- ☐ There would be no feasible way for me to commute as there is no public transport network near enough and I live too far away to walk or cycle
- ☐ Other (please specify)..

16) How long do you estimate your journey time would be whilst commuting by the method you chose in the previous question?
☐ (Minutes)..

17) If your job allowed you to, would you be willing to work from home on occasions?
☐ Yes
☐ No
☐ This would never be possible in my job role
☐ Don't know

Transport in St Albans

18) What do you think are the most important transport issues facing St Albans? (Please tick up to 3 boxes)
☐ Car parking provision
☐ The location of parking facilities
☐ Lack of effective parking enforcement
☐ Too much parking enforcement
☐ Traffic congestion
☐ Inadequate public transport provision
☐ Poor Air quality
☐ Road safety issues
Additional comments..
....
....

19) Which of the following do you think would have the greatest impact on changing your commuting habits in the future? (Please tick up to 4 boxes)
☐ Shared company vehicles provided by your employers
☐ The ability to work from home
☐ Financial incentives to use alternative transport methods (such as train/bus/walk & cycling)
☐ Discounted or subsidised public transport fares
☐ Alterations to the routes of public transport, making it more suitable for yourself to use
☐ The price of fuel
☐ Car sharing schemes
☐ Park and ride schemes
☐ More cycle route provision
☐ None of the above
☐ Other (please specify)..
..

20) Do you think the introduction of staggered opening times for businesses, offices and schools within the city centre could be a viable option for reducing traffic congestion?
☐ Yes
☐ No
☐ Don't know
Additional comments..
....
....

21) Would you be in favour of restrictions limiting the number of vehicles permitted within the city centre area to improve air quality/reduce traffic congestion?
☐ Yes
☐ No
☐ Don't know
Additional comments..
....
....

22) Would you be in favour of any form of pedestrianisation of St Peters Street?
☐ Yes
☐ No
☐ Don't know
Additional comments..
....
....

23) Would you support restricted access by private vehicles to St Peters Street during busy periods of the day, in order to ease congestion?
☐ Yes
☐ No
☐ Don't know
Additional comments..
....
....

24) If pedestrianisation of St Peters Street were to be introduced, how do you think it should be enforced?
☐ By means of physical barriers on the fringes of the restricted zones
☐ By means of vehicle registration camera recognition to issue retrospective fines
☐ I would not agree with either previous option, as I strongly disagree that access to St Peters street should ever be Restricted
☐ Other (please specify)..
....
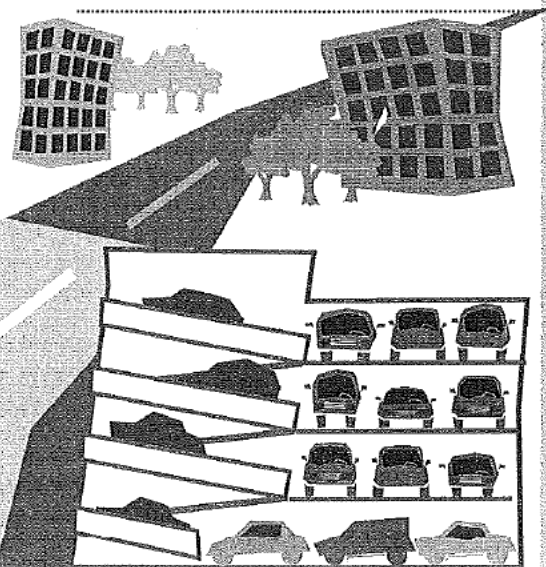
Environmental Issues

25) Do you think that concerns about environmental issues and carbon dioxide emissions could influence your future personal transport choices?
- ☐ Yes
- ☐ No
- ☐ Don't know

26) Whose responsibility do you consider it to be to reduce carbon dioxide emissions that result from the transport sector?
(Please tick up to 3 boxes)
- ☐ You, the individual
- ☐ St Albans City and District Council
- ☐ Hertfordshire County Council
- ☐ Central government
- ☐ International government
- ☐ Individual businesses and organisations
- ☐ No one
Additional comments...
....
....
....

About You

27) What is your home postcode?
....

(Please state your full postcode, if you do not wish to state your full postcode, please just state the first 4 digits, for example AL1-4)

28) What is your Gender?
- ☐ Male
- ☐ Female

29) Could you please indicate your age group?
- ☐ Under 20
- ☐ 20-25
- ☐ 26-35
- ☐ 36-45
- ☐ 46-55
- ☐ 56-65
- ☐ 65+

If you wish to enter the prize draw, please give your name and a contact telephone number, you are not required to give this information if you do not wish to be entered to the draw :

Your Name:...

Contact phone number:...

If you have any issues or opinions that you wish to share regarding transport within St Albans, please use the space provided below:

....
....
....
....
....
....
....
....
....

Please return by Mon 25th February 2008 using the self addressed envelope or alternatively post to the address printed below:

....
....
....
....

Thank you for your time and co-operation

St Albans City & District Council
District Council Offices, St Peter's Street,
St Albans, Herts AL1 3JE
Telephone: 01727 866100
www.stalbans.gov.uk

St Albans
CITY AND DISTRICT

University of Hertfordshire UH

ST ALBANS & DISTRICT LOCAL STRATEGIC PARTNERSHIP

Appendix 3   Semi-Structured Interview Schedule

Research Title: An investigation into the Development and Implementation of a Transport Plan within a company

<u>Interview Schedule for Transport Plan Stakeholders</u>

My name is Scott Copsey, a postgraduate student undertaking research on how transport plan (TP) initiatives are first developed and subsequently implemented within an organisation. The aim of this research is understand the issues that affect TP development, and provide solutions to overcome them. Interviewing internal and external stakeholders involved with TPs is essential to this process.

Information gathered will be used to understand problems encountered when developing initiatives and to understand the extent to which stakeholders impact on given initiatives. This will also be undertaken with local external organisations.

Interviews will be recorded using a tape recorder. All the information collected will be used in the strictest confidence and recorded material will be destroyed at the end of the research project. Interview lengths will vary between stakeholders, although it is expected to take between 20-30 minutes of a participant's time.

Question 1:

Briefly outline your position within the organisation and then can you explain how it is linked to transport planning or related areas?

(i.e., freight, commuter, business travel)

Question 2:

Do you know what a Transport Plan is?

If so can you provide a brief outline of one?

Question 3:

Have you been involved with any past, current or future transport related initiatives that have been or will be implemented within the organisation?

Question 4:

If so can you firstly:

list each of them
briefly explain the background to each individually
then provide some background to why they were developed?

Starting with

Past Initiatives:

Current:

Future: if any

Question 5:

Which of the initiatives you have outlined above where successfully implemented?

Question 6:

To what extent were/are you involved with developing and implementing initiatives?

Question 7:

For each of the initiatives* you have mentioned, can you outline what problems/issues you encountered firstly with their development and subsequent implementation.

*Successful

*Unsuccessful

Question 8:

For each problem you encountered, can you explain how these were overcome? If at all

Question 9:

Do you have any further comments to add on this subject?

Thank you for your time in helping with this matter. As a reminder, all tape recordings are confidential, and results will be recorded so that individuals will not be identifiable.

Appendix 4   Network St Albans Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING

COVERING THE ESTABLISHMENT OF A VOLUNTARY

QUALITY NETWORK PARTNERSHIP

FOR THE ST ALBANS AREA

Parties to the Agreement:-

(1) HERTFORDSHIRE COUNTY COUNCIL of County Hall, Pegs Lane, Hertford, SG13 8DQ

(2) ST ALBANS CITY & DISTRICT COUNCIL of Civic Centre, St Peters Street, St Albans, AL1 3JE

(3) FIRST CAPITAL CONNECT LIMITED of Hertford House, 1 Cranwood Street, London, EC1V 9QS

(4) LONDON MIDLAND of 102 New Street, Birmingham, B2 4HQ

(5) ARRIVA THE SHIRES AND ESSEX of 487 Dunstable Road, Luton, Bedfordshire, LU4 8DS

(6) CENTREBUS LIMITED of 37 Wenlock Way, Leicester, Leicestershire, LE4 9HU

(7) METROLINE TRAVEL LIMITED of Hygeia, 66-68 College Road, Harrow, Middlesex, HA1 1BE

(8) UNIVERSITY BUS LIMITED and UNO BUS LIMITED of Gypsy Moth Avenue, Hatfield, AL10 9BS

(9) UNIVERSITY OF HERTFORDSHIRE, of College Lane, Hatfield, Hertfordshire, AL10 9AB

St Albans Quality Network Partnership

1.0 Introduction and Aim

  1.1 This Memorandum of Understanding follows recent discussions between the parties above directed towards creating a Quality Network Partnership (QNP) serving the District of St Albans with the broad aim of creating an integrated public transport network through partnership.

  1.2 The QNP aims to provide residents of and visitors to St Albans with a real and attractive alternative for many of the journeys currently made by private car. This will help St Albans City and District Council to cut traffic related road congestion, air and noise pollution, help businesses in the city recruit and retain staff, and maintain the city's position as an attractive visitor destination.

  1.3 The fully integrated approach to be adopted aims towards developing a network to include at least the following:

- Routes and corridors designated with a minimum service level based on demand, with integration between rail and bus (where feasible)

- Real Time/Automatic Vehicle Location (AVL) information on all routes serving the QNP area, with public display using screens, mobile and internet technology (where suitable)

- A common and interchangeable ticketing scheme, possibly incorporating smartcard technology, for integrated ticketing between services and operators

- Traffic management schemes, parking controls, street works orders and bus priority schemes, supported by strong enforcement measures that allow buses to offer quick and punctual services at all times

- Route specific marketing

- Introduction of a wider city Travel Plan Strategy, which will develop an ongoing set of measures aimed at enhancing the QNP

- Working with and integrating the new initiative for developing and implementing railway station Travel Plan Strategies at both the St Albans and Hatfield stations.

2.0 Stakeholders and Status of the Agreement

  2.1 This "Memorandum of Understanding" defines a voluntary agreement between the Primary Partners (as defined below) committed to the operation of a QNP within St Albans City and District.

2.2 The QNP will co-ordinate the use of powers included in the Transport Act 2000 and the Local Transport Act 2008, and related guidance, which make provision for local transport authorities to create and develop either statutory or voluntary QPs. The St Albans QNP is voluntary. Its aim is to assist the partners to increase public transport usage through improving services and implementing appropriate restrictions on the use of private cars, whilst building upon the viability and sustainability of the commercial public transport network.

2.3 The QNP will encourage and facilitate the use of both existing and new powers to allow both bus and train operators to develop and enhance the commercial public transport network, while supporting subsidised services where identified needs cannot be met commercially, providing the public with a viable alternative to the car for commuting, retail and leisure journeys to and within the City.

2.4 The QNP will not possess either legal powers of its own, or a permanent legal status. It will affect its objectives by gaining consensus for particular projects, and promoting the establishment of legally-binding agreement between groups of the Primary (and possibly Secondary) Partners to achieve these objectives. It will be a voluntary association, hosted by one of the Primary Partners. In the event of the QNP needing to have bank account facilities, these will be provided *via* the host organisation.

3.0 <u>Organisation</u>

3.1 The members of the partnership are broken into two distinct groupings. Primary Partners will be responsible for directly implementing QNP objectives, and will be signatories to this "Memorandum of Understanding." Secondary Partners will each be represented on the Wider Reference Group by a designated representative.

3.2 Primary Partners: -

- Hertfordshire County Council
- St Albans City and District Council
- Main Transport Operators (currently First Capital Connect, London Midland, Universitybus, Arriva, Centrebus, Metroline)
- The University of Hertfordshire

3.3 Secondary Partners, for example: -

- Oaklands College
- Hertfordshire Constabulary
- The National Health Service, Primary Care Trust(s)/ Strategic Health Authority
- Businesses, Transport Users Representative, Co-Opted Members (Local Strategic Partnership (LSP))

3.4 Partnership Board and Wider Reference Group

3.4.1 The QNP shall be made up of a Partnership Board comprising of one representative from each of the Primary Partners. The Board shall have powers to co-opt additional members. The Partnership Board shall elect a Chair from amongst their number. The Board and Chair shall be supported by an Executive Assistant role that shall be funded by subscriptions from the primary partners or by equivalent contributions in kind. The roles and responsibilities of these officers shall be defined in Annex A to this Agreement. It is intended that the Partnership Board will meet quarterly.

3.4.2 The QNP will form sub-groups where appropriate to consider details on particular issues. Their membership may be drawn from Secondary as well as Primary Partners. Sub-groups will in due course report back to the Partnership Board. Within both sub-groups and the main Partnership Board, the aim will be to arrive at decisions by consensus. This recognises that, given the numerical strength of the particular groupings represented on the Board, any form of voting by majority would (or potentially could) disadvantage individual members.

3.4.3 In addition, a Wider Reference Group will be created. This group shall include a representative from each of the Secondary Partners and up to three (3) other co-opted members. These members shall be persons of distinction in the transport field and/or an appointed representative of bus/train users and/or a person who is able to represent the interests of the business, commercial and industrial communities within the partnership area. It is intended that This Group will meet twice a year.

3.5 Resignation of a Partner
If a primary Partner organisation wishes to leave the QNP, it must provide six (6) months' notice to this effect to the remaining Partners.

4.0 Partnership Objectives

4.1 The over-arching principle of the QNP is that the Local Authorities and others will provide infrastructure, traffic management, parking restrictions, bus priority schemes and an enforcement regime which allows the transport operators to improve operating speeds and hence generate resources to improve frequencies at no additional cost and deliver higher punctuality and efficiency.

4.2 In exchange, the bus and train operators will invest in modern vehicles, staff training, information services and improved standards of service. In addition they will consult the other partners on fares and service frequencies where appropriate.

4.3 This partnership's objectives will thus include, but will not be restricted to:-

- establishing what bus network is appropriate to the partnership area including routing, frequency, ticketing and bus priority based on careful market research of users and potential users, and co-ordination of bus and train timetabling;

- using the expertise of the transport operators to determine the measures needed to make the network commercially sustainable into the longer term;

- negotiating within the partners and with other stakeholders an implementation plan for the creation of the network that takes into account the delivery constraints on each partner's input. The general principle should be that the transport operators should not be required to deliver their service improvements until such time as the other parties have provided the appropriate infrastructure, resources and enforcement that are required to facilitate improvements to bus and train services;

- agreeing an appropriate ticketing strategy to encourage optimal use and modal shift (with the benefit of market research data);

- working with INTALINK over branding and publicising the partnership and the services to customers;

- assembling the resources required to facilitate the creation and sustainability of the network whether from statutory sources, Section 106 Agreements or voluntary commitment;

- developing and then entering into the Agreements with the transport operators for the provision of the network in the expectation that the network, properly planned and launched, is commercially sustainable in the long term and takes into account funding of socially necessary services;

- establishing mechanisms for funding network wide travel schemes, including partnership travel cards, 16-19 travel schemes, University travel schemes and the fair distribution of revenues to operators; and

- considering any other measures as may be requested by the statutory bodies and members of the partnership to enhance the activities of the partnership and the benefit of the wider community.

4.4 It is recognised that the objectives described above will require expenditure to bring about. The QNP will not initially have funds of its own (though this position may change if new legal powers make it possible for fund-raising to be legally possible) so the intention is that each QNP member will be responsible for funding its own work within the QNP agreed plans.

4.5 The QNP recognises that, prior to its coming into being, a number of area-based Transport Plans had been in existence (for instance covering St. Albans and Hatfield railway stations, and their surrounding areas). It is the intention that, while not superseding these, their objectives and activities will be noted and as far as possible integrated with the work being undertaken by the QNP.

5.0 <u>QNP Area of Operation</u>

5.1 The QNP will focus its efforts on the area within the centre of St Albans, approximately defined as being within a one mile radius of the Old Town Hall in St Peter Street ("the core area"), together with the principal transport corridors leading from all directions into the core area itself.

5.2 This definition is accepted as being imprecise and, should this prove necessary, will be re-defined by the Primary Partners at a later date.

6.0 <u>Duration of Agreement</u>

6.1 This Agreement will remain in force for a period of three (3) years from the date of execution.

6.2 During its third year of operation, steps will be taken either to renew the Agreement for a further period or to replace it with some other form of co-operative measure with the aim of continuing the work initiated during the first period of operation.

Signed by:

Name (Print):   John Sykes

Position: Integrated Transport Services Manager

Date: 5th March 2009

on behalf of Hertfordshire County Council

Signed by:

Name (Print):   Andrew Robertson

Position: Head of Environment and Regulatory Services

Date: 5th March 2009

on behalf of St Albans City and District Council

Signed by:

Name (Print):   Larry Heyman

Position: Integration and Partnership Manager

Date: 5th March 2009

on behalf of First Capital Connect

Signed by:

Name (Print): Gerard Burgess

Position: Partnership Manager

Date: 5th March 2009

on behalf of London Midland

Signed by:

Name (Print): Brian Drury

Position: Commercial Director

Date: 5th March 2009

on behalf of Arriva the Shires and Essex

Signed by:

Name (Print): David Shelley

Position: Commercial Director

Date: 5th March 2009

on behalf of Centrebus Limited

Signed by:

Name (Print):   Richard Foster

Position: Commercial Manager

Date: 5th March 2009

                on behalf of Metroline Travel Limited

Signed by:

Name (Print):   Bill Hiron

Position: Managing Director

Date: 5th March 2009

                on behalf of Universitybus Limited and UNO Bus Limited

Signed by:

Name (Print):   Philip Waters

Position: Secretary and Registrar

Date: 5th March 2009

                on behalf of the University of Hertfordshire

Annex A

Executive Assistant (Officer) to the St Albans Quality Network Partnership.

The QNP is a partnership of local authorities, public bodies and transport operators dedicated to improve the quality of public transport in St Albans and along key corridors serving St Albans. The Partnership Board and Chair is supported by an Executive Assistant (Officer) who will be employed by one of the partners with the role built into their job remit and funded by the Partners by agreed financial arrangements.

The Executive Assistant will support the Board by preparing papers, taking and then circulating minutes. The role will also involve undertaking official correspondence of the Partnership and progressing discussions and negotiations on behalf of the Partnership. The role will be expected to work closely with the Chair of the Partnership, taking direction as required. The Executive Officer will represent the Board and Partnership at meetings but ultimately will report to and be responsible to the Chair.

Ideally the Assistant should be well informed on transport and travel planning issues and be able to communicate orally and in writing to a good standard. The Executive Assistant will organise and facilitate meetings of sub-working groups which will be developed as part of the QNP structure.

Appendix 5   Network St Albans Marketing Material

Network St Albans BUSnet Multi Operator Ticket Poster - as advertised at Bus Stops and Bill Boards

Network St Albans Multi Operator z-card Leaflet – showing colour coded network map

Network St Albans Multi Operator z-card Leaflet – showing Multi Operator Zonal Ticket Map
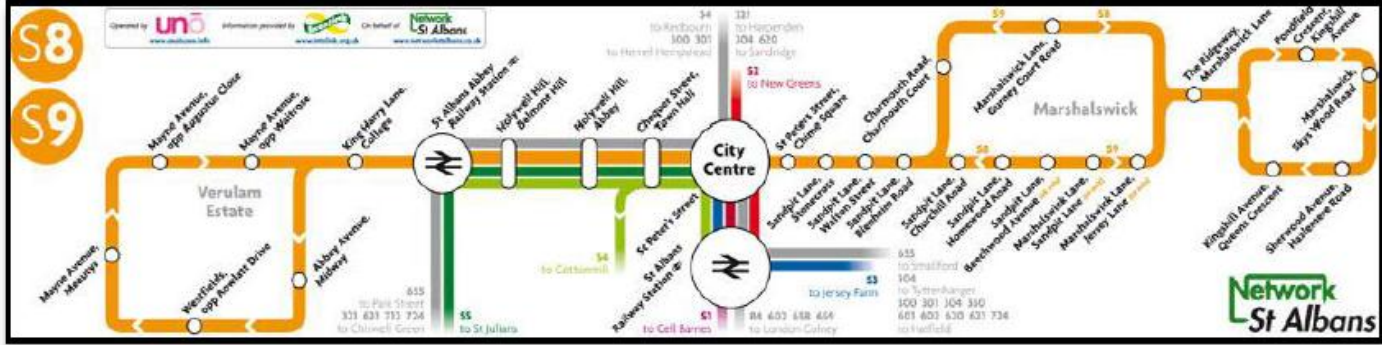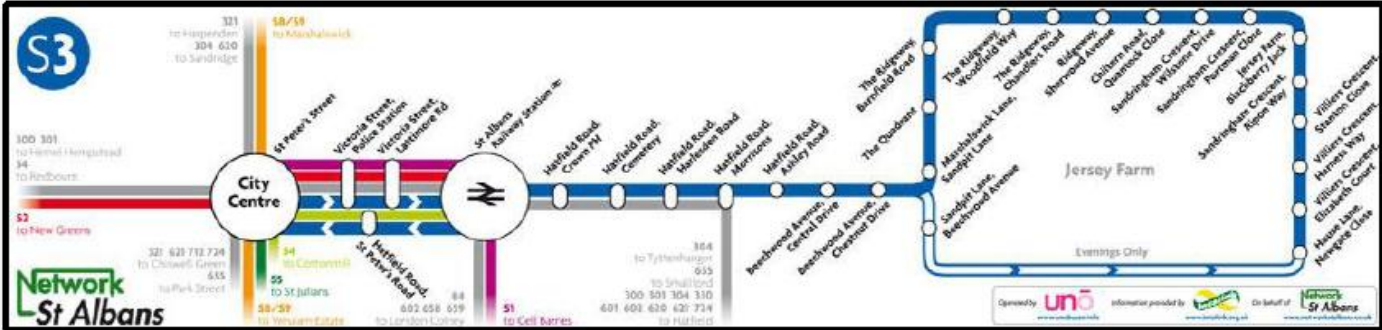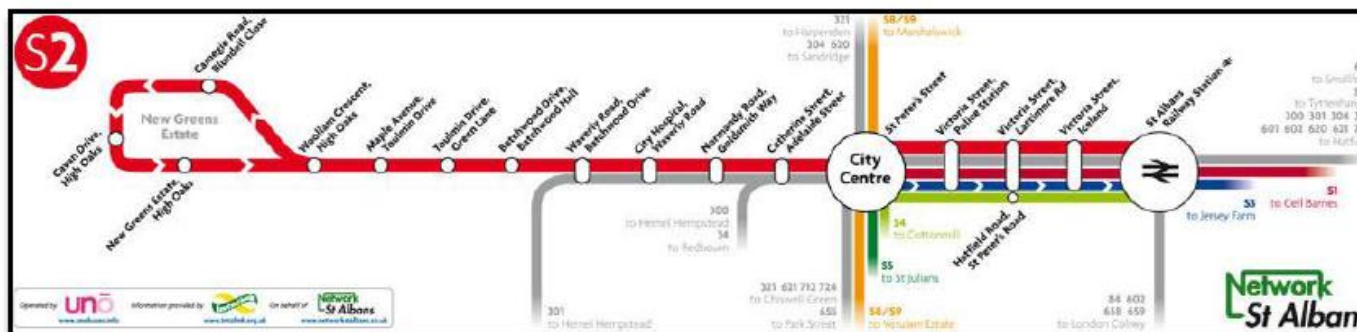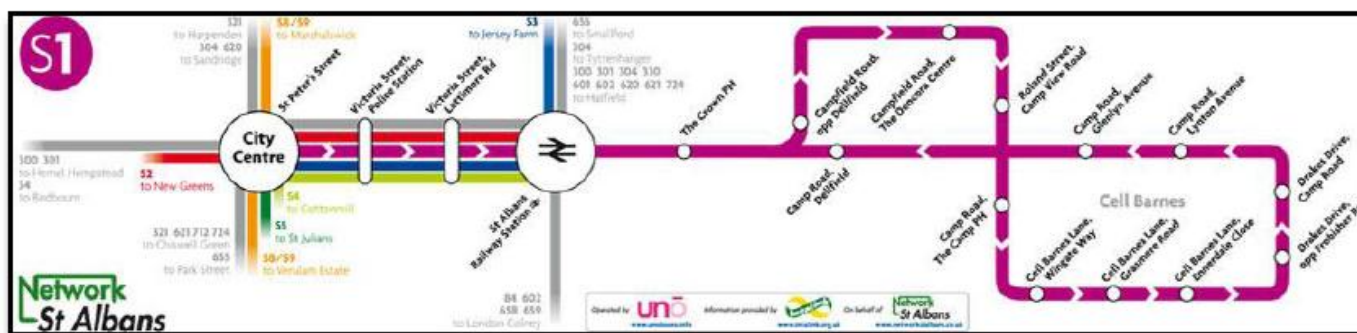
Network St Albans Multi Operator Route Specific Maps

Appendix 6   University of Hertfordshire Aspects and Impacts Registry

Appendix Six: University of Hertfordshire Aspects and Impacts Register (Travel Plan Exert).

	Aspect	Objective	Target	Task	Date added	Lead	Support	Deadline	Updates (month added)
4.0						**Transport**			
4.1	Transport emissions to air from business travel, fleet and commuting	To reduce the amount of emissions to air	Apr-11	Calculate carbon emissions by type	Jun-10	SC	JH	International travel by students and fleet completed Aug-10. Commuting completed Apr-11.	Scope 1-2 have been calculated as part of the CRC- Energy efficiency scheme, with Scope 3 emissions (commuting and transport) methodology being developed by HEFCE. Reporting on this should be provided by HEFCE by Nov 2011
4.2	Provision of car parking on campus	To develop and implement a charging mechanism for managing car parks	Reduce staff commuting alone to 60% by 2013	Introduce a new pricing system that takes into account environmental concerns	Jun-10	SC & TR & DM & Estates	Estates	Oct-11	As part of the University's 2020 vision, a planning application is being placed with Local Authority
			Reduce students commuting alone to 20% by 2013						
4.3	Provision and promotion of more sustainable travel options and facilities	Reduce single occupancy vehicle use through implementation of the Travel Plan	Reduce staff commuting alone to 60% by 2013	Advertise and promote car sharing	Jun-10	SC, SR & ER	Continuous	Continuous	Advertised through staff-net, leaflets and events. New leaflet to be launched in 2011-12. Car share for staff advertised in Travel Leaflet produced Oct 2011
				Advertise and promote tax reduced cycle scheme	Jun-11	SC, SR & ER	Continuous	Continuous	Staff Tax reduce cycle advertised in Travel leaflet and via digital media. As of Oct 2011, over 200 staff had purchased a cycle using this scheme since launch in 2008

			Advertise and promote public transport services to the campuses	Jun-11	SC, SR & ER	Continuous	Continuous	UNO, other bus operators and train operators advertised at international freshers fayre, Environment Week and at all staff and student inductions
			Advertise and promote joint ticketing deal for train and bus services	Jun-11	SC, SR & ER	Continuous	Continuous	New ticket machine installed June 2011.
			Run free cycle maintenance checks	Jun-11	SC, SR & ER	Continuous	Oct-11	Event held as part of Environment Week., being held in Oct 2011
			Run workshops to raise awareness among staff of the IT options available for video/phone conferencing and telecommunications for working from home	Dec-11	SC	Continuous	Dec-12	3 workshops held on 14th December 2012.
			Raise awareness of the new Travel Plan leaflet and environmental impacts of travelling to the University	Jun-11	SC, SR & ER	Continuous	Advertised through staff net, leaflets and events. New leaflet to be launched in 2011	Leaflet produced with Estates to provide an overview of all transport alternatives to University stakeholders
		Reduce students commuting alone to 20% by 2013	Set up a tax reduced bus scheme	Jun-10	SC, SR & ER	Continuous	Investigations taken place but not viable at this stage. It will be considered in the future.	Still not viable at this stage
			Install electric vehicle charging	May-11	SC & Estates	Feb-12	Mar-12	Sites have been located for between 12-14 sites and a plan of works is being drawn up

Task	Date added	Lead	Support	Deadline	Updates (month added)
Transport					
Calculate carbon emissions by type	Jun-10	SC	JH	International travel by students and fleet completed Aug-10. Commuting completed Apr-11.	Scope 1-2 has been calculated as part of the CRC- Energy efficiency scheme, with Scope 3 emissions (commuting and transport) methodology being developed by HEFCE. Reporting on this should be provided by HEFCE by Nov 2011. Draft overview produced in November (Nov-11).
Introduce a new pricing system that takes into account environmental concerns	Jun-10	SC & TR & DM & Estates	Estates	Oct-11	As part of the University's 2020 vision, a planning application is being placed with Local Authority. Draft proposal for potential charge scheme has been developed, to be sent to CEG in December (Nov-11).
Advertise and promote car sharing	Jun-10	SC, SR & ER	Continuous	Continuous	Advertised through staff net, leaflets and events. New leaflet to be launched in 2011-12. Car share for staff advertised in Travel Leaflet produced Oct 2011. Advertise this in Feb-12 as part of car-share week (Nov-11).
Advertise and promote tax reduced cycle scheme	Jun-11	SC, SR & ER	Continuous	Continuous	Staff Tax reduce cycle advertised in Travel leaflet and via digital media. As of Oct 2011, over 200 staff had purchased a cycle using this scheme since launch in 2008. On-going and now offered as part of the University 'choices' package (Nov-11).

Advertise and promote public transport services to the campuses	Jun-11	SC, SR & ER	Continuous	Continuous	UNO, other bus operators and train operators advertised at international freshers fayre, freshers fayre Environment Week and at all staff and student inductions. On-going (Nov-11).
Advertise and promote joint ticketing deal for train and bus services	Jun-11	SC, SR & ER	Continuous	Continuous	New ticket machine installed June 2011. On-going (Nov-11).
Run free cycle maintenance checks	Jun-11	SC, SR & ER	Continuous	Oct-11	Event held as part of Environment Week., being held in Oct 2011. One to follow in April (Nov-11).
Run workshops to raise awareness among staff of the IT options available for video/phone conferencing and telecommunications for working from home	Dec-11	SC	Continuous	Dec-12	3 workshops held on 14th December 2012.
Raise awareness of the new Travel Plan leaflet and environmental impacts of travelling to the University	Jun-11	SC, SR & ER	Continuous	Advertised through staff net, leaflets and events. New leaflet to be launched in 2011	Leaflet produced with Estates to provide an overview of all transport alternatives to University stakeholders. On-going (Nov-11).
Set up a tax reduced bus scheme	Jun-10	SC, SR & ER	Continuous	Investigations taken place but not viable at this stage. It will be considered in the future.	Still not viable at this stage (Nov-11).
Install electric vehicle charging points across the University	May-11	SC & Estates	Feb-12	Mar-12	Sites have been located for between 8-12 sites and a plan of works is being drawn up. Sites have been identified, meeting on 29th to confirm site suitability. £35,000 set aside for this (Nov-11).
Develop Quality Network Partnership within local community	Jun-10	SC & SR	Continuous	Aug-12	The University has helped secure £1.99m as part of the government's Local Sustainable Transport Fund (LSTF). The CSC has secured £70k of this funding to manage the development and implementation of Quality partnership in St Albans, Watford and Hemel Hempstead. CSC currently working with partners on phase two funding circa £10.75m, to be submitted in Dec 11 (Nov-11).

Appendix 7   Long Term University Car Parking Strategy (Proposed as an Outcome of PhD Thesis)

University of Hertfordshire
Estates Hospitality and Contract Services
Proposed Car Parking Strategy Paper for Chief Executive Group - 2020 Estates Vision

August 2012

Purpose

In order to meet our Local Authority Travel Plan Targets and to assist in furthering our sustainability agenda, changes to our existing car parking arrangements will be needed.
This paper sets out a proposal to replace the current staff car parking permit system to that of a daily charge and reward scheme, using a three phased approach. Students would not be included within the reward scheme, but continue to pay daily charges. This is because the scheme for University employees has been designed to incentivise non-car use whilst not adversely penalising car drivers. The prime purpose is to encourage a behavioural change away from single occupancy car use to help meet the University's Statutory Travel Plan requirements; to align our car parking strategy with our sustainability agenda; and to reduce the need to build additional car parking capacity, whilst managing the current demand for car park spaces. Currently single occupancy car use by staff is stagnant at 68% and the University has committed to a Local Authority Statutory Travel Plan target of 60 per cent.

Key points

- Align the car parking strategy with the sustainability agenda
- Align to the University's Travel Plan; to encourage staff to reduce their car use where feasible
- Align to the Estates 2020 Vision to save capital expenditure on additional car park infrastructure costs
- Develop a sound financial business case, with a 2-3 year payback period

Synopsis

The Charge Reward Scheme would use an Automatic Number Plate Recognition System (ANPR), ideally working alongside existing staff cards and/or signing in points. The system would operate by employees initially registering their car (or cars) that would allow them use of University car parks (currently employees register for a car permit annually). The database would work in conjunction with ANPR cameras located around the University to record car park use. All employees would receive a daily reward through swiping their employee card, to register their attendance on site. It is important that all employees receive the reward element as this increases the likelihood of car sharing within the scheme. If an employee has an issue with registering their attendance, then they don't need to, but they would not benefit from the reward.

The charge reward system would operate on a points system through employees accruing and deducting points (when using a car park) over a month basis, with a charge or reward being applied depending on an individual's travel choices. The net effect is taxable at the point of payment (ideally through the payroll system). The difference between the deduction and the reward is the net charge, which can be altered based on agreed criteria (such as concessions, disability requirements special circumstances etc., use of Electric vehicles etc.). Employees who do not use the car parks are subject to no point's deduction and would therefore benefit from a daily reward. The rewards would ideally be fed through the payroll system and converted to a cash payment after being taxed as an in-kind benefit. This is important as it makes the system cashless, with employees either just having to swipe once a day to receive their reward or, if they drive, ANPR automatically registers the appropriate charge. The benefit of this system is that the employee should be able to pay for their car park charge through their gross pay, before tax as part of the existing tax relief system that the University currently operates. The system could be developed further to consider different charges based on car park locations (as is current practice at the Park & Ride). This could encourage greater use of car parks on the periphery of the site. If staff were to use more than one car park in a day, the charge deducted would only apply once per day with the highest charge being applied to the car park used.

The cost to implement ANPR is circa £300K, with an annual maintenance charge of circa £31K. Projected net revenue savings of approximately £150K per annum are anticipated through reduced staff time in maintaining and

monitoring the current car parking regime. Therefore a payback period would be projected to be achieved within 2-3 years (Table 1).

The current annual payment system is heavily subsidised by the University and does not encourage individuals to think about the possible alternatives available to them on a daily basis. **The calculated costs for building and maintaining a car parking space per person/car per day is between £4-9 (Table 2).** Staff members currently pay for an annual permit which means that they pay considerably less than what it costs to maintain the space. For example staff within the salary band £17,501 - £24,500 (the band with the highest number of staff) pay £55 per annum for a permit, meaning they only pay £0.25 per space per day.

Under a charge reward scheme, employees would be banded into three daily charge brackets; Band A staff earning between £5,000 - £24,500 (58% of staff); Band B staff earning between £24,501 - £60,000 (39% of staff) and Band C staff earning £60,001+ (3% of staff). It is proposed that different daily charges would apply to each band. All employees would receive the same daily reward, but this would be taxed on individual income tax bands when an employee generates a credit from their reward.

Revenue generated from staff permits in 2010/2011 was £151K (Table 3). The daily charge for each band has been calculated so that if the University reached its required Travel Plan target of 60% for staff driving alone, there would be no reduction in revenue compared to the current permit system (≈ £161K). Each staff band would pay for car parking. Band A employees would pay £2/day however receive a £1 reward therefore only be charged £1/day to park. Band B employees would pay £1.40/day after they receive their £1 reward and Band C employees would pay £1.80/day. This equates to £18.33/month (Band A), £26/month (Band B), and £33/month (Band C) respectively, should emloyees drive alone everyday (Table 4). (*note: costings have been calculated on 220 day working year*).

Worked examples of how employees commuting options would impact on how much in credit or debit they would be after tax, are for provided for each salary band in Table 5.

Table 6 provides indicative comparative car parking costs for employees for each salary/tax band compared to the existing permit system (if they drive alone every day). For example if an employee currently pays £360 for an annual permit, they would pay £396 per annum under the proposed scheme, an increase of £36 per annum. This is represented as +£36 in Table 6. As some of the salary bands split across the national tax bands, some employees who may be on 20% have been classed within the 40% band, and likewise for those in the 50% tax band.

Risks

The introduction of short term measures to the University's parking policies (short term stay car park, student use of college lane car parks and free parking at the Park & Ride) have been essential in order to demonstrate to Welwyn Hatfield Borough Council our commitment to addressing the parking issues that exist on and around the campuses. However, it is the long term decisions that will help deliver real and sustained changes to staff travel behaviour.

If the proposal above is not taken forward, the University risks not achieving its statutory Travel Plan targets. Moreover our Scope 3 emissions which includes commuting, come into effect in 2013 and will be materially impacted as will our People and Planet League table position. On street parking will only increase if viable alternatives to the car are not encouraged and promoted. This will hinder our community relations with staff, students and visitors continuing to park on the streets. The proposal as set out would enhance the University as a leader of innovative approaches to travel and environmental improvement and its commitment to sustainability. The proposal represents an innovative approach to altering employees' behaviour towards more sustainable practices, which if not implemented would risk negative press, locally and within national league tables. The University's statutory Travel Plan target is 60 per cent of employee car users commuting alone to the University; this current figure is static at 68 per cent. If this continues the local authority has the power to limit development on site under planning requirements. Therefore the University needs an innovative approach to tackling its high modal split usage by its employees.

If the above 60 per cent target is achieved under the proposed scheme, an additional 200 car park spaces would be made available just through achieving modal split targets. Adding these to the current circa 500 above capacity spaces would reduce the University's need to build further car parking infrastructure, thus saving on capital expenditure. Further revenue could be generated through making car park spaces available to students who currently have to pay for parking. Further spaces for visitors, functions and conferences would be made available. Encouraging a greater proportion of employees to use UNO services would also generate greater revenue from that source.

A key risk to this proposal is the possible adverse reactions of staff and the Recognised Trade Unions to the noticeable increases in car parking cost, to those that continue to commute daily by car to campus.

Another potential risk is an increase in parking in the surrounding streets, with staff then collecting a reward through 'walking in'. However regular users of the University's car parks and staff who wish to receive a reward should have registered their car(s) on the ANPR system, security would be able to patrol the surrounding streets using software called SCOOP which would pick up any car registrations that are on the system. A warning notice could then be administered, or deductions applied from the credit scheme. Warning notices on cars would be a clear visual sign to residents confirming the University's commitment to playing its part in the local community, through requesting staff to park on-site or take public transport in future.

Recommendations
That a three phased approached be developed to introduce the approach outlined above.

Phase One: 2012-14

- That full ANPR costs be investigated prior to installation. Once installation is agreed upon car park use can be monitored, but still under the current annual permit system.
- Annual tiered permit be incrementally increased and tiered bands reduced and simplified to better reflect costs.
- Develop the above works in partnership with successful ANPR tender, local residents and authority to develop a workable solution in order to reduce daily on street parking from University commuters.

Phase Two – 2014-16

- A sample of volunteer employees can opt into the proposed daily charge and rewards scheme in order to test software and payment method. This would allow for data and research to be collated from those participating, in order to better understand a full roll out. Increases in annual permit could be used to pay for reward element. Detailed pilot would need to be developed with Estates, Security, CSC and Marketing Departments.

Phase Three: 2016 - 2020

- Roll out and fully implement Daily Charge and Reward scheme and phase out of annual staff car parking permits by 2020.

The University could choose to only implement Phase One of the scheme in order to reduce staff time required to manage car parks. Payback for installing ANPR as a management system would be achieved within 2 years.

The proposed Charge Reward scheme is pioneering and innovative in its approach to delivering real behavioural change to daily employee commuters. No other university (or sector) in the United Kingdom is currently implementing such a model. However there is an increasing move within the sector towards implementing higher car parking charges for employees. Even the proposed higher costs within this scheme, are in many instances lower than comparable sites. The reward element, coupled with a daily charge, is a scheme which other universities and large organisations grappling with high demand for car parking could adopt if proved successful at Hertfordshire. The University would be a leader in developing this unique approach, which it could undertake research into and benefit commercially if implemented elsewhere, with insights from our experience.

	2013				2013												2014												2015										
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Phase 1																																								
ISG		25																																						
CEG		→→																																						
Consultation				→→→→→→→→→																																			
Approved								→→																																
Tender process										→→→																														
Phase 2																																								
Installation of ANPR system														→→→→→→																										
Testing of ANPR system																					→→→→→																		
Marketing																							→→→→→																
Permit cost raised & bands reduced																									→→→→→→→→→→→→→→→→→→														
Volunteer pilot testing																									→→→→→→→→→→→→→→→→→→														

				2015				2016												2017												2018											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Data & feedback collection																																											
Phase 3																																											
Marketing																																											
Full implementation																																											

Table 1: Automatic Number Plate Recognition (ANPR) Capital Expenditure Requirement

Company	Indicative quote	Annual licences and maintenance
SAGOSS	£204,360	£31,141
WYG	£250,000 (approx.)	N/A

Table 1 shows two indicative quotes provided by two different ANPR companies, SAGOSS and White Young Green (WYG). SAGOSS have also provided an indicative quote for the cost of annual licences and maintenance of the ANPR system.

Table 2: Cost of a car parking space per person/car per day (see Appendix for full workings)

Park and Ride (including shuttle of circa £3/day/person)	**£9**
Average surface level car park space on campus	**£4**
Multi-Storey Car Park	**£8**
Average cost of a car parking space across University	**£7**

Table 3: 2010/2011 Car Parking Costs and Revenue Generation

Income from Pay & Display ONLY	£217K
Income from Staff Permits ONLY	**£151K**
Total income (Inc. Staff Permits and Pay & Display)	£368K
Car park running costs	£388K

Table 4: Car parking costs to individual and revenue generated if all staff drive (alone) every day

	Modal split	75%	68% (current)	60% (target)	50%	40%	0%	Annual cost/person	Monthly cost/person
Band A	1,389 (58%)								
Charge	£2.0	£458,370	£415,589	£366,696	£305,580	£244,464	£ -		
Reward	£1.0	£305,580	£305,580	£305,580	£305,580	£305,580	£305,580		
Revenue		£152,790	£110,009	£61,116	£ -	-£61,116	-£305,580	£220	£18.33
Band B	925 (39%)								
Charge	£2.4	£366,300	£332,112	£293,040	£244,200	£195,360	£ -		
Reward	£1.0	£203,500	£203,500	£203,500	£203,500	£203,500	£203,500		
Revenue		£162,800	£128,612	£89,540	£40,700	-£8,140	-£203,500	£308	£26
Band C	69 (3%)								
Charge	£2.8	£31,878	£28,903	£25,502	£21,252	£17,002	£ -		
Reward	£1.0	£15,180	£15,180	£15,180	£15,180	£15,180	£15,180		
Revenue		£16,698	£13,723	£10,322	£6,072	£1,822	-£15,180	£396	£33.00
TOTAL REVENUE		**£332,288**	**£ 252,344**	**£160,978**	**£46,772**	**-£67,434**	**-£524,260**		
Gain/loss to UH compared to current permit system (151K)		**£181,288**	**£101,344**	**£9,978**	**-£104,228**	**-£218,434**	**-£675,260**		

Table 5: Worked examples of typical commuter journeys per annum

Example journey	Average current permit cost for each band per annum		Examples of weekly staff commuter journeys and their related annual charges/rewards per annum					
		Drive alone all year	Based on 2 people car sharing all year	One person car sharing twice a week, and driving alone 3 times a week	Based on 3 people car sharing all year	Bus user/ walk/cycle all year	Walk 2 days and drive alone 3 days a week	Cycle 1 day, car share 2 days and drive alone 2 days a week
Band A (20% tax)	**£29**	(-£220)	£0	(-£132)	+ £58.67 (ea.)	+£176	(-£44)	(-£44)
Band B (40% tax)	**£159.75**	(-£308)	(-£44) (ea.)	(-£220)	+£26.40 (ea.)	+£132	(-£96.80)	(-£114.40)
Band C (50% tax)	**£309.33**	(-£396)	(-£88) (ea.)	(-£308)	+£7.33 (ea.)	+£110	(-£149.60)	(-£184.8)

Table 6: Increase/decrease in car parking costs, compared to the current annual permit system

Salary band	Number of staff within each permit band	Band	% of Staff	Current annual permit cost	Increase/decrease in car parking costs, compared to the current annual permit system						
					Drive alone all year	Based on 2 people car sharing all year	One person car sharing twice a week, and driving alone 3 times a week	Based on 3 people car sharing all year	Bus user/ walk/cycle all year	Walk 2 days and drive alone 3 days a week	Cycle 1 day, car share 2 days and drive alone 2 days a week
Up to £5k	401	A	17%	£15.00	+£205	-£15.00	+£117	-£73.67	-£191	+£29	+£29
£5001 to £11,500	245		10%	£20.00	+£200	-£20.00	+£112	-£78.67	-£196	+£24	+£24
£11,501 to £17,500	284		12%	£26.00	+£194	-£26.00	+£106	-£84.67	-£202	+£18	+£18
£17,501 to £24,500	459		19%	£55.00	+£165	-£55.00	+£77	-£113.67	-£231	-£11	-£11
£24,501 to £32,500	275	B	11.5%	£91.00	+£217	-£47	+£129	-£117.40	-£223	+£5.80	+£23.8
£32,501 to £42,500	303		13%	£128.00	+£180	-£84	+£92	-£154.40	-£260	-£31.2	-£13.20
£42,501 to £50,000	205		8%	£183.00	+£125	-£139	+£37	-£209.40	-£315	-£86.20	-£68.20
£50,001 to £60,000	142		6%	£237.00	+£71	-£193	-£17	-£263.40	-£369	-£140.20	-£122.20
£60,001 to £80,000	56	C	3%	£258.00	+£138	-£170	+£50	-£265.33	-£368	-£180.40	-£73.20
£80,001 to £100,000	10		0.5%	£310.00	+£86	-£222	-£2	-£317.33	-£420	-£160.40	-£125.20
£100,001 +	3		0.01%	£360.00	+£36	-£272	-£52	-£367.33	-£470	-£210.40	-£175.20

Table 7: Percentage and number of employees better or worse off financially compared to existing annual permit system
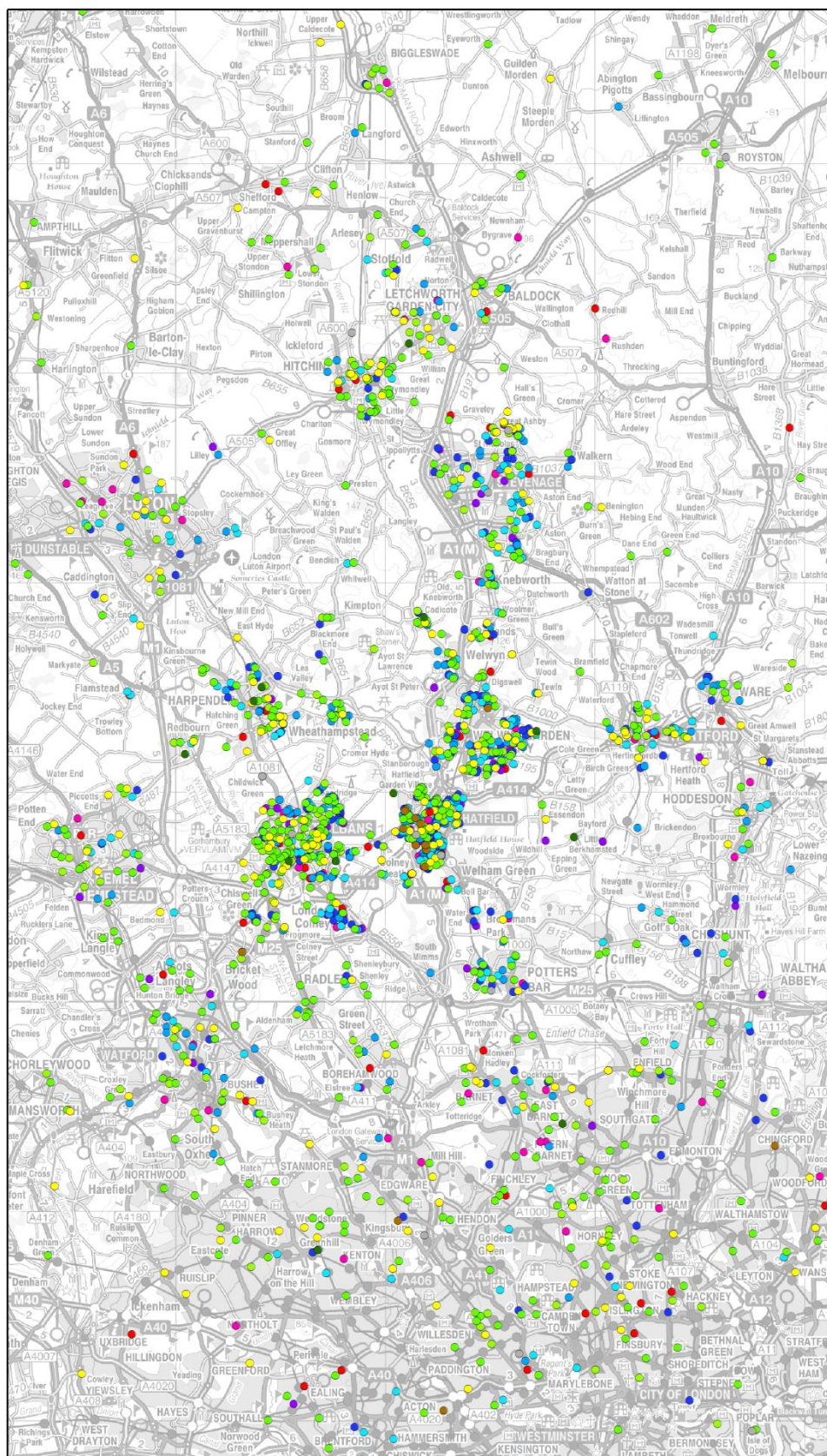
Salary band	Number of staff within each permit band	Band	% of Staff	Current annual permit cost	Percentage and number of total employees better or worse off financially compared to existing annual permit system						
					Drive alone all year	Based on 2 people car sharing all year	One person car sharing twice a week, and driving alone 3 times a week	Based on 3 people car sharing all year	Bus user/ walk/cycle all year	Walk 2 days and drive alone 3 days a week	Cycle 1 day, car share 2 days and drive alone 2 days a week
Up to £5k	401	A	17%	£15.00	100% worse	100% better	93.5% worse	100% better	100% better	50.5% worse	50.5% worse
£5001 to £11,500	245		10%	£20.00	2,383	2,383	2,228	2,383	2,383	1,202	1,202
£11,501 to £17,500	284		12%	£26.00						↓	↓
£17,501 to £24,500	459		19%	£55.00						better	better
£24,501 to £32,500	275	B	11.5%	£91.00						worse	worse
£32,501 to £42,500	303		13%	£128.00						49.5% better	49.5% better
£42,501 to £50,000	205		8%	£183.00						1,178	1,178
£50,001 to £60,000	142		6%	£237.00			6.5% better - 155				
£60,001 to £80,000	56		3%	£258.00			worse				
£80,001 to £100,000	10	C	0.5%	£310.00			better				
£100,001 +	3		0.01%	£360.00	↓	↓	better	↓	↓	↓	↓

Table 7 identifies the percentage and total number of staff who will either be financially better or worse off annually under the proposed car parking scheme compared to the existing permit system.

Where employees would have to pay more annually under the proposed scheme compared to the existing permit system, and therefore becoming worse off financially, this is represented by the percentage of the total number of employees (x% worse), followed by the actual number of employees. The arrow indicates all those within each salary band who would be worse or better off as dictated by 'worse' or 'better' at the beginning of the arrow. Those employees who would become better off (pay less than what they currently pay for an annual permit) under the proposed system are represented in the same way.

These figures have been calculated on the basis that there are 2,383 employees.

UH Pay Grade by Postcode

UH Pay Grade

Pay Grade (£/Annum)

- 1 (13353 - 14376)
- 2 (14758 - 15932)
- 3 (16376 - 18340)
- 4 (18868 - 21802)
- 5 (21802 - 24520)
- 6 (25251 - 30122)
- 7 (30122 - 35938)
- 8 (35938 - 45486)
- 9 (45486 - 54283)
- NMW
- SM
- ADHO

0   2.5   5
Kilometers

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UH Pay Grade by Postcode

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- 7 (30122 - 35938)
- 8 (35938 - 45486)
- 9 (45486 - 54283)
- NMW
- SM
- ADHO

0 25 50
Kilometers

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UH Pay Grade by Postcode

Hatfield

UH Pay Grade

Pay Grade (£/Annum)
- 1 (13353 - 14376)
- 2 (14758 - 15932)
- 3 (16376 - 18340)
- 4 (18868 - 21802)
- 5 (21802 - 24520)
- 6 (25251 - 30122)
- 7 (30122 - 35938)
- 8 (35938 - 45486)
- 9 (45486 - 54283)
- NMW
- SM
- ADHO

0 0.5 1
Kilometers

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UH Pay Grade by Postcode

Hertford Ware
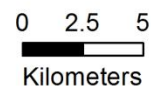
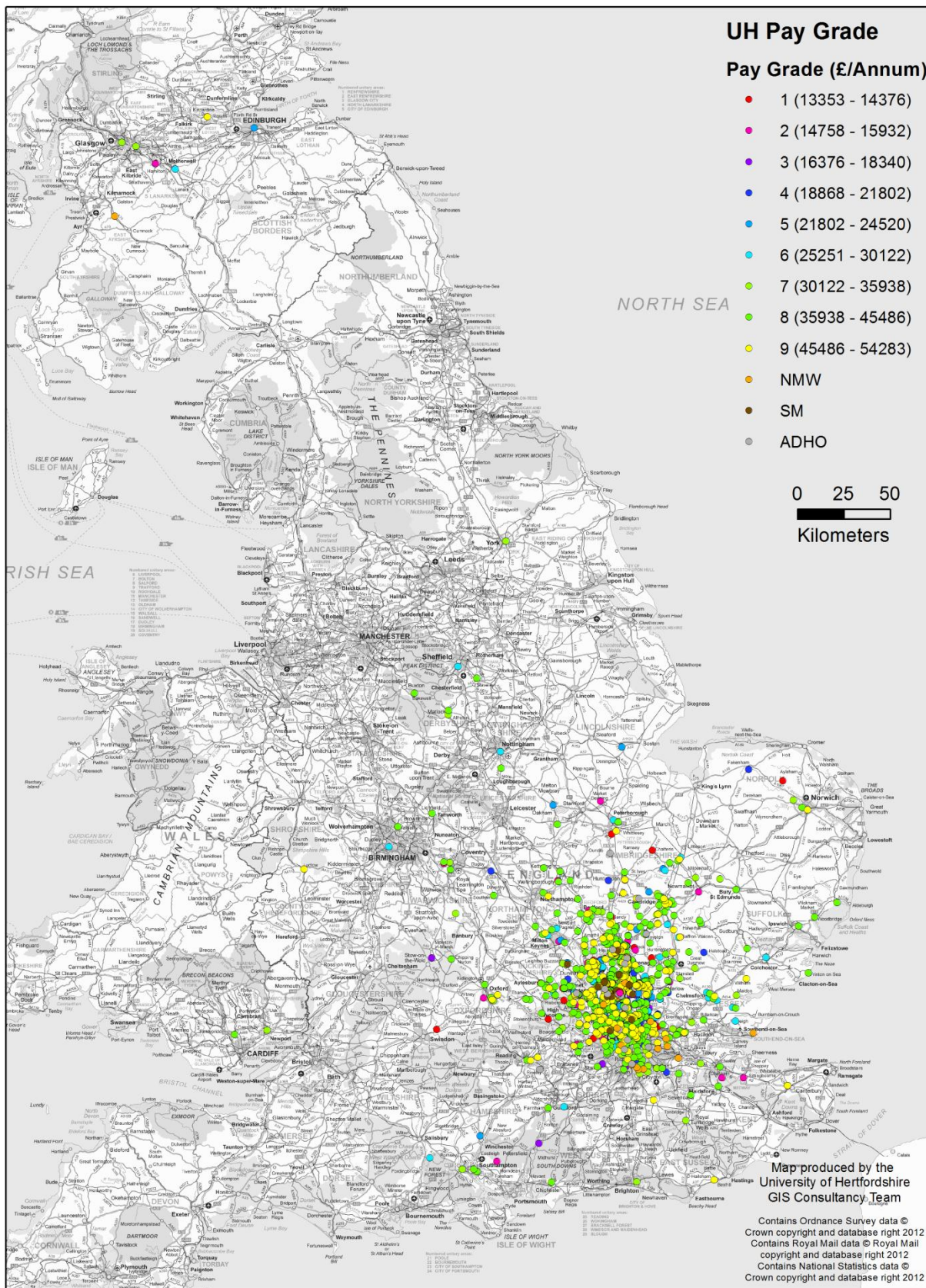**UH Pay Grade**

Pay Grade (£/Annum)
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- 2 (14758 - 15932)
- 3 (16376 - 18340)
- 4 (18868 - 21802)
- 5 (21802 - 24520)
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- 8 (35938 - 45486)
- 9 (45486 - 54283)
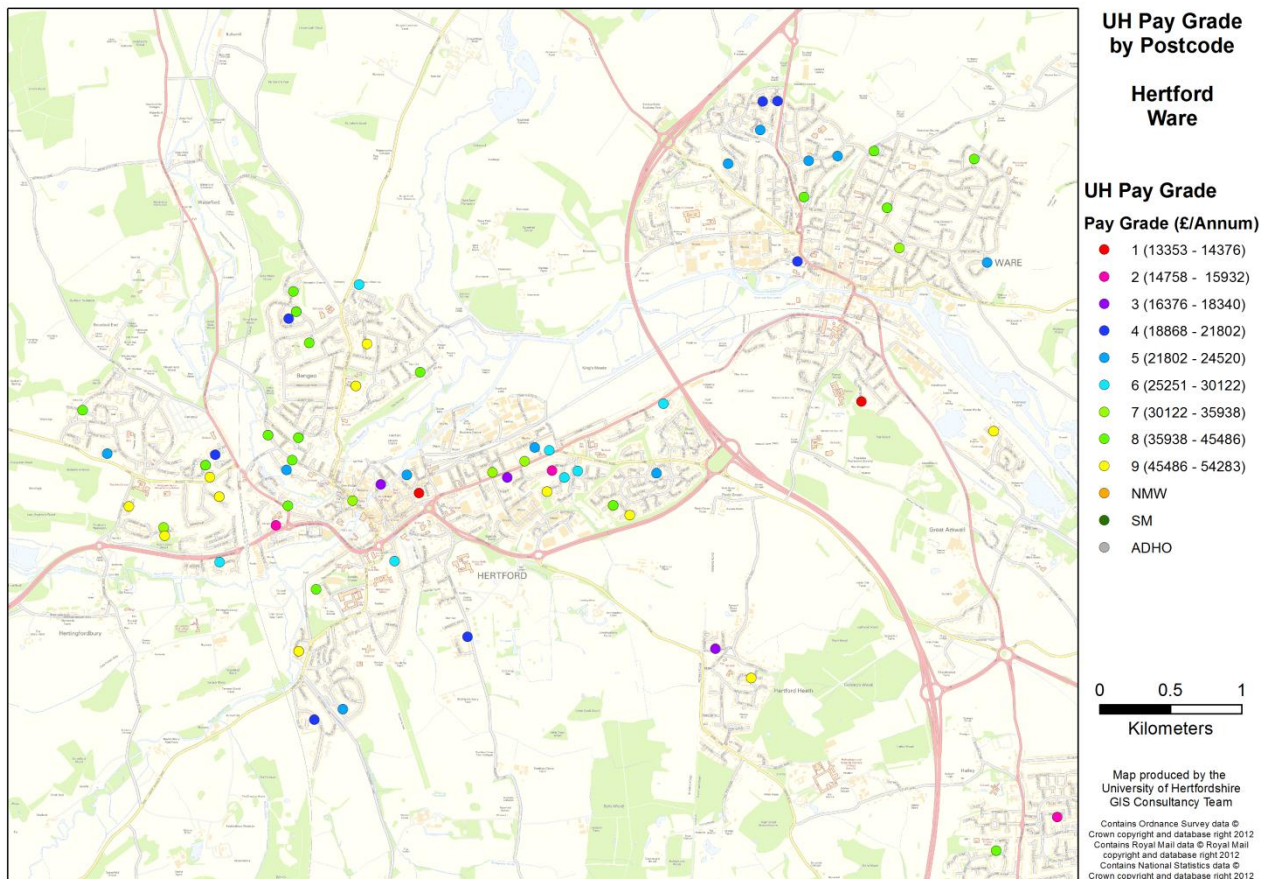- NMW
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- ADHO

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Kilometers

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**UH Pay Grade
by Postcode**

**Hitchin
Letchworth**

UH Pay Grade

Pay Grade (£/Annum)
- 1 (13353 - 14376)
- 2 (14758 - 15932)
- 3 (16376 - 18340)
- 4 (18868 - 21802)
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- 6 (25251 - 30122)
- 7 (30122 - 35938)
- 8 (35938 - 45486)
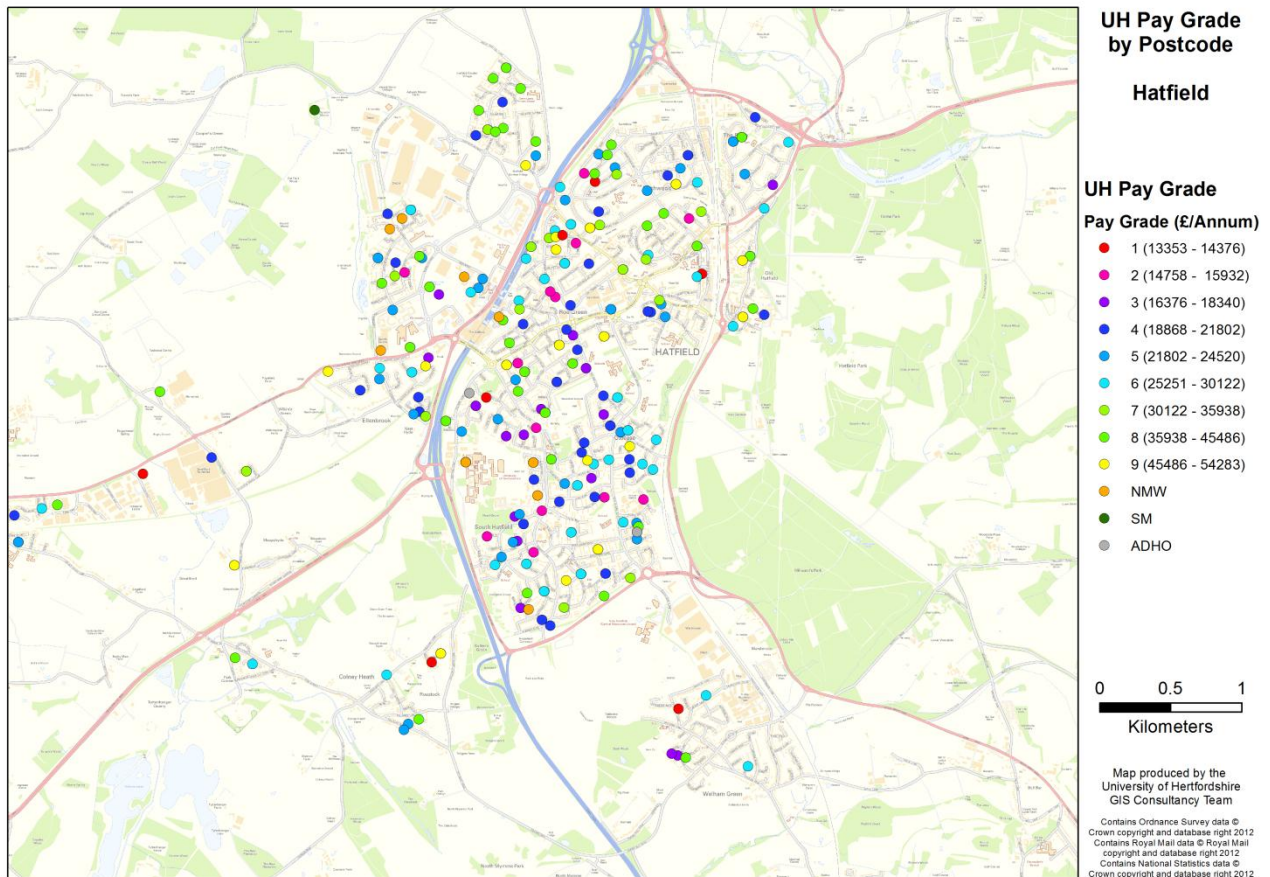- 9 (45486 - 54283)
- NMW
- SM
- ADHO
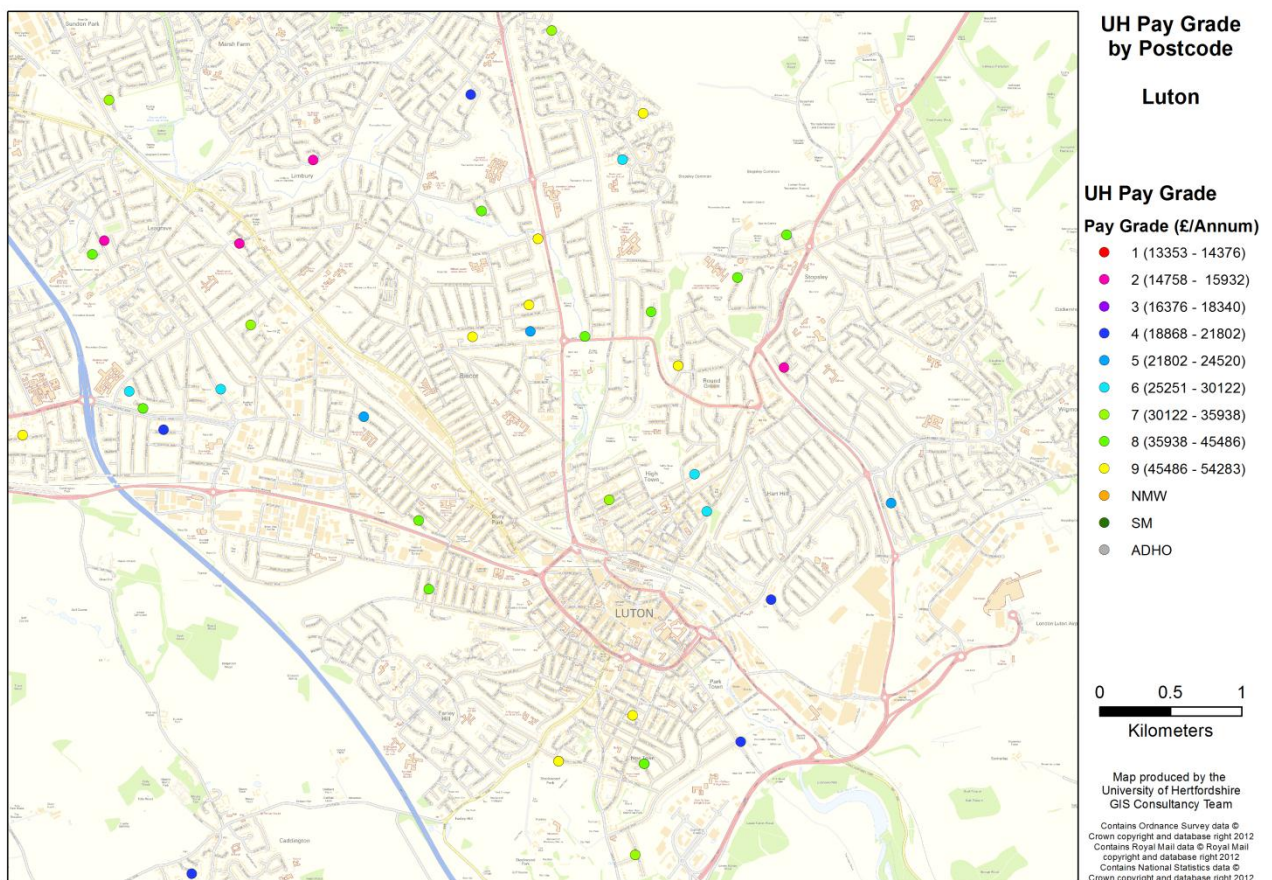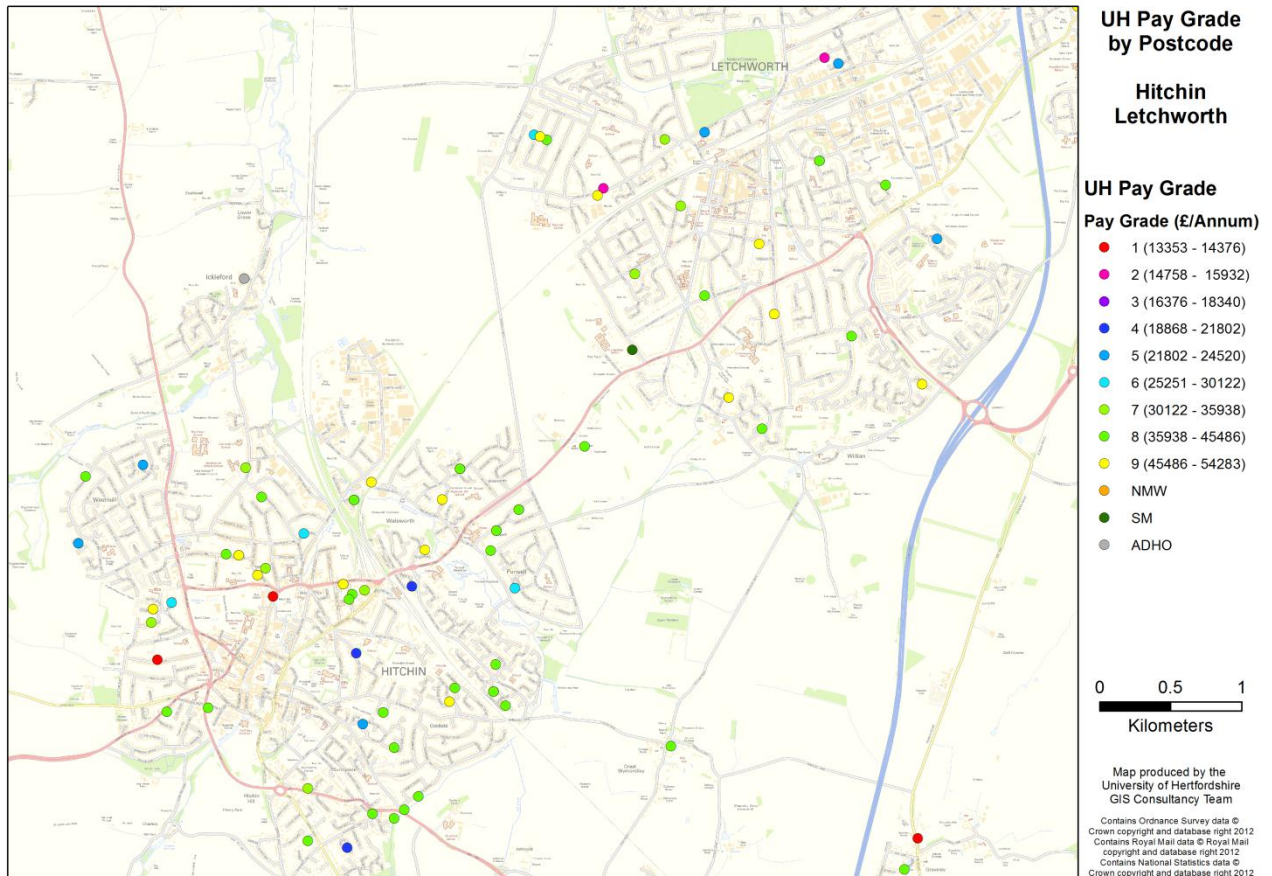
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Kilometers

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**UH Pay Grade
by Postcode**

Luton

UH Pay Grade

Pay Grade (£/Annum)
- 1 (13353 - 14376)
- 2 (14758 - 15932)
- 3 (16376 - 18340)
- 4 (18868 - 21802)
- 5 (21802 - 24520)
- 6 (25251 - 30122)
- 7 (30122 - 35938)
- 8 (35938 - 45486)
- 9 (45486 - 54283)
- NMW
- SM
- ADHO

0   0.5   1
Kilometers

Map produced by the
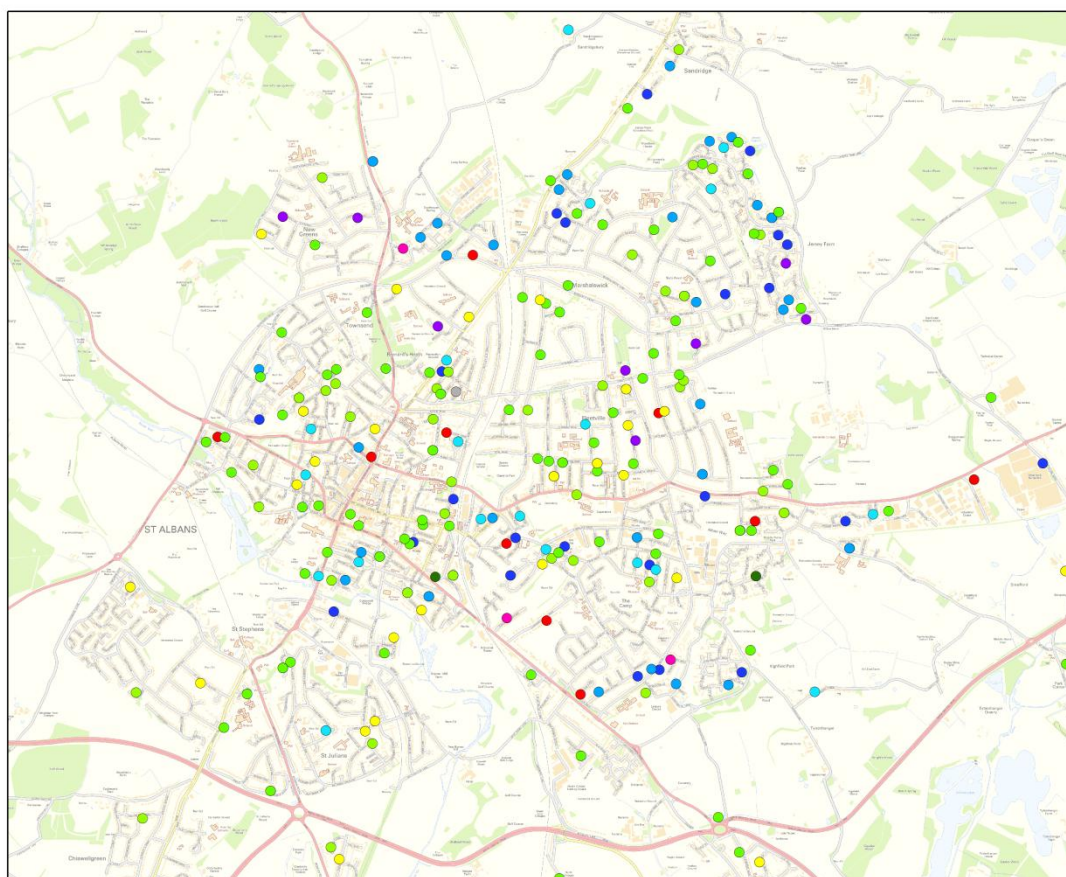University of Hertfordshire
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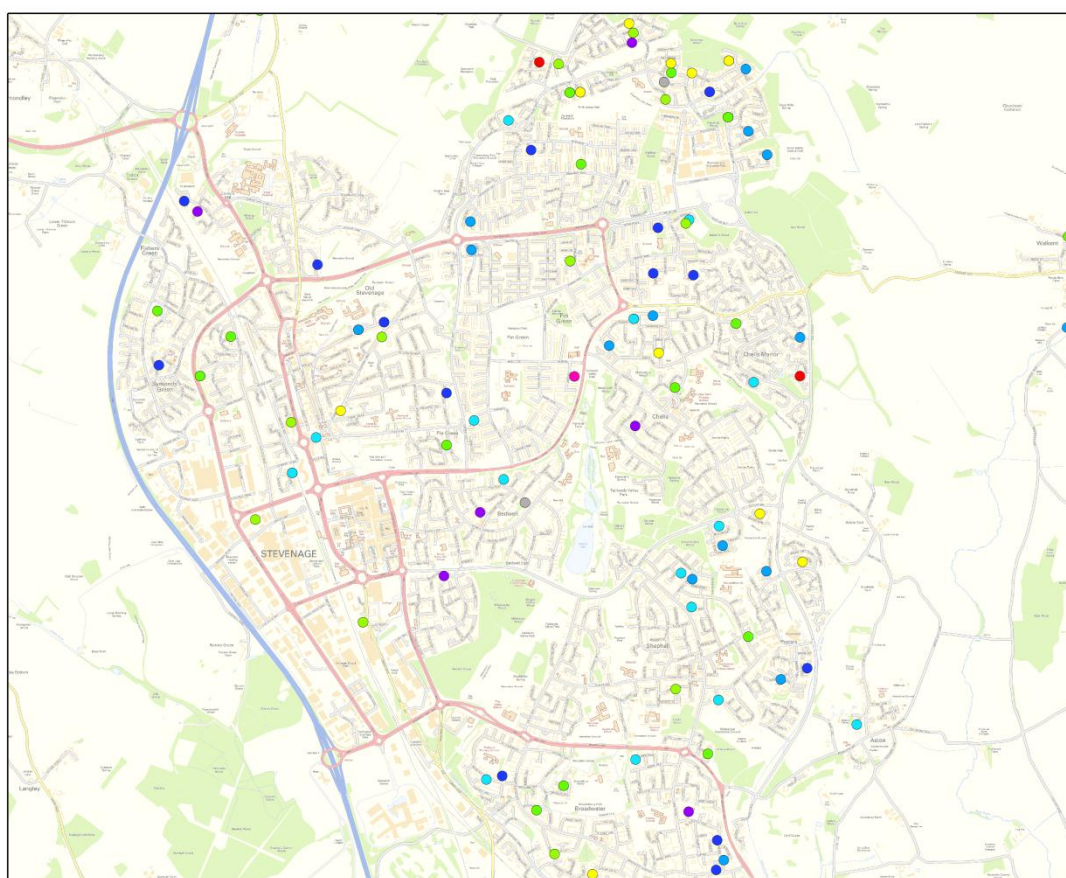Crown copyright and database right 2012

**UH Pay Grade
by Postcode**

St Albans

UH Pay Grade

Pay Grade (£/Annum)
- 1 (13353 - 14376)
- 2 (14758 - 15932)
- 3 (16376 - 18340)
- 4 (18868 - 21802)
- 5 (21802 - 24520)
- 6 (25251 - 30122)
- 7 (30122 - 35938)
- 8 (35938 - 45486)
- 9 (45486 - 54283)
- NMW
- SM
- ADHO

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**UH Pay Grade
by Postcode**

Stevenage

UH Pay Grade

Pay Grade (£/Annum)
- 1 (13353 - 14376)
- 2 (14758 - 15932)
- 3 (16376 - 18340)
- 4 (18868 - 21802)
- 5 (21802 - 24520)
- 6 (25251 - 30122)
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- ADHO

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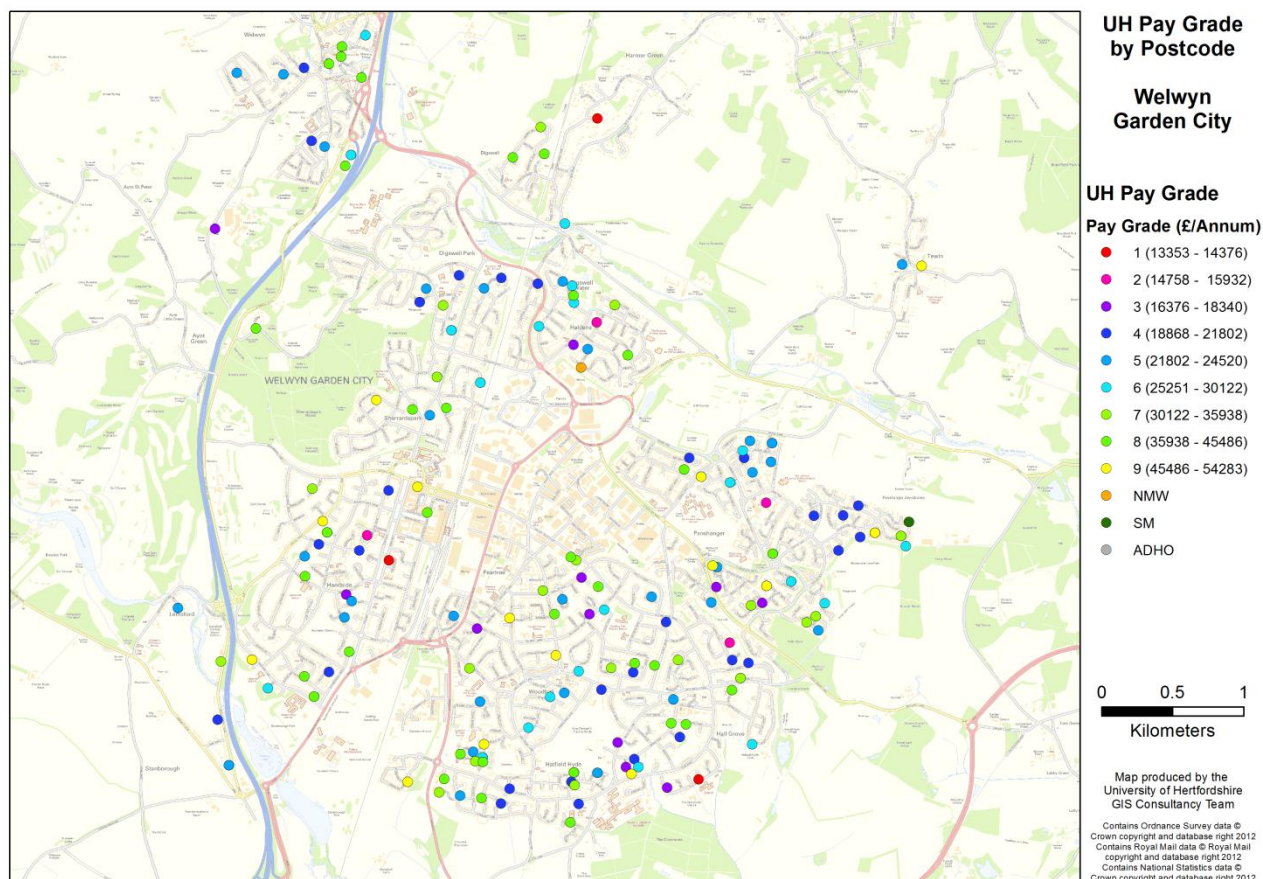
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