University of the West of England

Thesis outline

Delivering a step change in travel: a social practice approach

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Chapter 1. Introduction

1.1. Introduction

Changing behaviour has become the 'holy grail' of the climate change agenda within UK Government policy since the 1980s (Hargreaves, 2012), with limited success to date (Watson, 2012). The psychology-based behavioural change paradigm currently dominates in the area of consumption and climate change in UK Government policy and this frames the issue as one of human behaviour (agency) (Shove, 2011, Shove, 2010). This approach ignores the multitude of other factors that influence how and why actions are performed. Schatzki (1996) suggests that social life (agency) and social theory (structure) are predominantly thought of as separate elements, when in reality they are linked. Giddens' (1984) theory of structuration provides a basis for understanding individuals and institutions (agency) and the rules and structures (structure) that govern them.

The thesis applies the one of the dominant theories of social practice, Shove *et al.*'s (2012) 3-elements model, to the transport planning sector in England to examine whether it can firstly be applied to provide a greater understanding of a professional practice and secondly whether it is a more effective tool in changing behaviour associated with travel than the currently dominant psychology-based techniques. The research will add value to the theories of social practice by identifying how the 3-elements model should be applied. The 3-elements model has been selected as the analytical tool for this research as it is Giddens' structuration theory forms the grounding for the model (Shove *et al.*, 2012: 3). Shove *et al.* (2012) admit that: "*theories of practice have yet to make much impact on public policy*" (pp2) and this provides the opportunity to demonstrate the appropriateness or otherwise of using the 3-elements model within UK Government policy.

1.2. 3-Elements Model

Andreas Reckwitz (2002) provides one of the most definitive descriptions of what a social practice is describing it as: "*a routinized type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge*" pp249. Reckwitz's summary brings together the work of Giddens (1984), along with Bourdieu (1979) and Schatzki (1996) to provide a clear summary of a practice. This forms the basis of the 3-elements model. The three elements model breaks these down into three core elements:

- "**Materials**: *including things, technologies, tangible physical entities, and the stuff of which objects are made;*
- **Competences** – *which encompass skill, know-how, and technique; and*
- **Meanings** – *including symbolic meanings, ideas and aspirations*" (Shove *et al.*, 2012: 14).

Shove *et al.* (2012) place importance on each of the elements and the links that form between them, as shown in Figure 1.1. When the links are broken, a practice changes or develops in a different way. It is these breaks, or disruptions that provide the opportunity to understand change. This is not possible through psychology-based approaches to behaviour

as they fail to adequately capture the wider influences of society. A more detailed literature review discussing theories of social practice and the 3-elements model is available in Appendix A.
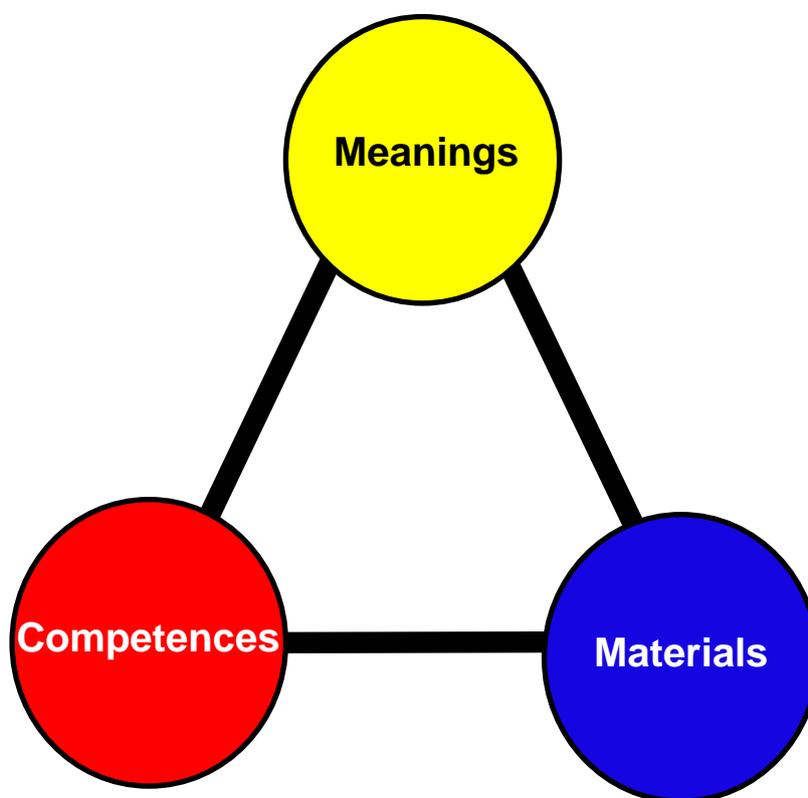
Figure 1-1 The 3-Elements Model (Shove *et al.*, 2012)

1.2.1. Disruption

Disruptions occur regularly through natural and manmade events (Little, 2010), some of which can be predicted, such as winter weather events (Williams *et al.*, 2012) and some of which cannot such as the Volcanic Ash Cloud (Birtchnell and Büscher, 2011). Disruption is therefore part of everyday life. Disruptions can be: "*disruptive to different actors in different contexts at different scales*" (Anable *et al.*, In Press : 5). It is difficult to quantify the impact of a disruption at an individual level, as a minor disruption, such as a train delay could have a significant impact on an individual if for example they were late for a job interview. Similarly a large scale disruption such as the Volcanic Ash Cloud may have a minimal impact if an individual did not wish to fly during and shortly after the event.

This research will take a novel approach to disruption in focusing on how transport planners working in the Local Authority (LA) sector can use planned 'disruptions' to change how people travel. Cairns *et al.*'s (1998) study identified sixty international case studies where schemes removed space for motor-vehicles and in the process made traffic 'disappear' from the network. This research is interested in identifying whether this 'disruptive' approach is being used by LA practitioners. Using the 3-elements model removes the requirement for a context dependent impact of a disruption on an individual and will allow an understanding of how LAs can influence how people wish to travel. By actively disrupting how people travel it should be possible to reduce the emissions from this sector with minimal 'chaos' to the transport network.

Lefebrve (2004) suggests that disruption creates 'lacuna': a hole in time that can be filled with invention and creation. It is possible that harnessing these lacunae that exist during planned disruptions by both transport planning practitioners and the public it may be possible to create a change. It is also worth noting that LA transport departments have to deal with unplanned events and that it is possible these may provide opportunities for change. These will fall outside the scope of the study, due to time and resource constraints.

1.2.2. Disincentives

Disincentives differ from disruptive measures but can also change behaviour. An example of this is the London Congestion Charge which provides a financial disincentive to people who which to travel by non-electric private motor-vehicle into central London (Shove and Walker, 2010). This disincentive has meant that people have adapted their mode of travel, location and time of meeting to accommodate this change but are not restricted from undertaking the action of driving. This distinction is important in the context of this research, as a disruptive measure prevents an action that was previously possible, whilst a disincentive makes it less desirable.

1.3.   The Practice of Transport Planning

The research will investigate the professional practice of transport planning to identify the influences of the 3-elements within transport planning, how the links are built and broken and how this impacts on what type of transport network is provide in England. LAs are placed at the centre of this research as this is where the practice of transport planning predominantly takes place within the UK context. Whilst central government and its departments are in control of the design and formation of policy and are responsible for the allocation of funding; it is within the LAs (and their consultancies) that transport schemes are planned, designed and implemented. LAs are therefore the 'bridge' between the socio (public, policy and politicians) and the technical (infrastructure) of what Geels (2004) defines as society's socio-technical system. This places a significant level of responsibility on the transport planners to ensure that the schemes that are designed and implemented in terms of delivering a network that is fit for purpose and that is able to meet the changing demands for transport.

1.3.1. Local Sustainable Transport Fund (LSTF)

The research will assess the LSTF to gain an insight into the transport planning system at the Local Authority (LA) level. The LSTF is a fund set aside by the UK Government for LAs outside London to deliver schemes designed to enhance sustainable travel options within local communities (DfT, 2010a). As part of the LSTF, LAs could apply for a range of funding for: Small Projects (SP), Large Projects (LP) and Key Components (KC) (as quick implementation aspects of the LP bid). SPs and KCs were for schemes up to £5m and applicants were notified of the funding decisions in two tranches: Tranche 1 announced SP and KC bids in May 2011 (DfT, 2011a), and Tranche 2 announced in May and June 2012 (DfT, 2012a, DfT, 2012b). LP bids were for schemes between £5m and £50m and the successful bids were announced in June 2012 (DfT, 2012b). As of June 2012, £538m was awarded to LAs from the LSTF fund. This total is raised to £1.14bn through several sources including by 'local contributions' from each LA's Integrated Transport Block funding which is used to deliver LTP3 schemes that have been incorporated into the LSTF. Other local contributors include: property developers; public transport providers; non-government organisations; and local charities. The funding is designed to deliver capital schemes to provide new infrastructure and revenue schemes designed to inform the public how to travel

sustainably, and to enable change by providing schemes including Personalised Travel Planning (PTP) and adult cycle training. In total 97 of the 145 bids were funded with the money being split between 112 local authorities.

The research will use the LSTF to explore both the changes that it created in the practice of transport planning and as a means of understanding what transport planners attempt to deliver in the context of the 3-elements.The LSTF also provides an opportunity to further explore the relationships that exist within LAs with other elements of the transport department and the wider authority to understand how this influences what is delivered.

1.4.   Delivering Sustainable Transport

A current definition of sustainable development states that is comprises of three strands: the environment, society and the economy (Adams, 2006). The DfT's definition of sustainable transport in their 2011 White Paper 'Creating Growth, Cutting Carbon: Making Sustainable Transport Happen' is based on this definition as demonstrated by this quote: *"Genuinely sustainable modes – environmentally sustainable as well as fiscally, economically and socially sustainable*", DfT, 2011b: 8). This does not place any weighting on each strand. The emphasis has since been placed on one strand following the announcement of LSTF capital funding for 2015/16 that stated that the next round will have: "*a strong focus on economic growth*" (DfT, 2013: 1). This indicates that the economy is the dominant strand in the development of sustainable transport within the DfT's definition.

This research is interested in understanding what changes are required to the practice of transport planning and the measures delivered to reduce the number of trips by private motor-vehicle. Within the DfT's 2011 White Paper the private motor-vehicle is included as part of the sustainable transport options, with reference to car sharing and car clubs (pp68), Park and Ride schemes (pp72) and electric and low emission vehicles (pp7, p72) (DfT,2011b). This framing of sustainable transport suggests that both the economic and social needs of travel outweigh the environmental impacts. This is of concern as cars and light vans accounted for 70% of UK transport GHG emissions in 2009, with buses accounting for 4% and rail 2% of emissions (DfT, 2010b). There is now near global consensus within academic literature that anthropogenic carbon dioxide (CO_2) emissions are having a significant impact on the global climate (IPCC, 2013, Cook *et al.*, 2013, IPCC 2007, DEFRA, 2007, Oreskes, 2005). In response to this challenge the UK Government of 1997 to 2010 set a legally binding target to reducing Greenhouse Gas Emissions (GHG) emissions by 80% by 2050 (DECC, 2009). To achieve this target significant change is required to how society produces and uses energy. With reference to energy use from transport, GHG emissions have remained relatively constant since 1990. This is despite the overall level of emissions from other sources falling during this period. (DECC 2012: 9). It is hoped that investigating transport planning through the 3-elements it will be possible to identify the changes required to the system and the best means of actioning them.

With the retention of private motor-vehicle use as part of the *sustainable* solution it will be difficult to see how the changes required to reduce GHG emissions will be made. The focus on electric and low emission vehicles is reliant on technological advances, legislation and adoption of the technology (Schäfer *et al.*, 2011: 25) all of which can influence whether technology delivers the desired impact within the timeframe. The other modes described as sustainable transport in the 2011 White Paper include: walking; cycling; and the use of public transport services including, bus, rail, light-rail and trams systems (but not trips by

aeroplane) (DfT, 2011b) and this is the same definition as the Government of 1997 to 2010 had post the *Eddington Transport Study* (Eddington, 2006) and prior to the 2011 White Paper as evidenced in the '*Delivering a Sustainable Transport System'* report (DfT, 2008). As the research will be reviewing sustainable transport schemes delivered through funding based on the DfT white paper, the definitions above will be used for this research.

1.4.1. Resilience

Sustainability and resilience are two words that are often linked, although their meanings are different. An example of this was the 1st International Conference on Urban Sustainability and Resilience that was held at UCL in November 2012. A copy of the paper presented in at the conference is available in Appendix B. Although both words can be used in a number of contexts this research will use the definition that sustainability is concerned with balancing the environmental, economic and social needs of a system to ensure that it can endure; whilst resilience is related to a system's ability to experience shocks or disruptions, whilst retaining the same function (Walker *et al.*, 2006) or returning to its previous state after the disruption as shown in Figure 1.2. Chelleri and Olazabal (2012) also show that a resilient system can adapt or transform depending on the nature of the disruption. An example of an adaptive system from transport planning would be winter weather events where the system has a reduced function (or new regime) but is able to operate, before reverting back to the previous regime. Regime shifts can also be irreversible when they transform and in this case the system would be said to not be resilient but may be sustainable (Walker *et al.*, 2006). Conversely a resilient system may not be sustainable, for example private-vehicle use regime is not environmentally sustainable at present due to GHG emissions, but the regime is resilient to change due to economic and societal factors.
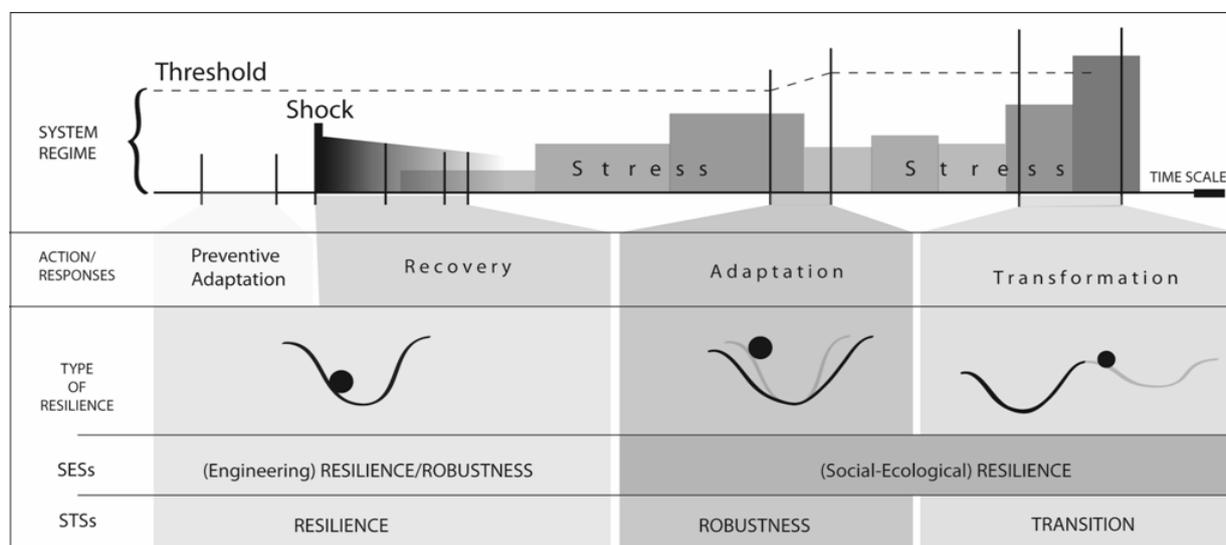
Figure 1-2 Example of Resilience and Adaptation to a System (Chelleri and Olazabal, 2012)

Resilience of the transport infrastructure provided through the LSTF is important to this research, as if the research published in academic literature discussed in Section 1.4 proves to be correct, it is likely that there will be increased occurrences of disruptive events and other associated impacts from climate change that will adversely affect society's ability to survive and continue to thrive. It is therefore of importance that the schemes provided are sustainable, environmentally through emitting fewer GHG emissions, socially by providing

access to services for all and economically through providing access to employment, whilst remaining resilient to the impacts of climate change.

1.5. Aims and objectives

The aim of this thesis is to understand what benefits are available through the application of the 3-elements model approach to behaviour change. This will be analysed at two levels: through assessing a practice and as an analysis tool of sustainable transport. By understanding the practicality of the tool for both these tasks it is hoped that it will be possible to identify what changes are required to transport planning to create the significant changes required to reduce GHG emissions from transport in a way that existing approaches have so far failed to achieve.

With these issues in mind the research questions to be answered with this research are as follows:

Question 1: How useful is Social Practice Theory as a tool to understand professional practices?

Question 2: Is Social Practice Theory a useful tool to be used by practitioners when delivering behaviour change initiatives (with reference to the LSTF scheme)?

Question 3: Moving transport planning forwards: is SPT a theory for explaining change; can it be used to create change; can it do neither; or both?

Chapter 2. Transport Planning as a Practice

2.1. The Social Practice of Transport Planning

Social practices rarely, if ever exist in isolation. Shove *et al.* (2012) explain "*Practices link together to form bundles and complexes. Bundles are loose-knit patterns based on the co-location and co-existence of practices*" [pp81]. Schatzki (1996) explains that they create causal chains of action. These exist in hierarchies that overlap and are important to understand as they influence how and why a practice is performed (Warde, 2005). Practices can become 'black-boxed' into one practice and this in essence is what the practice of transport planning is a bundle of different practices. Table 2.1 describes the many practices undertaken by transport planning practitioners in performing the practice of transport planning.

Table 2-1 Practices undertaken by Transport Planners (adapted from Billington and Wenban-Smith, 2000 [pp26-27].

Transport Planning	Agency or Structure? Or Both?
Help formulate transport policy	Structure (Policy)
Forecasting travel demand	Both. Structure (Policy), Agency (Behaviour)
Influencing land use planning	Structure (Infrastructure)
Designing new infrastructure	Structure (Infrastructure)
Devising new traffic management systems	Structure (Infrastructure)
Promoting travel awareness and encouraging modal shift	Agency (Behaviour)
Designing Traffic Control Systems	Structure (Infrastructure)
Appraising the costs and benefits of new schemes	Structure (Economics)
Devising green commuter plans	Agency (Behaviour)
Studying road user behaviour	Agency (Behaviour)
Devising traffic calming measures	Structure (Infrastructure)
Improving road safety	Both. Structure (infrastructure), Agency (Behaviour)
Predicting patronage and revenue	Both. Structure (Policy), Agency (Behaviour)
Evaluating parking provision	Structure (Policy)
Determining public attitudes	Agency (Behaviour)
Promoting integration between modes	Both. Structure (Infrastructure), Agency (Behaviour)
Designing pedestrian and cycle facilities.	Structure (Infrastructure)
Assessing the transport impact of new developments	Agency (Behaviour)
Developing telematics applications	Both. Structure (Policy), Agency (Behaviour)
Restraining traffic in town centres	Structure (Infrastructure)
Encouraging efficient freight transport	Both. Structure (Infrastructure), Agency (Behaviour)
Designing bus priority measures	Structure (Infrastructure)
Modelling transport patterns	Structure (Infrastructure)
And many other tasks	-

Each of these individual practices may have separate materials, meanings and competences that influence how they are undertaken. These may push and pull the practice in different directions from each other. It is possible that these conflicts are the reason that transport

planning has failed to successfully deal with the issue of congestion and latterly issues of GHG emissions.

The table has also been adapted to incorporate whether the skills identified are designed to deal with the agency of travel (individuals), the structure of transport (both physical and political); or both. This is to reflect the change in meanings that have developed through the history of transport planning. For a more detailed literature review of the history of transport planning in England refer to Appendix C. The changes in the materials, competences and meanings of transport planning have made and broken links between each element over time. This chapter will provide an overview of transport planning as a bundle of practices in relation to the 3-elements prior to the LSTF. It will then discuss the impact of the LSTF and how it may have 'disrupted' the existing elements of the 3-elements model of transport planning, by making, breaking and/or strengthening certain links. The chapter will then discuss how the 3-elements allows practitioners to identify issues outside the control of transport planning before identifying how this research will enhance the theories of social practice in relation to this issue.

Transport planning is also used to manage the UK rail system and the logistics sector. This research will however focus on the element of transport planning undertaken to manage the highway network. This has traditionally taken place within LAs, although elements of this process are now undertaken by private transport consultancies. The Highways Agency manage the motorway network and A Roads that are deemed 'strategic', with the remainder of the network managed by LAs. When transport planning is discussed within this research it will be with reference to the practices associated with LAs and their appointed consultancies.

2.2. The 3-Elements of Transport Planning

The use of the 3-elements in this approach is novel, as it will be used to assess a professional activity rather than an everyday practice, such as showering or driving. Table 2.2 provides a short overview of the types of materials, competences and meanings required to perform the practice of transport planning. This list like Table 2.1 is by no means exhaustive, but provides a basic understanding of what elements may be required for transport planning to be performed. Some factors do not fit easily into the model, but whilst not a physical material, finance is an essential material to deliver transport planning schemes, providing the resources of practitioners to deliver the schemes alongside the materials required.

Table 2-2 3-Elements of Transport Planning

Element	Factors
Materials	Finance, transport planning practitioners, infrastructure design tools transport models, structure of LA, National Traffic Model (NTM)
Competences	Designing transport schemes, running models and understanding outputs, consulting with councilors and the public, skills to complete Cost Benefit Analysis (CBA), skills to deliver behaviour change initiatives, interpreting policy, managing budgets and timetables,
Meanings	History of TP e.g. Traffic in Towns, government policy, government finance, local politics, NTM, CBA, practitioner's education, mobility, individual choice, enabling movement, economic benefits, carbon reduction, government policy, government and local government structure (silos)

The 3-elements of the profession have changed and adapted over the past 50 years, as there has been a move away from an infrastructure led industry towards an economic and modelling based approach (Dudley and Preston, 2013). For more information on this please refer to Appendix C. This is reflected in the meanings that show the multitude of sources that influence the practice. In recent times transport planning has been influenced by behaviour change approaches (Chatterjee, 2009) and this has altered the competences and materials required to deliver these services. The thesis will now look at five factors that influence more than one element of transport planning practice:

- Finance;
- Computer Modelling;
- Behaviour Change;
- Education of practitioners;
- LA Structure.

2.2.1. Finance

Financial support from the DfT provides a form of validation for practitioners in their role in transport planning by providing the resources to deliver the transport solutions they have proposed. Without this funding it would not be possible to provide the materials that are delivered through the process and employ staff with the competences to deliver the schemes. The meanings of the funding are also important, as this influences what LAs are able to bid for. This involves an element of pragmatism, from what the practitioner wants to deliver and what is possible.

The bidding for funding for schemes is primarily based around the Cost Benefit Analysis (CBA) approach to provide a "scientific and rational response" to transport issues (Dudley and Preston, 2013, Munby, 1968 [p9]). The CBA model is favoured by politicians as it is easy to understand and as the name suggests it provides a clear link between the costs and benefits of implementing a scheme. The economic paradigm became dominant with the growth of computing power from the 1960s through the influence of then Transport Minister Barbara Castle creating the role of Director of Economic Planning to give economics greater importance in planning (Dudley and Preston, 2013). This occurred at a time when it became possible to forecast future road traffic demand (Munby, 1968, pp12) and model it.

This monetised approach creates financial costs for impacts such as noise and GHG emissions so that the total costs of the scheme can be assessed, rather than just the financial costs of implementing the scheme. This approach simplifies the possible environmental and social impacts of a transport scheme and ignores the costs that cannot be quantified. It is also based on simple assumptions about human behaviour that cannot adequately capture the complexity of how people will travel or the economic impact of adding or removing transport provision.

2.2.2. Computer Modelling

Computer modelling has enabled transport planners to understand transport in ways that would not have been possible 50 years ago. This has been built up around the demand for software (materials) and the competences of using and interpreting the results of them. The problem with many models is like the CBA they are based on simple assumptions of human behaviour. George Box said that: "*All models are wrong, [but] some of them are useful*", (Box and Draper, 1987: 424). Software packages such as SATURN (Simulation and Assignment

of Traffic to Urban Road Networks) include a simplistic interpretation of behaviour (agency) based on Wardrop's Principle (Van Vliet, 2013 pp7-1, 7-2) in that the route choice when travelling is the only decision made. Wardrop's Principle is mathematically rigorous, in that it can be checked easily, and can be applied cheaply and quickly to assess transport issues (Cairns *et al.*, 1998), helping to explain why such models remain dominant within transport planning.

This simple assumption of route choice is compounded when SATURN is used to forecast future transport scenarios, as it uses growth factors based on the National Transport Model (NTM). The Department for Transport released the latest forecasts from the National Transport Model (NTM) for road transport in July 2013 (DfT, 2013). This model is based on a set of assumptions regarding population, economic growth and the cost of fuel and predicts how the demand for road traffic will change in the future. The current projections are for continued significant growth in private motor-vehicle use, despite the identified need from the DfT through the funding of the LSTF to reduce emissions associated private motor-vehicle use. Many critics of this demand modelling highlight the flaws and over-estimation of demand that have continued to this day (CfBT, 2013, Goodwin, 2013, Næss *et al.*, 2006). Through this over-estimation transport planners are forced to design transport infrastructure's to cope with this projected demand rather than attempt to design schemes that transfer the demand to sustainable modes of travel.

Sheller and Urry (2000) state that the problem with transport planning is related to the assumptions made at the start of the process: "*Transport researchers take 'demand' for transport as a given, as a black box not needing much further investigation, or as derived from the level of a society's income*" [pp212]. Models based on such simple assumptions of human behaviour are not capable of dealing with changes that occur to transport demand but return the industry to a 'predict and provide' approach which dominated the industry between the 1960s and 1990s (Cairns *et al.*, 1998, SACTRA, 1994). Whilst academic transport studies are debating issue such as the possibility of Peak Car, such issues take a long time to filter into transport planning. Dudley and Preston (2013) suggest there is a lead time of up to 20 years and by this time the transport network may have been altered dramatically on incorrect assumptions within transport. It is therefore possible that the meanings associated with transport modelling or the assumptions around demand that need to change.

2.2.3. Behaviour Change
The historic background of transport planning has been from both (planning and designing) and economics (justifying cost) (Dudley and Preston, 2013). This means that the industry has traditionally been based on structure, rather than dealing with how people use transport (agency). Within strategic transport models such as SATURN behaviour is reduced to simple decisions, rather than the complex set of decisions that are made every day. Although economic models remain dominant in transport planning, other areas developed, particularly in academic studies of transport, which have been influenced by geography and more recently psychology-based behaviour change approaches grounded in social psychology and behavioural economics (Dudley and Preston, 2012).

At present, psychologically-based approaches to behaviour are politically favoured and have been given the general term 'Behaviour Change' at the exclusion of all other options by the UK Government. Approaches focused on changing an individual's behaviour include

providing information and more recently using a more subtle approach of 'nudging' behaviour to a preferred (less environmentally damaging) action (Dolan *et al.*, 2010). The development of behaviour change approaches has required transport planning as a practice to gain a new set of competences as well as associated meanings in relation to individual choice. Traditional transport planning approaches are based on aggregated movements, based on the number of trips being made rather than individual choice of whether the trip will be made. Adding the extra level of complexity has altered the skills required by practitioners.

2.2.4. Education of Practitioners

The DfT's Ten Year Plan 2000 recognised that change was required for transport in the 21st century in the UK (DfT, 2000). Billington and Wenban-Smith (2000) identified the need for a change in the 'type' of transport planners needed to meet the demand due to the issues relating to mobility and the environment. This new 'type' of transport planner brings different competences and meanings to transport planning that may previously have been absent. They emphasised that this need could not be addressed by the traditional approaches to transport planning. Many of these new skills were related to understanding behaviour.

Education influences the competences practitioners have, as well as the materials (in terms of practitioners) available to deliver transport initiatives. Billington and Wenban-Smith's (2000) paper Transport Skills for the New Millennium highlighted the lack of training available for new transport planners. In 2012, 12 years after Billington and Wenban-Smith's paper Clark and Lyons' (2012) found that in total 90% of transport planners who responded to their survey held a first degree, with 37% in geography and just 19% in engineering. This shows the change in competences and skills practitioners have and the associated meanings that come from the subjects they studied. Also of note from Clark and Lyons' (2012) study was that 37% of practitioners had a second degree in transport planning (or transport planning with engineering). This suggests that Billington and Wenban-Smith's aim of improving the provision of post-graduate training has been successful.

2.2.5. LA Structure

LAs are complex systems (Mitleton-Kelly, 2003) and are involved in many aspects of daily life. It is from this unique position that they are able to influence how people behave, rather than simply providing for society. LAs face pressure on all sides as shown in Figure 2.1. From below, the customer-facing side of the local authority deals with the public and their expectations of how a LA should operate and what services they should provide. Local and national politics also apply pressure through: party politics; legislation; and policy. LAs also face pressure from the local media who often sensationalise the elements of a story that they perceive to be of interest to increase sales (Dickinson, 2006), increasing web traffic or editorial policy.
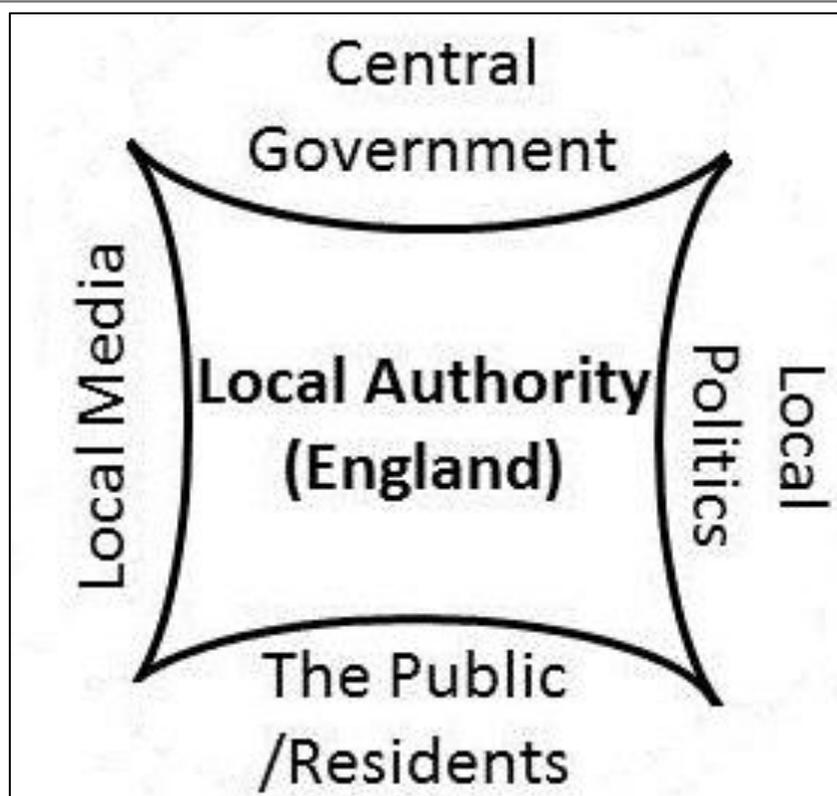
Figure 2-1: Pressures on Local Authorities

All these pressures require practitioners to have a set of skills to deal with a variety of influences. These include consulting with other LA officers from different departments, councillors and the public. The varied nature of an LA provides the opportunity to influence how people travel through the provision of materials, meanings and competences. This requires cross-departmental working, effective and coherent management across the authority and the removal of the 'silo mentality' and the horizontal transfer of expertise and working between departments (Olowoporoku *et al.*, 2011, Bundred, 2006, Rashman and Radnor, 2005). Each of these relationships will influence the meanings that are placed on transport planning and it is up to the practitioner to find the most practicable solution.

2.2.6. The 3-elements of Transport Planning – Summary
As demonstrated by these five examples it is difficult to provide a simple summary of all the factors that influence the 3-elements of transport practice. Within the summary of five key factors, there are multitude of different materials and competences required and meanings that influence different aspects of the practice. The model is, as the authors admit, a reduction of a complex system into a simple framework (Shove *et al.*, 2012). It is this simplicity that is both its strength and its weakness. The strength is that it provides a starting point to identify the factors that influence how a professional practice is undertaken. This concept is easy to understand and apply. Its weaknesses are the difficulty in how to compile all of these factors together to form a coherent narrative of a professional practice. Many of the factors that influence a practice such as finance and power do not fit neatly into the 3-element categories.

Practices develop over time and space and it is perhaps at the points of change that the model can provide a useful insight into professional practice. This research will attempt to

identify this through investigating such a change and whether this occurred through the funding of the LSTF.

2.3. Making, Breaking and Strengthening Links

Shove *et al.* (2012) believe that "*defining and classifying an emergent practice is not something that any one actor can control*" [pp54]. The UK Government have attempted to influence and classify the practices of sustainable travel through the funding of the LSTF. Whilst behaviour change approaches such as Voluntary Travel Behaviour Change (VTBC) techniques have existed within UK transport planning they have remained in a niche as they were not used as a mainstream tool within the transport planning profession such as transport modelling. The LSTF is the first national attempt to deal with agency in travel, by using behavioural economics and psychology techniques, bringing the approaches from the niche into the mainstream.

The funding, or non-funding of the LAs' LSTF project had a significant impact on how the practice of transport planning would be undertaken within the LA for the four years between 2011 and 2015. For those with funding it would provide the funding for materials to deliver sustainable transport infrastructure and training, as well as provide money to either retain the competences of existing staff or pay for the employment of people with skill sets required. The meanings associated with transport planning within the LA would change. Whilst most of the authority is cutting spending due to the austerity measures by 27% between 2010/11 and 2014/15 (HM Treasury, 2010: 10), the department may have difficulty delivering the service and spending the money effectively in the timeframe. Conversely if the LSTF bid was not funded the transport planning team may have to reduce staffing levels, losing valuable materials and competences from the team. Without the possible influx of new staff the methods and skills of delivering sustainable transport within retained practitioners may not develop. The meanings associated with transport planning within the LA may be different as would the meanings attributed to the LSTF. This research aims to identify where this was the case.

2.4. Chapter Summary

The chapter provides a critique of the 3-elements model by applying it to the professional practice of transport planning. It demonstrates that the 'black-boxed' practice of transport planning is made up of many differing factors, all of which influence how particular practitioners will undertake the practice. The research highlights the weaknesses of some of the assumptions within transport planning and identifies the need to change these. The chapter then critiques the simplicity of the model and suggests that this may be both its strength and weakness. This research will attempt to add to the theories of social practice, by demonstrating the importance of power relations in the emergence, stability and disappearance of practices as this is not adequately dealt with through current research.

The next chapter will discuss how the 3-elements model can be used by LAs as a tool to deliver behaviour change initiatives.

Chapter 3. 3-elements model as a tool for creating behaviour change

3.1. Introduction

The 3-elements model provides an alternative approach to behaviour change to the behavioural economics and psychological approaches that are currently in favour with the Government of 2010 to present for delivering public policy and services (Cabinet Office, 2013). Theories of social practice have yet to be applied in field of transport planning although they are starting to be used in academic transport research (Spotswood *et al.*, In Press, Watson, 2012). Theories of social practice have also increased in use in the fields of health and energy use (Guell *et al.*, 2012, Chatterton and Anderson, 2011, Darnton *et al.*, 2011). The research is interested in the application of the 3-elements model to both how transport practitioners perform the practice of transport planning and to what they deliver. This is because what influences on practitioners may differ from those that affect the public. This chapter will therefore discuss: the current application of behaviour change approaches in the transport sector; what differences the 3-elements model might bring to transport planning's approach to behaviour change; the development of a co-ordinated approach to delivering behaviour change to transport planning; the factors that sit outside transport planning's control that affect transport before looking at the possible future for the industry and what it delivers.

3.2. Behaviour Change in Transport Sector

The psychology-based behavioural change paradigm provides a narrow framing of the problem, based on individual agency fails to adequately take into account the many external factors that prevent 'pro-environmental' behaviours from being taken up (Shove, 2011, Shove, 2010). This is referred to by psychologists as the value-action gap (Darnton *et al.*, 2011, Shove, 2010, Kollmuss and Agyeman, 2002, Blake, 1999).

Within transport planning psychological behaviour change polices where trialled in the UK, as part of the *Sustainable Travel Towns* pilot project between 2004 and 2009 (Sloman *et al.*, 2010). This followed the research by Cairns *et al.* (2004) which assessed various initiatives being undertaken in the UK but lacked the detail for comprehensive assessment (Chatterjee, 2009). The aim of the Sustainable Travel Towns project was to assess sustainable travel and Voluntary Travel Behaviour Change (VTBC) initiatives, known in the UK as Smarter Choices, within three towns in the England: Darlington; Peterborough; and Worcester. The report concluded that the pilot was successful in reducing travel by car and increasing use of other "sustainable" modes. The scheme was able to show that in economic terms VTBC schemes in the England provided good value for money when delivered in conjunction with improvements to sustainable transport infrastructure (Sloman *et al.*, 2010). The conclusions of the report show the need to provide clear evidence of the benefits of the schemes in economic terms. The success of the *Sustainable Travel Towns* pilot led to the DfT funding the LSTF project in 2011.

3.3. 3-elements Approach to Transport Planning

The 3-elements model will be used in an attempt to 'bridge' the value-action gap, by identifying reasons why pro-environmental behaviours are not carried through. The 3-elements model will be used to provide an alternative assessment of the LSTF projects being delivered in England between 2011 and 2015. With the apparent success of VTBC

within the Sustainable Travel Towns pilot in meeting the economic requirements of the transport planning sector it will be useful to understand whether these schemes are attempting to deliver change through, agency, structure or a mixture of the both (structuration). At the heart of this will be an understanding of whether the schemes are designed to: influence the materials provided for sustainable travel; the competences of users to travel sustainably; and the meanings associated with travel. By giving the schemes a wider framing than individual choice it is hoped that LAs will be able to provide more successful and sustainable transport schemes in the future.

The DfT's advice to LAs submitting LSTF bids discussed the possibility of using psychology-based behaviour change techniques (DfT, 2011) and it is therefore unlikely that other approaches are unlikely to have been used within the LSTF delivery programme. This means that it is not possible to assess the application of social practice techniques such as the 3-elements model. Instead this thesis will 'retro-fit' the 3-elements model to the existing schemes that have been included in the bid documents to analyse whether they are designed to influence the materials, competences or meanings associated with transport. This can then be used to either support or reject the use of this approach for the design of transport schemes in the future. Transport planning has traditionally been assessed through the economic benefits provided by the schemes being delivered, but it is possible that many of the benefits of VTBC schemes are not quantifiable in economic terms. This research is interested in investigating whether an alternative assessment framework is required for qualifying the success of behaviour change initiatives.

3.4. Planned Disruption as a Tool for Behaviour Change

When designing transport schemes transport planners have the opportunity to create capacity within the network, increasing the opportunity to travel. Transport planners also have the opportunity to 'disrupt' the way people travel by reducing the capacity of the network. This can be done with minimal impact to the network (Cairns *et al.*, 2002, 1998) although it is possible that public opinion and the views of Local Councillors may prevent planned disruptions from taking place. Planned disruptions can break rhythms; throwing out the order of everyday life (Lefebvre, 2004). Lefebvre (2004) calls this Arrhythmia, where there is a problem within the normal ordering of everyday life and creating 'lacuna'. Assessing this in relation to practice theory the links between the three elements are broken by a disruption and this creates new ways of performing a practice or makes the practice disappear.

The key is to identify where these lacunae exist and how to harness them. Several examples come from unplanned disruptions such as Workington, Cumbria in November 2009 where excessive flooding caused the destruction or significant damage to all road and pedestrian crossing points, leaving the railway bridge as the only possible travel option between the two sides of the town. It took five months for a new road bridge to be restored, and within this lacuna the way people travelled changed (Guiver, 2010). However once the road bridge was restored the majority of people who were travelling by sustainable modes returned to driving. LAs need to be looking for these opportunities to create a long-term change in behaviour. By identifying where such opportunities exist is the biggest challenge, as for many they wish to see the transport network return to pre-event conditions (Wisner *et al.*, 2004) even if this means that the network fails to operate as effectively as it has done during the disruption. An

example of this was the re-opening of Bridge Valley Road in Bristol, were the Council had to apologise for the end of free-flowing traffic in the vicinity of the re-opened road (BBC, 2011).

Breaking or disrupting the links between the elements through the provision or removal of infrastructure (materials), travel training (competences) and restrictions on the highway network (meanings) are some of the ways that LAs can influence travel behaviour, all of which can be disruptive to private motor-vehicle use. This research will provide a new insight into whether such measures are being adopted by LAs when delivering sustainable transport provision in England.

3.5. Factors outside the Control of Transport Planners

Although LAs have been given the task of creating behaviour change in relation to transport, in reality there is only so much that they can do. This is because many factors that affect transport sit outside LAs control. Actions of central Government have a significant impact on the meanings associated with travel, even if they are unintended. The Education Reform Act 1988 gave parents the 'choice' to send their children to their preferred school (Gillard, 2011). This has had implications for the journeys made to and from school. Jarvis and Alvanides (2009) show in Figure 3.1 the complexity of journeys that this Act has created in Newcastle with the red lines showing the closest school to home locations (although not by road) and the purple lines show the actual journeys made. The DfT's National Travel Survey 2011 shows that in the AM peak the number of car trips that are attributed to 'escort education' trips has increased in the AM peak from 10% to 14% between 1995/7 to 2009 (DfT, 2012). This increase in travel is outside of the control of LA transport planning teams although they may be able to work with the education department to resolve some of the issues.
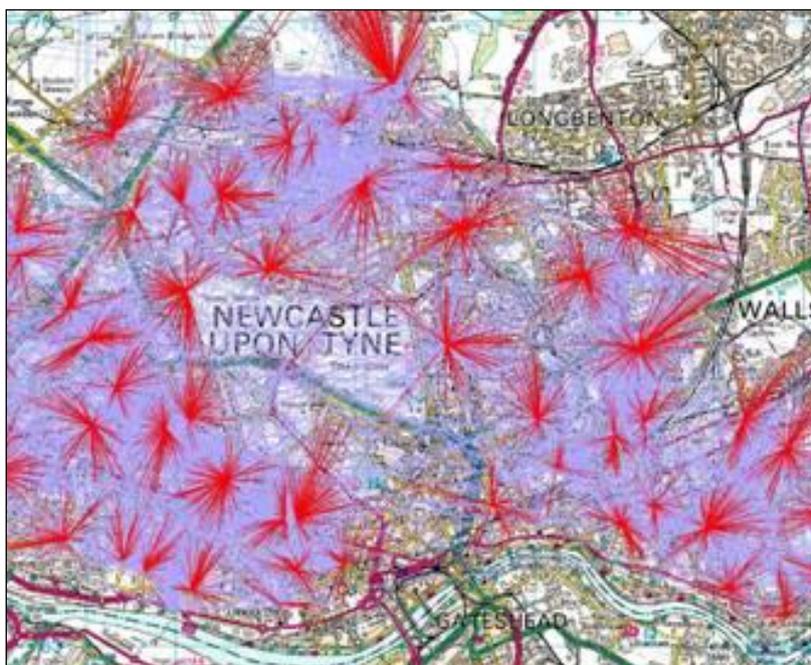
Figure 3-1: Journeys to School in Newcastle (Jarvis and Alvanides, 2009).

Changes to working life patterns and the desire for 'quality' time also influence how people chose to travel (Southerton, 2003). The changes to the UK employment market towards a service sector (Green *et al.* 1999) altered the job market and saw an increase in women in employment increasing the number of dual income families (Washbrook, 2007).This has

altered the dynamic of the family, with both partners responsible for household income, childcare and other domestic arrangements. The 3-elements model approach will enable transport practitioners to identify the elements that are outside their control. By understanding the factors that can be controlled it should be possible to create initiatives that can influence and possibly change travel practices.

3.5.1. Co-ordinated Approach to Change

By understanding what can and cannot be controlled enables policy makers to deliver co-ordinated schemes that can create the change you wish to make, through the delivery by multiple sources. In the case of transport planning this would involve co-ordination with bodies and groups that would not be associated with the practice. The 3-elements model does not rely on individual choice but provides an understanding the wider influences on how people travel. Watson (2012) suggests that practices are embedded within the socio-technical system and that: "*By understanding the systemic relations in which particular mobility practices are embedded, it should be possible to begin to identify possible points of intervention*" [pp494]. When we are able to identify the layer or layers at which a change is required it may be possible to break the links that sustain undesirable practices (Shove *et al.*, 2012). This could be particularly useful in reducing the number of trips by private motor-vehicle.

Shove *et al.* (2012) cite the example in Japan where the national Government developed the 'Cool Biz' programme, which was designed to reduce energy demand from climate control to reduce CO_2 emissions. The Government amended the rules to suggest to property owners that no heating or cooling should occur in buildings between 20°C and 28°C. If people were hot or cold they were encouraged to remove or add clothing. Added to this the Government helped to alter the perception of the business suit, with many prominent politicians dressing in a more casual manner changing the meaning of what you should wear in a business meeting. The clothing industry started designing new ranges of clothes to accommodate this development, providing the materials for people to dress informally. The competence of how to heat and cool a building was also changed and this contributed to a significant drop in CO_2 emissions from building climate control (Shove *et al.*, 2012). Whilst it is difficult to foresee all the possible outcomes that may occur from breaking links between the elements, the Cool Biz example demonstrates that intervention by policy-makers and various levels of the Government can disrupt and break the links between the elements and provide a beneficial result. Retrospectively this looks relatively easy the complexity of practices means that there may be unintended consequences from the intervention if such an approach were to be applied to the transport sector.

3.6. The future of transport planning

This research is interested in providing ideas in the way that transport planning can move forward both as a practice and in what it delivers. The current economic approach to transport planning which has dominated the practice since the 1960s has proved to be ineffective in resolving the issues of congestion and more recently GHG emissions. The long-term benefits of psychology-based behaviour change are yet to be proven. It is possible that an alternative, more complementary approach may be required. Kenworthy (2012) states that many approaches are: "*seeking to treat only the symptoms of an ailing transport system*" pp12, rather than understand the root causes of why people are travelling. To continue the medical analogy the theory of salutogenesis was developed by the late

sociologist Aaron Antonovsky in 1979 (Burns, 2010, Antonovsky, 1996). The concept suggests that medical practices are focused on pathology when they should be focussing on promotion of the factors that make people healthy. This approach has been included in the Scottish Government's approach to healthcare (Burns, 2010). Transport planning only deals with issues created by people's desire to travel and fails to adequately investigate the reasons for this desire. It could be from within this understanding, related to the meanings of travel, that there means of reducing trips by private-motor car may lie and it is in this area that this research will add to the understanding of the future direction of the industry.

3.7. Chapter Summary

The chapter describes the dominance of economic and psychology-based behaviour change approaches that dominate the transport planning sector and describes how the application of the 3-elements model to an existing delivery scheme will identify whether it is an appropriate model to understand the type of scheme that should be delivered by transport planners. The chapter explains the opportunities that exist to disrupt undesirable practices for transport planners and how these can be used to break the links between private motor-vehicle use and travel. The chapter highlights the issues that sit outside the control of transport planning, but affect travel and how a co-ordinated approach to tackling these issues is required. The chapter concludes with an overview of a desirable future path for transport planning that has been identified. This research will test through empirical data whether such a future is possible.

Chapter 4. Methodology and Research Methods

4.1. Introduction

This chapter presents the rationale for the collection of empirical data to answer the three research questions set out in Section 1.5. The chapter initially sets out the research strategy before providing an explanation of the mixed-methods approach that has been selected for this research. The chapter will also explain how the data will be collected, the analysis methods that have been chosen and why these approaches have been chosen for this research. The chapter will summarise and explain how the research questions will be answered using by this approach.

4.2. Research Strategy

Transport studies have traditionally used positivist approaches that were developed in the natural sciences where a researcher with a clear research question seeks to demonstrate a cause and effect between the phenomena they are observing. This is because transport planning is grounded in economic theory where practitioners are required to provide a scientific and rational response to transport issues (Dudley and Preston, 2013) whilst demonstrating the fiscal benefits of delivering a scheme (Munby, 1968: 9). Within academic transport research there have been a growing number of studies that use interpretive approaches, where the researcher explores phenomena in depth through interviews or case studies. This study will fall in between the two extreme approaches using both positivist approaches favoured by the transport planning sector and interpretive approaches growing in favour in the academic sector and will use a mix of both quantitative and qualitative methods. The use of mixed methods has been applied to help form a coherent argument (Wilson, 2006). This method is often called 'triangulation', yet this term can be difficult to understand (Willis, 2007, Bogdan and Biklen, 2000) and is in reality just a metaphor. Bogdan and Biklen (2000) state: "*If you are using different data-collecting techniques – interviewing, observation and official documents, for example – say that*", pp107. This research will therefore use three different data-collecting techniques: content analysis; a survey of transport practitioners; and interviews with key people within the transport planning sector.

The mixed-methods approach is designed to improve the understanding of the phenomena being studied; in this case it is the practice of transport planning and the delivery of the LSTF. The transport planning profession has been chosen to research as it acts as a bridge between the structure of policy and the infrastructure designed for travel and the agency of the individuals who travel. The approach involves gathering data from different sources and this gives the research rigour (Williamson, 2005). The quantitative data will provide the background for the research by explaining what is being delivered through the content analysis. The survey further helps to understand why this was delivered and the qualitative interviews will provide subjective explanations for the decisions within the process. This will provide a rounded understanding of transport planning as a professional practice, assess the use of the 3-elements model as a delivery tool for transport planners and assist with an understanding on the future of transport planning.

4.2.1. Epistemological and Ontological Approach

The epistemological approach of the research is based on the researcher's personal experience. This has played some part in influencing the decision to undertake the research and the direction that the research is taking. Having previous experience of working within the transport planning sector, both as a transport consultant and as a council officer it is possible that I am 'too close' to the subject. To counter this I would argue that this previous experience gives me an advantage as I have a working understanding of the transport planning sector that is practical rather than abstract. This will allow me as a researcher to penetrate the language and terminology of the group which can often be a barrier for researchers (Denzin, 2009).

Ontologically the research takes a *constructionist* approach as social practice theory, whilst studying the practices rather than social actors, understands that the phenomena (practices) and their meanings would not exist without their repetition by actors (Shove *et al.*, 2012, Bryman, 2004, Reckwitz, 2002, Schatzki, 1996). Without actors to construct practices, there would be no phenomena to study. Understanding the methods and the methodological, epistemological and ontological reasons for choosing this approach the research will now discuss the types of data being collected for this research.

4.3. Data Collection

The data collection process in this research involves three stages, with each stage influencing the data collected at the next stage. Figure 4.1 provides a visual concept of the methodological approach to data collection. The remainder of this section will discuss the collection methods and why they were selected.

Phase 1 - Content Analysis
- Assessment of all 145 separate LSTF bid documents to generate quantitative and qualitative data
- Findings used to create working questions for phases 2 and 3

Phase 2 - Internet Survey of Transport Practitioners
- Email details of survey to contacts for LSTF bid documents
- Provide new data to inform phase 3 and test findings of phase 1

Phase 3 - Interviews with Key People with LSTF Delivery Process
- Conduct 1-2-1 interviews with transport practitioners identified in phase 2
- Provide new data to support or conflict with findings from phases 1 and 2
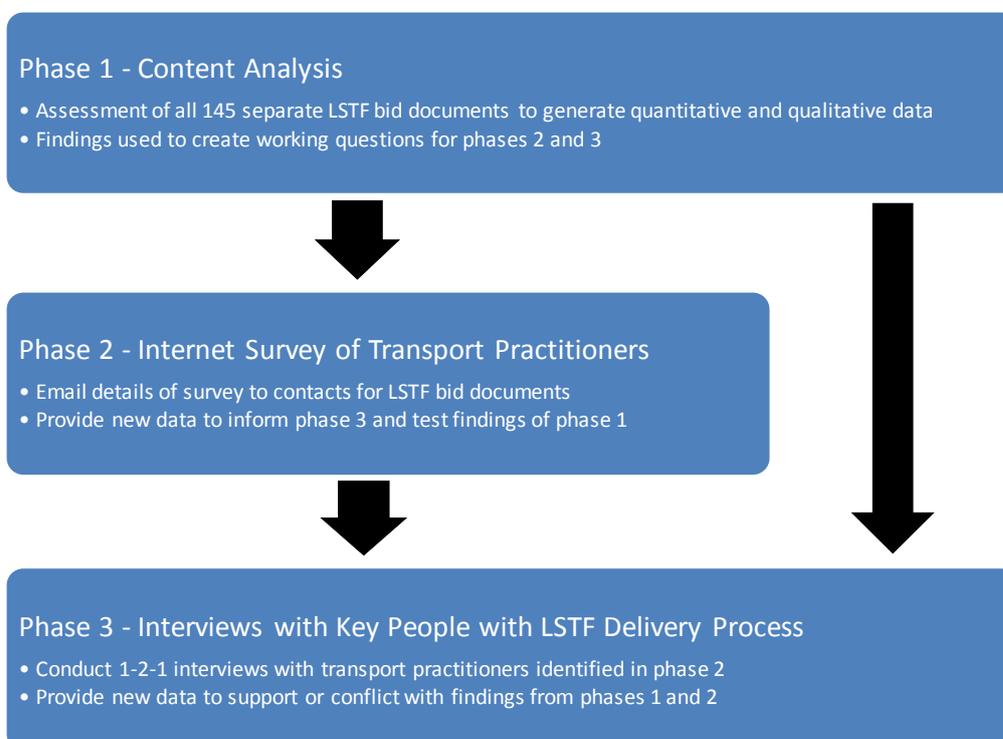
Figure 4-1: Research Methodology

4.3.1. Phase 1 – Content Analysis Data Collection

The research uses a content analysis assessment as this is a means of quantifying content of a document or documents into pre-determined categories in a systematic manner (Bryman, 2004). The nature of this approach is replicable, so gives reliability to the method. This approach was selected as it provided a useful background to the LSTF and helps to provide a detailed understanding of the schemes being delivered which are defined 'sustainable transport' schemes by LAs.

In total there were 145 bid documents submitted to the DfT and it was decided to review all of the documents rather than a selection as this provided an opportunity to study the whole of the LSTF process at an aggregated level rather than a snapshot of schemes that may or may not have been representative of the LSTF overall. The findings from the content analysis assessment have been used as the basis for both the survey and the interviews.

LAs submitting to the LSTF were given a proforma file to complete the submission and it is these documents that were assessed. This proforma was followed in all bar one (unsuccessful) submission[1]. An example bid document is available in Appendix D. The bid document was broken down into five sections A-E shown in Table 4.1. An initial pilot of four bid documents selected at random identified that for the purposes of the content analysis the key data was included in Section B: objectives and Section C the package description, so for the wider assessment only these sections were reviewed.

Table 4-1 Sections of LSTF Bid Submissions

Section	What is included
A	Project name; headline description; a summary of the geographical area; the type bid; the cost of the package and DfT contribution sought; a spend profile for the project and what the local contribution will be; how it would be funded; and which bodies would be working in partnership with the authority
B	The local context; evidence for the need for the funding and the objectives the scheme was designed to meet.
C	Package description; a more detailed breakdown of the package costs, the rationale and strategic fit of the bid and community support.
D	The value for money assessment; financial sustainability.
E	Implementation; output milestones, a summary of key risks, and project evaluation.

Many of the documents were available on the internet, whilst others were sourced through contacting the local authority and requesting a copy. All of the documents were received and assessed between August 2012 and December 2012.

4.3.2. Phase 2 – Online Survey (Self completion questionnaire)

Following the completion of the content analysis the second phase of research was designed to gather primary empirical data for the project. It was decided that the most efficient approach to gathering data would be an online survey. This was selected principally for ease of delivery to contacts at local authorities. Each bid document front cover contained details of the project's S*enior Responsible Owner* (SRO) and the *bid manager*. On the

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[1] Walsall Borough Council submitted a bid called A-Stars Active Sustainable Travel and Road Safety Scheme that contained a project delivery plan

majority of documents the bid manager's work email address was supplied whilst the SRO's was not. In cases where the bid manager's email address was not supplied it was possible to undertake an internet search to find this information. It was decided that the bid managers would be contacted and invited to complete the survey to provide data for Phase 2 of the project as they were involved in overseeing all aspects of the completion bid document. The SRO was not contacted as this role is generally given to a person at a senior level within the LA who is not involved in the day-to-day running of the project.

Self-completion surveys were chosen as they have several benefits including: speed and cost of administration, the absence of interviewer effects on the respondent; the lack of interviewer variability and the convenience to the respondent (Bryman, 2004). Self-completion surveys can have lower response rates and missing data from respondents not understanding the questions (Bryman, 2004). To counter these issues and to make the survey convenient the survey was deliberately kept relatively short (10-15 minutes) so that it could be completed on a break period.

The survey was designed and set up using internet software company SurveyMonkey. A copy of the survey can be found in appendix E. The initial design of the survey was undertaken using Bristol Online Survey, but this was finally rejected as the format and software was not as user friendly. Figure 4.2 shows a screen print of the front page of the online survey. The survey and the initial contact email (found in Appendix F) included the details of the disruption project. It is possible that this could influence the response rate and the way the questions were answered, but it was decided that including the name of the project and the funders would add weight to the importance of the survey to improve the response rate.
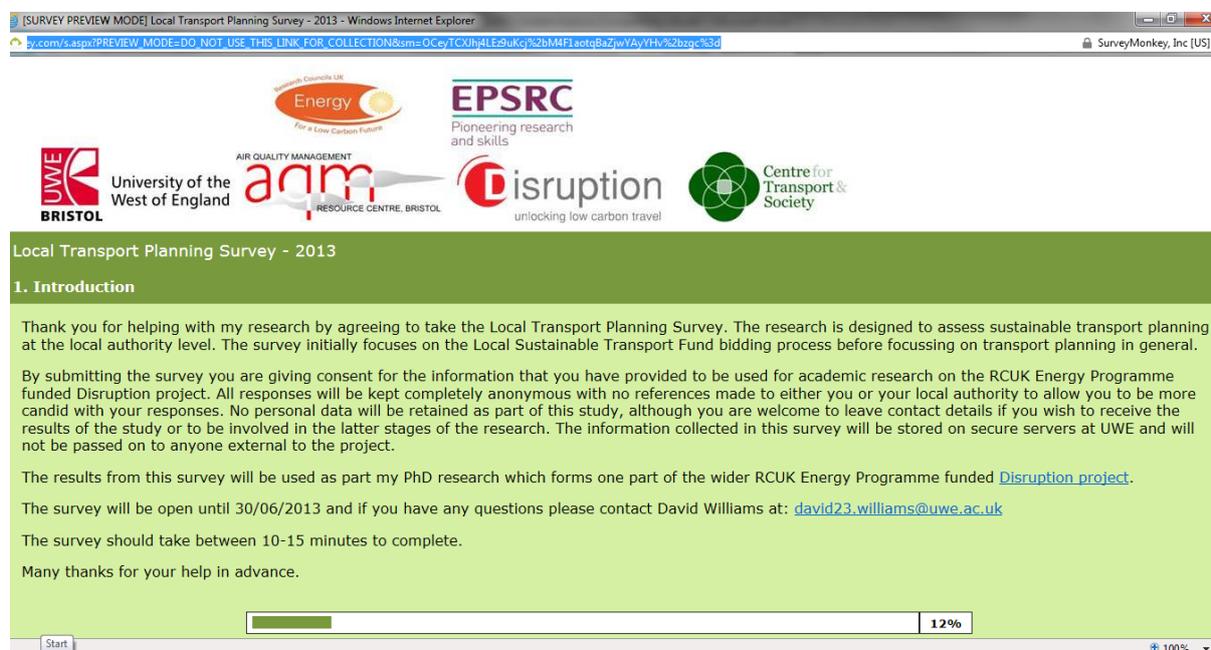

Figure 4-2: Local Transport Planning Survey 2013 - Front Cover

Several of the questions mirror the British Social Attitudes Survey to allow for comparison with the general public's views on transport issues. The key to this element of the research was to understand whether the bids were designed within transport planning 'silos' within the

LAs, or whether there was greater involvement from across the Council and with key stakeholders. The survey was piloted with eight practitioners who were involved in the LSTF process, but were not bid managers. This process helped to refine the questions and assess the time taken to complete the survey. In total 165 unique emails were sent inviting the bid manager to complete the survey. The email was tailored to include details of their bid's name, date of submission and success. Some bids had multiple contacts, whilst 19 responded or provided a new contact who was duly sent a link to the survey. Reminder emails were sent with two weeks to go to the closing date, an example of which is available in Appendix G.

A presentation was given at the LSTF Practitioners Workshop in Birmingham in May outlining the project and the survey. The event was attended by many of the bid managers and the survey was also advertised on the Transport Planning Society's (TPS) monthly newsletter for June 2013 (Appendix H). The survey was open for six weeks between 17 May 2013 and 30 June 2013. The survey was principally answered by the targeted respondents and the number of fully completed surveys was approximately equivalent to a 38% response rate.

4.3.3. Phase 3 Qualitative Interviews – Data Collection
At the time of writing this process is still to be competed. The analysis of the data from the first two phases of data collection will help to form the basis of the questions asked in the interviews. Interviews provide a more inductive approach to research, so from this they should be suitable for answering the 'how and why' questions that were raised within the research, (Blaikie, 2000). The interviews will be semi-structured as this allows '*a more natural expression of life*' (Willis, 2007) by the interviewee. The semi-structured approach fits with the ontology of the research in that it will allow the interviewee to provide additional information that may not have been identified in phases 1 and 2 of the data collection and analysis. Structured interviews have not been chosen, as this sets pre-established questions with a limited set of responses (Fontana and Frey, 2000). This approach is similar to the online survey and would therefore be a repetitive method of data collection. Unstructured interviews have not been considered as this may allow the respondent to deviate from the theme of the research. Phases 1 and 2 have provided key topics that require further elaboration and this process will allow this to occur.

The semi-structured interview allows the researcher to provide an '*interview guide*' of topics that can be discussed, but the interviewee is able to go off topic to other areas that may be relevant. Semi-structured interviews provide flexibility to the interviewer (Bryman, 2004). An interview guide of questions and topics will be created in preparation for the interview, but the interviewees will have some freedom to express their opinions within the research and raise topics or areas that have yet to be considered in the research. This approach will therefore provide both the structure of the topic and the freedom for the interviewee to deviate where appropriate

4.3.4. Identifying Interviewees
The online survey in Phase 2 provided a list of 24 practitioners who were interested in being involved in the interview stage of the research. The respondents were asked to give details of their job, their length of service in the authority and their length of time within the transport planning industry. From their email addresses it has been possible to ascertain whether they

work for a County Council (CC), Unitary Authority (UA), Metropolitan Borough (MB) or Transport Authority (TA). Table 4.2 shows that in addition to staff from LAs seven respondents do not work at the LA level.

Table 4-2 Matrix of Survey Respondents interested in Phase 3 of the Study

Authority Type	Role	Total	Time with LA					Time in Transport Industry				
			Up to one year	1-5 years	5-10 years	More than 10 years	Prefer not to say	Up to one year	1-5 years	5-10 years	More than 10 years	Prefer not to say
County Council (CC)	Transport Planner	2		1	1						2	
	Senior Staff											
	Sustainable Transport	1				1					1	
	LSTF Staff	1	1								1	
	CC Total	*4*										
Unitary Authority (UA)	Transport Planner	6		2	2	2				3	3	
	Senior Staff	3			3						3	
	Sustainable Transport	1	1					1				
	LSTF Staff											
	UA Total	*10*										
Metropolitan Borough (MB)	Transport Planner	1		1							1	
	Senior Staff											
	Sustainable Transport											
	LSTF Staff											
	MB Total	*1*										
Transport Authority (TA)	Transport Planner											
	Senior Staff	2	1	1					2			
	Sustainable Transport											
	LSTF Staff											
	TA Total	*2*										
Non LA	Sustainable Transport	2	1		1			1			1	
	Other	2					2				1	1
	not specified	3		1	2				1	1		1
	Non LA Total	*7*										
TOTAL		**24**	**4**	**6**	**9**	**3**	**2**	**2**	**3**	**6**	**11**	**2**

The matrix shows the number of respondents and their experience within the transport sector. The results show that 10 of the respondents work for UAs, so this gives the largest pool of candidates to select for interview. Within Wave 1 of the interviews the research will attempt to complete three interviews with staff from UAs: one with a transport planner, one with a senior member of staff and one with the sustainable transport employee. This will give a variety of opinions from staff within similar types of organisation. The research will attempt to interview three staff from CCs, again to give a flavour of opinions from various staff, including one member who has been employed to deliver the LSTF.

The limited responses from MBs and TAs mean that all three respondents will be interviewed as part of Wave 1. Following the completion of this wave and assessment of the results will be conducted and the remaining interested parties may be called on for the additional interviews. In addition to this the interviewees from Wave 1 will be asked whether they can supply contact details of any colleagues or associates they know who may be interested in assisting with the research. These contacts will then be interviewed in Wave 2 if required. Wave 2 may also include interviews with the respondents who do not work in the LA transport planning sector. These respondents have not been included in Wave 1 as the focus is predominantly on LAs, but if it is seen as necessary to include an external 'voice' this pool of respondents will be utilised.

In addition to the LA responses it has become increasing apparent that there is a need to include the opinions of staff from the DfT, as they were involved in the overall design, framing and selection of funded schemes. At present the researcher has two contact names within the LSTF team and hopes that the interviewees will provide an additional name of a

member of staff that is not directly involved with the LSTF, but would be willing to participate in the research.

In total Wave 1 will involve 12 interviews, with the total number to be included in Wave 2, still to be determined.

4.3.5. Interview Approaches

Due to the financial constraints of the project the interviews will primarily involve telephone interviews. Where the interviewee is relatively local, the interview will be held face-to-face. There are pros and cons to each approach. With face-to-face interviews provide a verbal exchange between people (Denzin, 2009) that the researcher is able to interpret using both the language used and the non-visual language when discussing a subject. Face-to-face interviews will often take place in quiet spaces, such as meeting rooms, where as there is a chance that a telephone interview may take place at the interviewee's desk, where the computer and colleagues may provide distractions. Denzin (2009) suggests that there can be unwillingness for an interviewee to give all the information required and if the interviews take place in a work environment, this may be the case with telephone interviews.

Telephone interviews provide a more pragmatic means of capturing the data and providing a clear record of the interview. Face-to-face interviews require the use of a Dictaphone, which may not capture everything that is said, or run out of battery power. Telephone interviews will cost considerably less to undertake and this may be a contributory factor in the final decision. This will be discussed with the supervisory team before this stage progresses. This phase of data collection will be completed by March 2014.

4.4. Data Analysis

The next section explains the processes that have been used in Phase 1 and 2 of the data analysis and what is planned to analyse the information gathered from Phase 3.

4.4.1. Content Analysis

Each of the 145 bid documents have been coded within NVIVO to be assessed under four final headline categories: type of scheme, whether they meet DfT objectives, whether the schemes are designed to disrupt car use and whether they were designed to alter the materials, competences or meanings of travel. The objectives and scheme descriptions were chosen for assessment as they identify where the overarching goals have been included within the bid documents. The number and type of schemes included in LSTF bid submissions were analysed to understand the differences (if any) between funded and non-funded schemes. The spend figures will provide an indication of what the DfT as funders believe to be sustainable transport measures and this will be corroborated or dismissed by the data gathered in Phase 3 of the research. It is assumed that the strength of the link between proposals and the overarching goals was the primary reason bids were selected for funding. Due to the time constraints of this research it will not be possible to assess the evaluation of the LSTF in terms of how successful the schemes have been in meeting the objectives.

In the current context, it might be logical to argue that to achieve a reduction in carbon emissions a reduction in the number of trips by car would be a desired outcome from any sustainable transport project. Therefore, as a secondary assessment, the bid documents have also been analysed to identify whether the schemes have elements that would be

'disruptive' to travelling by private motor-vehicle or whether they 'disincentivise' this activity. A sustainable transport network should also be able to meet the external pressures through moving to a transformed state that has reduced levels of travel by car.

A Chi squared analysis was applied to each of the elements of the categories to assess whether their inclusion was statistically significant in relation to the LA receiving funding from the DfT. This will then be raised within the interviews at Phase 3.

4.4.2. Survey Analysis

The survey analysis has taken place in two stages. The initial stage involved the development of headline findings from the research. A copy of this can be found in Appendix I. The second stage will involve a more detailed assessment of the findings to 'drill down' into the results. This second stage will include the cross-tabulation of results to assess the differences in opinions of staff in relation to their job type, their length of service with the LA and their length of time within the industry. This will be undertaken to identify differences of opinion that exist within the industry in relation to these factors.

Due to the relatively low number of total responses no statistical analysis of the results will be undertaken, as these will not be representative of the wider LSTF project.

The results from both the content analysis and the survey will be used to formulate the topics to be discussed at the interview stage and these will form the basis of the interview guide. These topics will discuss both the findings of the first two phases of the research and seek clarification on any outstanding issues that arise.

4.4.3. Interview Analysis

The interviews that are undertaken for this research will be recorded and this will be done by Dictaphone for face-to-face interviews and by Microsoft Lync for telephone interviews. In addition to this the researcher will with permission of the interviewee take down his own notes during the interview. The transcripts of the interviews will be written up and any notes taken added to the transcripts. The results will be coded in NVIVO to highlight the key points raised and their relevance to the topics discussed. Coding of the data provides the opportunity to correlate the responses and highlight key elements within the narrative of the interview (Silverman, 2000). The development of the coding structure is iterative and will be developed as the research progresses. This means that each transcript will require multiple reviews to ensure that all the key points raised in the interview are included.

4.5. Summary

The gathering of the empirical data for this study and the analysis will be used to answer the research questions of this study. Table 4.3 provides a breakdown of each research question and how this thesis will use the empirical data gathered to answer each question.

Table 4-3 Breakdown of Thesis Approach

Research Question	Data Collection Method	Analytical Approach
Question 1: How useful is Social Practice Theory as a tool to understand professional practices?	Interviews	Understand whether the types of schemes being delivered are unique or whether they stick to a guidance from the DfT.
	Online Survey	Section 2 of the survey provides a background understanding to practitioners' views on transport

Research Question	Data Collection Method	Analytical Approach
		planning. The results will be assessed to identify which of the 3-elements influence the responses given. The structure of transport planning and the connections and influences of other departments will also be analysed and assessed.
	Interviews	The interviews provide a more in-depth understanding of the 3-elements of transport by discussing the power structures within transport planning and other influential factors.
Question 2: Is Social Practice Theory a useful tool to be used by practitioners when delivering behaviour change initiatives (with reference to the LSTF scheme)?	Quantitative Analysis	The quantitative analysis provides the background information on what was proposed and what is being delivered as part of the LSTF. This will be assessed in the context of the 3-elements model and disruptive measures.
	Online Survey	Section 1 of the survey provides additional information on the other parties involved in the design of the LSTF schemes. This will provide a greater understanding of who was involved in the process
	Interviews	The interviews will be used to assess whether the working practices for delivering transport schemes have altered because of the LSTF and austerity budgeting.
Question 3: Moving transport planning forwards: is SPT a theory for explaining change; can it be used to create change; can it do neither; or both?	Online Survey	The survey elicited views on the future challenges facing transport planning due to changes in funding and climate change. These will be assessed to formulate topics for the interviews.
	Interviews	The interviews will ask for opinions on the future of the transport planning sector and what is required to deliver sustainable transport. At this stage a interviewees will be provided with an explanation of the 3-elements model and its relevance to the research.

Whilst the thesis will be using methods that are not novel their application to a professional practice and what is being delivered by practitioners is. The approaches used to gather the empirical data will provide a comprehensive background for the research. The research strategy provides a more holistic approach to the gathering of data, as it includes a

quantitative analysis of the sector and uses the qualitative interviews to provide a better understanding of how and why sustainable transport schemes are being delivered in this particular way. The next chapter includes the results gathered for this research to date.

Chapter 5. Results from quantitative and qualitative data collection (Phases 1 and 2)

5.1. Introduction

This chapter presents the results and initial findings from the first two phases of data collection as described in the methodology. The chapter will present the findings from the first two phases of the data collection.

5.2. Phase 1 Content Analysis - Results

The content analysis assessed the LSTF bids in relation to scheme type, whether the schemes were disruptive to private car use and in relation to which of the three elements they are trying to change. The preliminary results were presented at USTG in January 2013. A copy of the paper is available in Appendix J.

5.2.1. Scheme Type

All of the LSTF bids contained a variety of small schemes that create an overall package of measures that LAs were planning to deliver as part of the programme. These schemes were broken down into four categories by the DfT: public transport; active travel; traffic management; and marketing and engagement (DfT, 2012). For ease in the research these categories have been used to define the measures that have been delivered, rather than inventing new terminology for the schemes. A full list of the types of initiatives within each category is available in Appendix K. The results show that there is a wealth of initiatives proposed within the LSTF and that are defined as sustainable transport measures.

In total out of 145 individual bids, 97 were awarded funding. The content analysis was designed to see whether any of the initiatives proposed were statistically significant in affecting the outcome of the bid. A Chi Square Test was undertaken for each of the initiatives that were included in the LSTF bids to identify whether they may be a contributing factor in the success or failure of being awarded funding. A P-value below 0.05 indicates a relationship between the frequency of an intervention and whether the bid received funding. 10 of the initiatives out of 92 were significant to 0.05 within the Chi Square Test and these are shown in Table 5.1.

Table 5-1 Chi Squared Significance of LSTF Initatives

Scheme	Funded Bids (97)	Resubmit (16)	Refused Bids (32)	Significance (P Value)
Real time information at bus stops and interchanges	49	4	9	0.019
Bus corridor improvements	11	5	2	0.039
Station travel plans	23	2	0	0.019
Access to parks / recreational areas / National Parks	21	3	9	0.047

Scheme	Funded Bids (97)	Resubmit (16)	Refused Bids (32)	Significance (P Value)
Employer grants for cycle shelters, lockers etc	29	2	1	0.012
Dr Bike services[2]	17	2	0	0.049
Junction improvements / upgrades	30	6	2	0.014
Sustainable transport corridor(s)	12	6	4	0.021
Area / personalised travel planning / individualised travel marketing	75	10	15	0.002
Travel hubs	34	11	7	0.028
Road safety / 'share the road' awareness campaigns	9	6	5	0.008

The results show that schemes that did not include: real-time information at bus stops; station travel plans; access to recreation; employer grants for cycle infrastructure; Dr Bike services[2]; travel hubs; and Personalised Travel Planning (PTP) were less likely to receive funding. The results demonstrate emphasis of the LSTF on providing information to individuals through Real Time Information (RTI) and PTP when travelling within the sustainable transport remit. Other significant initiatives include the grants for cycling and travel hubs, both of which are designed to improve the materials available to travel by bicycle and the meanings associated with the acceptability of travelling by this mode. By providing facilities within urban areas and at workplaces this can influence the meanings of cycling, so that it can become associated with utility cycling rather than a recreational pursuit.

Several initiatives were more commonly included in unsuccessful bids or those invited to resubmit. These include general bus corridor improvements, sustainable transport corridors and road safety awareness campaigns. This suggests that the 'corridor' approach is not favoured within the LSTF delivery of sustainable transport initiatives. Road safety campaigns are not included to a great extent within the successful bids. It could be inferred that the messages around sustainable travel need to be positive, whereas most road safety campaigns are designed to make individuals aware of risk of travelling by sustainable modes.

5.2.2. Disruptive Schemes
The results show that few of the LSTF bids include initiatives that prevent people from travelling by private vehicle. The focus of the LSTF is on enabling travel rather than

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[2] Dr Bike is a mobile mechanic who services bikes cycled in on a day to a cycle event, school, or office. http://www.thebikestation.org.uk/what-is-doctor-bike/

providing alternatives such as improved Broadband. All 97 successful bids included initiatives that actively enable travel, compared to just 29 of the 32 unsuccessful bids. Of the successful bids, 60 include initiatives that enable journeys by private motor-vehicle as part of the initiative.

In relation to the definition of a planned disruption by an LA set out in Section 1.2.1, relatively few schemes actively disrupt private vehicle use. Table 5.2 includes a list of the initiatives that could be concluded to be disruptive. Only nine successful bids include any restrictions on car movements or the removal of road space for private motor-vehicles. The vast majority of these restrictions occur within central areas of towns or cities or around schools. This demonstrates that the within the LSTF process the removal of road space or access by private vehicles have not been used as means of restricting private vehicle use. Only two of the resubmitted and three of the unsuccessful bids included disruptive measures, which suggests that including disruptive measures was not significant in the decision making process. This is supported by the Chi Square analysis which shows that the inclusion of disruptive measures was not a significant factor in a bid's success.

Table 5-2 'Disruptive' initiatives within the LSTF bids

Bid Type	Local Authority	Initiative
Successful Bids		
KC and LP	Hertfordshire County Council	Removal of cars from main route through St Albans between 7am and 7pm.
SP (Tranche 1)	Oxfordshire County Council	Removal of road space to accommodate an outbound bus lane in Oxford to be used by the Park and Ride buses.
SP (Tranche 1)	Transport for Greater Manchester	Providing grants to businesses for cycle storage facilities for companies who remove parking spaces.
SP (Tranche 1)	Worcestershire County Council	Development of a bus gate on Evesham Road to stop rat-running and improve bus journey times.
LP	Centro	Traffic calming and demand management (parking). Implementation of car free zones around schools.
SP (Tranche 2)	Coventry City Council	Pedestrianisation of city's central square, reductions in vehicle speeds.
SP (Tranche 2)	Gloucestershire County Council	Traffic calming and removal of motorised traffic from inner ring road (Gloucester). Provide pedestrian priority at key access points to the town centre (Cheltenham).
SP (Tranche 2)	Royal Borough of Windsor and Maidenhead	Pedestrianisation of Maidenhead town centre
SP (Tranche 2)	Slough Borough Council	Reduce rat-running and obstructive parking. Provide gates to prevent general traffic using service roads to Slough Trading Estate, making bus journeys faster. Enforcement of parking.
Invited to Resubmit		
SP (Tranche 1)	Gloucestershire County Council	20 mph zones and the removal of traffic around the inner ring road (Gloucester). Reduce carriageway width and increase pavement width. Cheltenham – remove 20,000 vehicles from town centre. Remove conflict between pedestrians and cars at Boots Corner crossing point.
SP (Tranche 1)	Norfolk County Council	Relocate road space from general traffic to buses and pedestrians. Remove parking. Provide bus only link to

Bid Type	Local Authority	Initiative
		Hospital in Kings Lynn, whilst removing available parking spaces.
Unsuccessful		
SP (Tranche 1)	Medway Council	20 mph zones, priority for sustainable transport and speed restraint measures. These will be focused around schools. Twydall Accessibility Scheme will reduce through traffic, reduce traffic speeds and the bias of priority based on cars
LP	West Yorkshire	Re-prioritise roads space from the car towards pedestrians and cyclists within town centres. Use of traffic management to prioritise pedestrian and cyclist movements.
SP (Tranche 2)	Norfolk County Council	New two way bus and freight route into the city centre. Reallocation of road space for pedestrians. Restrictions to general traffic.

5.2.3. Disincentivising Initiatives within LSTF

In total 14 successful bids include measures that could be defined as disincentivising private motor-vehicles in relation to the description in Section 1.2.2. These schemes are listed in Table 5.3. These are primarily based around changing areas to 20 mph zones or the enforcement of parking restrictions. Oxfordshire County Council's unsuccessful bid was the only one to include the proposal of a Low Emission Zone within the town centre to reduce NOx emissions.

Table 5-3 'Disincentive' initiatives within the LSTF bids

Bid Type	Local Authority	Initiative
Successful Bids		
SP (Tranche 1)	Luton Borough Council	Development of 20 mph zones
SP (Tranche 1)	Peterborough City Council	Traffic management, changes to lines and signs, enforcement of parking restrictions
KC	Telford and Wrekin	Development of a shared space scheme for Box Road.
SP (Tranche 1)	Thurrock Council	Enforcement of parking restrictions around schools. 20mph zones
SP (Tranche 1)	Tyne and Wear	Enforcement of parking restrictions around schools. Installing 20mph zones.
LP	Bournemouth Borough Council	Review existing Transport Regulation Orders (TROs) and create a Red Route approach ensuring efficient movement of traffic. Enforced by a mobile camera.
LP	Surrey County Council	Traffic management measures within Redhill.
LP	Telford and Wrekin	Changes to traffic management to improve traffic movements and access to town centre by sustainable modes
SP (Tranche 2)	Central Bedfordshire	Traffic calming, path widening and crossing improvements near key employment sites.
SP (Tranche 2)	Cornwall Council	Installing MOVA to give buses priority over cars at key junctions in St Austell and Truro
SP (Tranche 2)	East Sussex Council	20mph speed limits in town
SP (Tranche 2)	Hampshire County	Development of shared spaces, lower speed limits within

Bid Type	Local Authority	Initiative
	Council	national park areas
SP (Tranche 2)	North Yorkshire County Council	Parking management for on street parking
SP (Tranche 2)	Stoke City Council	Changes to parking and loading arrangements to remove obstructions. Enforce parking.
Invited to Resubmit		
SP (Tranche 1)	Blackburn and Darwen Council	Creating a bus and cycle only lane to the town centre. 20 mph zones
SP (Tranche 1)	Cambridgeshire County Council	20 mph zones, redesign of junctions for cycle priority.
SP (Tranche 1)	Central Bedfordshire Council	20 mph zones around schools in Dunstable, Leighton-Linslade, Biggleswade and Sandy.
SP (Tranche 1)	Middlesbrough Council	20 mph zones in 49 areas
LP	Lancashire County Council	Enforcement of speeding offences though working with Lancashire Constabulary.
Unsuccessful		
SP (Tranche 1)	Bedford Borough Council	20 mph zones in residential areas and close to schools.
SP (Tranche 1)	Blackpool Borough Council	20 mph zones and community focused approach to safer sustainable trips.
SP (Tranche 1)	Wolverhampton City Council	20 mph zones near schools, off-site parking for parents. Upgrading signals for MOVA and SCOOT to improve traffic movements. Controlled parking zones.
LP	Oxfordshire County Council	Creation of a Low Emission Zone (LEZ) in Oxford City Centre.

The results show that the LSTF is designed to enable travel by sustainable means and that this is to be achieved by a variety of different initiatives as part of a package being delivered within a relatively short time-frame. The approach appears to be designed around incentivising sustainable modes, through the upgrading of infrastructure and provision of information to enable people to travel sustainably. The opposite approach of disincentivising or preventing unsustainable travel by private motor-vehicle does not appear to be a significant feature of the LSTF.

5.2.4. Assessment of the 3-elements within the LSTF

The assessment of the LSTF bid documents shows that the provision of new materials makes up the majority of elements that will be delivered through the LSTF process. The results from the assessment of the bid documents, shown in Table 5.4, demonstrate a clear emphasis on providing the materials that will enable travel. The key materials being delivered are: designing or improving the infrastructure for public transport, walking and cycling; and altering the layout of junctions to improve access for sustainable travel modes. This is an infrastructure led approach that fits with the traditional practices of transport planning in delivering transport provision.

Table 5-4 References to the Provision of the 3-elements in LSTF bids

Bid Type	No. Bids	References to the Provision of Materials	References to the Provision of Meanings	References to the Provision of Competences
SP (Tranche 1) and KC	73	470	78	195
LP	16	208	27	86
SP (Tranche 2)	56	360	91	222
TOTAL	**145**	**1038**	**196**	**503**

Breaking the results down further, Table 5.5 provides a summary of the type of infrastructure schemes. The results show an emphasis on allowing people to move, making journeys by these modes easier through the provision of infrastructure. Little has been done in the management of freight movements within towns and cities and this shows the focus of the LSTF is on the movement of people rather than goods.

Table 5-5 Examples of Infrastructure Schemes in LSTF

	Emphasis of Schemes	Example(s)
Public Transport	Provide information to users. Provide new facilities for public transport.	Cambridgeshire CC proposed the development of a bus interchange.
Walking	Joining up links and providing access to employment and recreation sites. Improving signage and walkability of towns.	Improved signage around Falmer, Moulsecoomb and London Road stations in Brighton.
Cycling	Joining up links and providing access to employment and recreation sites. Creating Cycle Hubs.	Herefordshire CC propose creating a cycle hire and loan scheme. Central Bedfordshire Council proposes a cycle hub (with showers and storage) in Dunstable.
Junction Alteration	Priority for sustainable modes.	Oxford and Blackpool both proposed bus lanes and priority.
Enabling Car Use	Installation of electric vehicle charging points at key locations such as stations and the development of low emission/ electric car pools.	Provision of electric car charging points in town centre car parks in Harrogate (North Yorkshire CC).

It is clear that the development of sustainable transport provision within the LSTF included a significant provision of infrastructure spending and this accounted for half of the money bid for and won through the LSTF process. There is also an emphasis on linking sustainable modes by improving access to rail stations and connecting bus services to walking and cycling routes. The LAs are also involved in providing materials such as bicycles, or taster tickets for public transport to actively enable people to try alternative travel modes. Schemes

such as *Wheels to Work*[3] and travel passes for people seeking employment provide people with the means to gain employment, when prior to the scheme they would not have been able to. Such initiatives also provide people with the competences to travel sustainably, once they have gained employment.

The delivery of schemes to provide people with the competences to travel sustainably is a move away from the traditional infrastructure-led transport provision of LA. Infrastructure comes from the capital budget, whilst the revenue funding for 'softer' measures has traditionally been relatively small revenue budget. Revenue funded elements have increased in popularity within transport planning in England in the 21st century, with the growth of School Travel Plans which have been rolled out nationally. Business travel plans have generally been on a smaller scale than School Travel Plans, delivered on a voluntary basis or for a planning application, whilst PTP has only ever been trialled in the UK through projects such as Sustainable Travel Towns (Sloman *et al.*, 2010).

Of the 97 successful bids 51 offered adult cycle training schemes to allow people to build on childhood experiences of cycling, or to develop a new set of skills. Such schemes are also designed to build the confidence of new, lapsed or infrequent cyclists. Birmingham's bid designed the scheme to encourage adults to ride to school with their children, whilst Shropshire's scheme is designed to enable more people to cycle to work. As discussed above schemes such as Wheels to Work not only provide people with the materials to travel but also with the competences to travel sustainably.

PTP is perhaps the largest proportion of where LAs are trying to build peoples' competence for using sustainable transport. PTP provides training for individuals to understand what the local 'sustainable' options are in their area and how these can be utilised on a daily basis. This gives them the competences to travel in a sustainable manner. PTP is being provided in various ways, with the majority being focused on an area or corridor basis. Other schemes focus on target groups such as job seekers, schools and colleges as in the case of Warrington and Leicestershire's bids. The West of England's bid focussed on delivering PTP to employees of large businesses on key corridors into and out of Bristol and Bath. The final question relates to whether they have been able to alter the meanings of sustainable travel.

Altering the meanings of travel is perhaps the most complex and difficult of the three elements to change. As table 5.4 shows there are fewer references to where it has been possible to identify attempts to change the meanings around travel. Several of the LAs try to influence meanings, with Bedford Borough Council stating that their Active Travel Strategy has the vision: "*To create an environment and culture in which walking and cycling are seen as the natural choices of travelling because they are convenient, safe, comfortable, healthy and attractive*". It is suggested that this will be achieved through the delivery of the initiatives within their LSTF package. Birmingham's bid takes an alternative approach, by recruiting 'champions' who will have the job of promoting sustainable travel. Roles such as Bike It officers will stand alone from the LAs and provide information to schools and businesses on how to travel.

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[3] Wheels to Work schemes provide people with mopeds, bicycles, public transport fares and information to enable them to travel to access employment. http://www.wheelstowork.org/

Dorset County Council has perhaps the most interesting Travel Awareness campaign called 'Child Miles'. This actively challenges the concept of 'choice' in the decision to select a school. Their results show that only half of the children in Weymouth and Dorcester attend their nearest school. The additional trips to take children to other schools in the two towns account for up to 20% of road congestion and the associated impacts. The campaign will therefore target parental choice of schools whilst helping schools to promote themselves in the hope of reducing traffic associated with the school run. No other bid appears to be so bold in actively attempting to alter the meanings associated with travel, with a clear and descriptive method of achieving their aim.

5.3. Phase 2 Online Survey - Results

The initial assessment of the survey is created headline findings shown in Table 5.6. A more detailed summary is available in Appendix I. The more detailed assessment is currently on going and some of the initial findings are detailed below.

Table 5-6 Examples of Infrastructure Schemes in LSTF

Local Sustainable Transport Fund (LSTF)
- The survey failed to capture any respondents who worked for a local authority that was unsuccessful in winning funding as part of the LSTF.
- Consultation occurs within transport teams in local authorities, but this may be more informal in nature.
- The lack of working with parking teams would suggest that demand management measures do not play a significant part of the LSTF bids.
- Stakeholders within the local community were actively consulted during the bidding phase of the LSTF.
- Few respondents state that property developers have been consulted with in designing LSTF schemes.
- The LSTF schemes have not been designed in 'silos' but have been designed through consultation and working with various departments within the Council and external stakeholders.
- The LSTF offered the opportunity to deliver both pre-designed schemes and completely innovative and new transport schemes.
- The LSTF made it easier to deliver sustainable transport schemes than the traditional Local Transport Plan (LTP) process. However there is concern that the Local Transport Boards (LTB) will ignore sustainable travel options in favour of infrastructure schemes.
- Fewer than half the respondents (46%) do not believe the LSTF schemes will reduce the impact of disruptive events on either the transport network or the individual traveller.

Transport Planning Survey
- Practitioners see traffic congestion as a bigger problem than the public perceive it to be.
- Practitioners believe that local authorities have a responsibility to support existing travel choices, enable people to travel and manage disruption.
- Practitioners understand the theory that building more roads induces traffic and removing road space reduces congestion.
- Practitioners in general do not think people should be allowed to travel by car as much as they like.
- The majority of practitioners believe they have a greater influence on limiting climate change as a practitioner than they do as an individual.
- Local politics is likely to become increasingly more influential in transport planning after the LTBs are introduced to decide on funding within the local area.
- 71% of practitioners, compared to just 41% of the public think that we are already experiencing climate change effects.
- The responses show that the respondents believe that a fuel shock may occur before electric cars have 50% of the market share.
- There is uncertainty as to whether car trips will increase or decrease over time.
- Practitioners appear to be confident that public transport, walking and cycling trips are already increasing.
- 32 out of the 55 respondents think it is possible for the UK to achieve an 80% reduction in carbon emissions from transport by 2050, but only 15 think that this is likely, with some difficulty.

The initial results provide a greater detail with regards to how the LSTF schemes were devised and the level of input by other parts of the LA and external stakeholders. The results also raise interesting questions on the uncertainty around funding of future sustainable transport initiatives. Focussing on the present and future of transport planning, the views of professionals differ from the public on issues of congestion and methods of controlling congestion and the impacts of climate change on the transport system.

5.3.1. Detailed Assessment – early results

The survey asked respondents what where the factors that in their opinion reduce the uptake of sustainable travel in their area. The survey provided 13 possible options:

- Family commitments;
- School choice;
- Home location;
- Work pressures;
- Property prices;
- Multi-trip journeys;
- Public Transport (PT) provision,
- Walking and cycling provision;
- Awareness of PT provision;
- Comfort when travelling;
- Safety;
- Transport network design; and
- Retail (including food).

The survey also included a box for other options and this generated 10 factors: convenience; cost of PT; lack of training; flexible working; habit; rurality; laziness; perception; PT reliability; and weather. To assess the factors that can be directly influenced by transport planning the factors were broken down into three categories: local authority, individual and societal. The factors were subdivided into each of these three categories as shown in the Venn diagram in Figure 5.1. Many of the factors cross more than one of the categories and this has been reflected in the diagram.

The most important factors identified by transport practitioners were: multi-trip journeys (16% of respondents), the design of the network (15%) and provision of PT (13%). The inclusion of network design and provision of PT supports the practitioners' belief that they have more influence on sustainable travel as a practitioner than as an individual. What stood out from this survey was the fact that no factor was highlighted as the most important by the majority of respondents. This means that there is no 'quick win' or easy solution to reducing trips by private motor-vehicle and increasing sustainable travel as so many factors influence how people travel.

Local Authority

Public Transport (PT) Provision

Walking and Cycling Provision

Transport Network Design

Safety
Lack of Training
Perception

Cost of PT
Awareness of PT
Provision
PT Reliability

Weather
Multi-trip Journeys
Comfort when Travelling

School Choice
Family Commitments
Home Location
Work Pressures
Convenience

Work Pressures
Property Prices
Retail (including food)
Rurality

Actor

Habit
Laziness

Wider Society

Figure 5-1 Which factor do you think is the most important in reducing sustainable travel uptake in your local authority area?

Chapter 6. Discussion

6.1. Introduction

The discussion chapter of this thesis outline will discuss the results from the empirical research in relation to answering each of the research questions. The chapter will conclude with a list of possible questions that will be taken forward to be included in the interview guide for the qualitative interviews.

6.2. Question 1 – Assessment of Transport Planning as Practice

The initial results from the empirical research to date show the 3-elements model works in providing an understanding a professional practice, as it is possible to identify the materials, competences and meanings and where they are derived from and how they are linked and/or broken. The findings show that transport planners both *'worked with'* (where other teams or stakeholders were involved in bid writing or scheme design) and *'consulted'* (other teams or stakeholders offered advice but were not involved in final bid or scheme design) people outside the transport planning profession when designing sustainable transport schemes. This suggests that the competences and meanings for designing the schemes were derived from multiple sources. At the interview stage interviewees will be asked whether this is part of normal working practices, or unique to the LSTF. It will also be interesting to know if these links will be maintained following the cessation of the LSTF funding for other transport schemes.

With half the funding for the LSTF devoted to the provision of infrastructure (materials), this has allowed transport planners to stick to the core competences of the industry. The LSTF has also challenged the industry to gain new competences, particularly in relation to delivering the PTP schemes and it is perhaps here that the additional skills from the outside transport planning have been requested. Once again the interview stage will further develop this theme. One of the primary differences of the LSTF to infrastructure led transport planning is the focus on the individual traveller, particularly though the delivery of PTP. Traditionally significant transport schemes are designed and delivered for mass travel and the individuals are expected to adapt to the new piece of infrastructure or service. Incorporating the needs of the individual in transport planning is incredibly difficult, due to the complex nature of travel choices, which can vary due to the factors (amongst others) in Figure 5.1 and many of the problems lie outside the traditional realm of transport planning.

The results from the content analysis show that very few of the LAs proposed schemes that fell outside the measures suggested in the DfT Guidance for the LSTF (DfT, 2011). The lack of innovation suggests that the meanings that are derived from guidance supplied from the DfT are critical in deciding what type of schemes will be proposed. As the DfT were appraising the bids for suitability of funding the need to stick to the guidance is understandable. The DfT's guidance (DfT, 2011) suggests schemes that could disrupt or disincentivise private-vehicle use such as pedestrian zones and improvements to street design, yet few LAs have taken up these options. This would suggest that the conservatism in disrupting private vehicle-use comes from the LAs rather than from the DfT.

The results show a relative lack of consultation and the low level of working with property developers that has taken place as part of the LSTF bidding process. This raises an

important issue, as these companies are responsible for designing and supplying new housing estates. If they are not actively designing their estates to include or link up to sustainable transport infrastructure being designed by the Council, this has implications for how effective the LSTF measures will be overall and the retention of the car as the principal means of travel for many people who live in new housing developments. This is in comparison to the 'car free' design of places such as Vauben in Freiburg, Germany that have been designed to focus on public transport and clear walking and cycling routes into the city (Melia, 2006). This is another area where the meanings of travel are out of the hands of the transport planning profession.

The survey sought to understand whether practitioners were aware of the findings of the SACTRA report (1994) and the findings of Cairns *et al.* (1998) in relation to the inducement and reduction of traffic in relation to available road space. The results showed that only nine successful bids included a scheme that could be defined as 'disruptive'. The results show that 79% of respondents agreed that building more roads induces more traffic. This view is not shared by the public, with only 45% agreeing with this view in the British Social Attitudes Survey 2011. With the second concept, removing road space to reduce overall traffic, 65% of respondents agreed. In general there appears to be some understanding of these concepts even if they were not used in the provision of sustainable transport through the LSTF process.

Also of interest were practitioners' views that traffic congestion is a more serious problem than the public perceive it to be in the British Social Attitudes Survey 2011.

- 79% of practitioners see congestion as either a serious (66%) or very serious (13%) problem
- 41% of the public see it as a problem (30% serious, 11% very serious).

The public perception could be due to the fact that traffic congestion has become 'normalised' in peoples' minds, so that there is an expectation that some congestion is inevitable. This suggests that the meanings associated with travelling by private vehicle involve an expectation of congestion and competences have been developed for dealing with it. One of the objectives of the LSTF process was to reduce congestion and the associated impact (to the economy, health and the environment), so this may influence the view that congestion is a serious problem by practitioners. An alternative interpretation could be that transport practitioners are more aware of congestion throughout the network, where as individuals are only influenced by the congestion that affects their journey or if they normally travel off-peaks so they rarely experience congestion.

6.3. Question 2 – Assessment of 3-Elements Model as an Assessment Tool

The 3-elements model provides a useful starting point for understanding the types of change that LAs are attempting to deliver and whether or not they are disruptive or disincentivising to private motor-vehicle travel. The results show that many of the schemes actually include an element of private motor-vehicle use, for example the development or upgrading of Park and Ride (P&R) sites, urban traffic control systems, the development of car clubs and eco-driver training. All these initiatives retain the private motor-vehicle as a key part of the travel mode and continue to re-enforce the meanings associated with private motor-vehicle use as being sustainable. For example, Cheshire West's SP bid that plans to increase the number of spaces at Hooton Station Car Park, the aim is to attract commuters to the railway line which

reduces the miles travel by private vehicle, but the private vehicle trip is retained as part of the journey and as Mingardo (2013) found P&R sites can often induce demand for travel and the retention of private motor-vehicle use also retains a reasonable level of carbon emissions and this means that the situation may not be a 'win-win' (Tiwary *et al.*, 2013) in terms of managing global an local pollution.

Disruption of road traffic and private vehicle trips does not appear to be a popular measure as LAs do not appear to be keen on breaking the links within travel practices. The results show that incentivising sustainable means and enabling people to travel are the priorities of the schemes included in the LSTF rather than the prevention of unsustainable travel modes. The reasons why 'disruptive schemes were not included will be discussed at the interview stage.

The 3-elements model offers the opportunity to identify areas where LAs are attempting to influence all of the elements, for example improving signage and links to key sites and stations within many towns and cities for pedestrians and cyclist provide the materials and competences to navigate the urban environment. Many of these schemes have been designed to enable people to travel via routes that reduce their conflict with motorised transport and improve the feel of the journey. Many of these schemes are relatively small in nature, but are hoped to provide significant benefits for people who travel by these modes altering the meanings associated with these modes.

It is clear that the LSTF offers LAs either the opportunity to offer something different to what they have been able to before particularly in the provision of PTP and the development of small-scale schemes that may have been over looked under other funding approaches. The results of the survey show that approximately half of the schemes were designed for the LSTF, whilst half came from existing schemes identified in the Local Transport Plan (LTP3). LAs are now providing people with more information and the skills to travel in a sustainable manner and by providing the infrastructure to make journeys easier.

The Chi Square analysis showed that some types of scheme were statistically significant in relation to whether the LSTF bid was accepted for funding. This issue will be discussed at the interview stage of the research with the interviewees from the DfT and transport planning practitioners. The key will be to see whether practitioners were given a steer towards certain types of scheme.

The example of attempting to alter the meanings of school choice by Dorset County Council is the only example of where the LA is attempting to alter the meanings of travel by changing something that sits outside the realm of traditional transport planning. If this scheme is successful it will demonstrate the need for LAs to work with other bodies in changing the way people travel, as the results from the survey show many of the factors influencing travel fall outside the remit of traditional transport planning. The fact that many of the bids involved consulting and the more formal working with other parts of the LA and external stakeholders suggests that these networks do exist either formally or informally. The interview stage will ask the nature of these links.

The survey identified that the level of consultation with maintenance teams, flood management, the emergency services, waste collection and the emergency management teams would call into question just how resilient schemes are in relation to disruption,

pollution or serious accidents. If these teams are not being consulted when schemes are being designed it makes it difficult to understand how these schemes will operate in disrupted conditions. This issue will be raised in the interviews.

6.4.   Question 3 – The Future of Transport Planning

The results from the assessment of the schemes included within the bid documents shows that a large number of individual schemes have been included within each of the bid documents. This poses the question of the ability of a CBA methodology to accurately reflect the impacts of the LSTF. Many of the schemes may have long-term impacts on the way people travel and this may be difficult to capture within the relatively short LSTF timeframe. Altering the meanings associated with travel can take time and often do not fit into political time-frames.

It is possible that an alternative assessment approach may be required when it comes to sustainable travel initiatives, as the benefits are not as easy to apply as the CBA compared to a road scheme. This system will need to be simple and easy to understand for both the public and politicians. Meanings are difficult to quantify and represent in an evaluation process and this will be one of the biggest challenges in designing an alternative approach to transport planning. This approach is in conflict with the Government of 2010 – present's approach as the DfT announced to LAs in July 2013 that £100m of capital funding will be available to bid for by LEPs through the Single Local Growth Fund where the emphasis is on economic growth. To date the amount of revenue funding is still to be confirmed (DfT, 2013). This demonstrates how the meanings of the sustainable transport will be linked to providing evidence of economic benefits of schemes, when the very nature of the LSTF schemes makes this hard to establish.

Changes as to how schemes are funded in the future are currently in the process, with LAs having to apply for future LSTF funding though the Single Local Growth Fund. Respondents to the survey believe that their influence in transport planning will reduce due to the requirement of funding locally. Many of the respondents also thought that local politics will play an increasing role in what type of transport scheme will be delivered. The survey found that 60% of respondents felt that delivering transport schemes would be more difficult after the change to local funding in 2015. Many felt that the LSTF approach offered a good way of delivering sustainable transport schemes and it was easier than the former LTP approach. It is worth noting that there were no respondents from the six authorities that did not receive funding.

Respondents were asked whether the Government's commitment to reducing carbon emissions by 80% of 1990 levels by 2050 was achievable. 58% of practitioners think that it will be possible with some difficulty, whilst only 27% currently think that it is likely. This raises several questions as to how this reduction is going to occur and what this means for transport planning as a profession. If schemes such as the LSTF are designed to help reduce carbon emissions, why do the practitioners who are delivering the schemes think it will be difficult to meet the target and do the measures in the LSTF go far enough?

6.5.   Summary – Possible Questions for Interviews

The discussion has raised several key issues that will be discussed at the interview stage. Table 6-1 provides a summary of the types of questions and topics for the interviews.

Table 6-1 Possible questions/topics for interview guide

Question/Topic
Discuss the suitability of CBA to assess sustainable transport and what other indicators should be used? From health, air pollution, societal, simple usage counts?
Where new staff required to deliver the revenue element of the schemes or were these skills retained in house.
To DfT – where any bids dismissed as they included/didn't include certain types of sustainable transport initiative?
Was there a conscious decision not to include schemes that actively prevented people from driving as part of the LSTF?
Where the links between departments and stakeholders formal or informal, or a mixture of both. For DfT – did you encourage these links to be built?
Question on resilience of the LSTF schemes.
DfT – has there been any contact with LAs that did not receive funding?
Open discussion around Local Transport Survey Summary Report
Discuss formal nature of consultation and working with other departments on the bid.
Discuss the providing materials, competence to travel. Should Local Authorities be trying to influence meanings?
Discuss where meanings come from e.g. government media and public.
Economic focus of LSTF particularly for 2015/16
How are schemes being evaluated? Difficulty in piecing together success of a number of small schemes?
Where any schemes that removed road space considered for the LSTF? If not why not? Local Politics, Government steer?
Discuss resilience of schemes - e.g. in winter weather will they be cleared as a priority?
Working relationships in local authority with other departments.
Consultation with property developers? Low levels in survey.
Is the individual behaviour change approach the correct one, or should local authorities be focusing on providing services?

Chapter 7. Conclusions and Remaining work

7.1. Formative Conclusions

The early conclusions of the thesis are that the 3-elements model provides a good starting point for understanding the elements that exist to create a professional practice. The model provides an understanding of the materials and the competences of the profession, but importantly it allows for an understanding of the meanings and their origins that influence what transport provision is being delivered in England. The research has shown that in delivering the LSTF bids the meanings and competences for the bids came from a large number of sources that were external to the profession.

The model is also an extremely useful tool for understanding what transport schemes are trying to deliver the LSTF provides an excellent example as it demonstrates what the LSTF is trying to deliver. The results show that the LSTF project is an attempt to provide infrastructure and the skills to travel sustainably, but is not focussed on altering the meanings of travel or breaking the links between the 3-elements of that maintain private motor-vehicle use as a dominant mode of travel in England.

Moving forward it the transport sector needs to alter the way it reviews transport schemes, as the LSTF has shown large-scale infrastructure schemes are not always the best solution and the current CBA system is ill equipped to provide a satisfactory explanation of the long-term environmental and social benefits that are achieved through sustainable travel. Whilst the UK Government of 2010- present wish to focus solely on the economic benefits of schemes for the LSTF funding of 2015/16 the findings of this research suggest that a 3-elements approach that is co-ordinated with the wider aspects of society in a similar way to the Cool Biz example is far more likely to create the change in behaviour required to reduce emissions.

7.2. Remaining Work

Table 7.1 shows a timetable for completion of the remaining work required to complete this thesis.

Month	Task
Nov 2013	Complete Thesis Outline. Continue assessment of survey.
Nov/Dec 2013	Develop qualitative interview guides. Conclude assessment of survey.
Jan/Feb 2014	Conduct interviews. Start write up of early chapters.
Mar/Apr/May 2014	Interpret results of surveys and conduct second wave if required. Continue write up
June – Oct 2014	Continue thesis write up
17 Oct 2014	Draft thesis submission
Nov/Dec 2014	Response from draft and changes
Dec 2014	Mock Viva
Jan/Feb 2015	Make changes
April 2015	Viva
May 2015	Make changes and submit final thesis
July 2015	Graduate

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Appendix A

Chapter 1. Sociological Perspectives on Travel

1.1. Introduction

This chapter provides an introduction to Social Practice Theory (SPT), with particular reference to Shove *et al.*'s (2012) 3-elements conceptual model. The 3-elements model has been chosen as it has the potential to provide an alternative and more holistic approach to understanding how and why people travel. To date the transport policy sector has had minimal input from the field of sociology: human behaviour and GHG emissions are not completely addressed by the partial nature of economic models and behaviour change theories to date (Schwanen *et al.*, 2011). It is therefore important that all possible approaches should be academically assessed to identify whether they may be able to play a part in creating a change in the way we travel. SPT provides the opportunity to understand the wider complexity of how and why people choose to travel, the inter-relations between these choices and it is from this viewpoint that it will be possible to make a change.

This appendix provides a detailed summary of the current approaches towards behaviour change in the UK, before discussing them in the context of transport planning. An introduction to SPT and the 3-elements model will set out why this approach is being used in this research particularly in reference to change and disruption.

1.2. UK Government approaches to Behaviour Change

Shove *et al.* (2012) admit that: "*theories of practice have yet to make much impact on public policy*" [pp2], and this is primarily due to the focus within many policies on individual choice, however this is beginning to alter with through research in the fields of health and energy use (Guell *et al.*, 2012, Chatterton and Anderson, 2011, Darnton *et al.*, 2011). The lack of impact may be because sociological approaches provide a wider social context to what is happening that is difficult to include in a traditional rational planning model where a simple solution and a clear causal link are required for many politicians willingness to accept the challenge to private motor-vehicle dominance of the transport sector. Changing behaviour has become the 'holy grail' of the climate change agenda within UK Government policy since the 1980s (Hargreaves, 2012), with limited success to date (Watson, 2012). The psychology-based behavioural change paradigm currently dominates in the area of consumption and climate change in the UK which frames the issue as one of human behaviour (Shove, 2011, Shove, 2010a). This narrow framing of the problem, based on individual agency; this ignores the multitude of other factors that influence how and why actions are performed. Schatzki (1996) suggests that social life and social theory are thought of as separate elements, when in reality they are linked. Shove (2010i) suggests that there is a need to: "*shift the focus away from individual choice and to be explicit about the extent to which state and other actors configure the fabric and the texture of daily life*" [pp1281]. At present the current behaviour change paradigm fails to adequately take into account the many external factors that prevent 'pro-environmental' behaviours from being taken up. This is referred to by psychologists as the value-action gap (Darnton *et al.*, 2011, Shove, 2010a, Kollmuss and Agyeman, 2002, Blake, 1999).

Despite the apparent difficulties in getting individuals to change behaviour, the concept of individual choice continues to form an essential part of UK Government policy. Whitmarsh *et al.*, (2011) state that the current political will is for psychological behaviour change models to

be created that are based on individualist approaches to tackling climate change. This view is supported by the UK Government through the implementation of the Behavioural Insights team, which applies behavioural economics and psychological approaches to public policy and service (Cabinet Office, 2013). Whitmarsh *et al.*, (2011) also assert the importance of individual choice within the decision making process. This concept of 'choice' is one part of what Shove (2010a) calls the dominant ABC model (Attitude-Behaviour-Choice) within consumption and climate change, which is based on the environmentally unsustainable economic theory of growth. Levett *et al.*, 2003, explain that challenging consumption patterns is a 'taboo' as they are based on political and social history rather than rational argument, such as the potential challenges faced by climate change. Shove's ABC model was criticised by Whitmarsh *et al.* (2011) as it deliberately misinterprets the original ABC model which is based on Attitude-Behaviour-Context (Stern, 2000). Contextual factors may include financial costs, physical capability, social norms and legislation, all factors that are missing from Shove's model. Whilst this is a useful criticism of Shove's argument the point remains that choice appears to be a key element in psychologically dominant behaviour change policies.

Chatterton and Wilson (2011) and Chatterton and Anderson (2011) provide early attempts to engage UK policy-makers with alternative behaviour change approaches. They suggest that the way a question is framed will influence how policy-makers seek to find solutions. Emissions-related behaviours are varied in time, space, in frequency and in context so policy using a 'one-size fits all' approach to behaviour change is not appropriate. Many different types of model exist, so it is essential to find the best model or models available from both the social and behavioural sciences.

1.2.1. Agency v Structure

1.3.   Theories of Social Practice

There is no single unified theory of practices, although many of the current interpretations which will be discussed in this section have evolved from: Anthony Giddens' (1984) and Pierre Bourdieu's work (1979). Giddens' structuration theory is focused on the structures in society rather than the functions that they perform (Giddens, 1984: 16). Giddens description of a structure is: '*the structuring of properties allowing the 'binding' of time-space in social systems'* [pp17]. Within this concept Giddens is referring not just to the physical structures, such as buildings and highways, but the social structures, that give these material elements meaning. These social structures provide the rules that govern how practices are undertaken and this is explained by Schatzki (1996) who states that Giddens' work looks at the institutions and structures that are built out of practices and the interlocking matrices of rules and resources that govern them. Shove *et al.* (2012) suggest that the structures are commonly reproduced by human activity and this reproduction occurs daily. Structuration is therefore an understanding of both *agency* (individuals and institutions) and how they form and reproduce practices and the rules and *structures* that govern them.

Schatzki (1996) argues that the individual should not be the unit of inquiry, as the individual identity is influenced by the institutions and structures of social life. He argues: "*Who a person is consists in the particular ensemble of subject positions she assumes in participating in various social arenas. This ensemble is woven from the possible positions offered to her by practices in these arenas...The identity of a socially constituted subject is*

thus precarious and unstable" [pp8]. By focusing interventions on one aspect of an individual's life e.g. when they commute, fails to look at fails to look at the individual as a whole, and the factors that influence why a practice has been performed in a particular way. For example, a commuter can also be a parent on the school run, a person on the route to/from work and an office worker in the day-time when they are not travelling, depending on the context in which you are viewing them. Each of these identities influence the practices that are undertaken; and how, where and when they are performed over space and time. Each of these factors, along with a host of other elements influences how practices are created and performed. This complexity is missed in individualistic behavioural approaches.

Social practice research is therefore different to other psychology based behaviour change approaches in that it looks at the 'practice' that is being undertaken, rather than focusing on the individual. For the purposes of social practices the individual is no longer the unit of inquiry. This makes it very difficult, to 'sell' the concept to politicians and civil servants who like to develop policies around climate change that are based on individual choice. Whilst choice exists within social practice, as a practice would not exist if there were no actors to perform it, the research looks at the elements that influence the decision to undertake the practice and how the practice is performed, rather than solely focussing on the individual decision in isolation.

1.3.1. What is a Practice?

Giddens (1984) sees practices that are based on practical consciousness and the repetition of actions that produce social structures (Gram-Hanssen, 2010i), whilst Bourdieu (1984) suggests that these practices are subconsciously embedded in the things that people do and this maintains and reproduces routines and practices (Gram-Hanssen, 2010i). Bourdieu calls this habitus and states that it is both a 'structuring structure' that organises both the practice and the perception of the practice as well as being a 'structured structure' that organises the perception of the practice (Bourdieu, 1984). This means that habitus is a 'system of conditions' (Bourdieu, 1984, [pp172]); and these conditions influence how the practice is performed

Schatzki (1996) defined a practice as:" *a temporally unfolding and spatially dispersed nexus of doings and sayings*" [pp89]. The nexus is the structure and these doings and sayings remain linked and co-ordinated to form a practice (Warde, 2005) and both are of equal importance. Schatzki states that there are three components of a practice: understandings, procedures and engagement and that these vary in relation to the people undertaking the practice. Schatzki's work tries to bring both the conscious and unconscious elements of practice theory together within the boundaries of structuration.

Reckwitz (2002) provides one of the most definitive descriptions of social practices as: *"a routinised type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge*" [pp249]. Whilst the routinised element of a practice can be challenged, as it does not account for novice practitioners, or a practice that is rarely undertaken, the description provides the first understanding of the social practice theory in relation to the three elements. Reckwitz is able to bring together the work of Giddens, Bourdieu and Schatzki to provide a clear summary that a practice is made of what people

do, think, the things they use and how they know and understand how to use them. This forms the basis of the 3-elements model.

1.4. 3-Elements Model

Shove *et al.* (2012) call Schatzki's 'nexus of doings and sayings' *social practices* and in the development of the framework of the 3-elements model they break a social practice down into three core elements:

- **Materials**: including things, technologies, tangible physical entities, and the stuff of which objects are made;
- **Competences** – which encompass skill, know-how, and technique; and
- **Meanings** – including symbolic meanings, ideas and aspirations (Shove *et al.*, 2012: 14).

The 3-elements model is based on Giddens' structuration approach in relation to how and where social practices are formed. Shove *et al.* (2012) place importance on each of the elements and the links that form between them, as shown in Figure 1. Within the 3-elements model the individual elements are linked and it is how these links are formed and how they break that is of particular interest to the research.
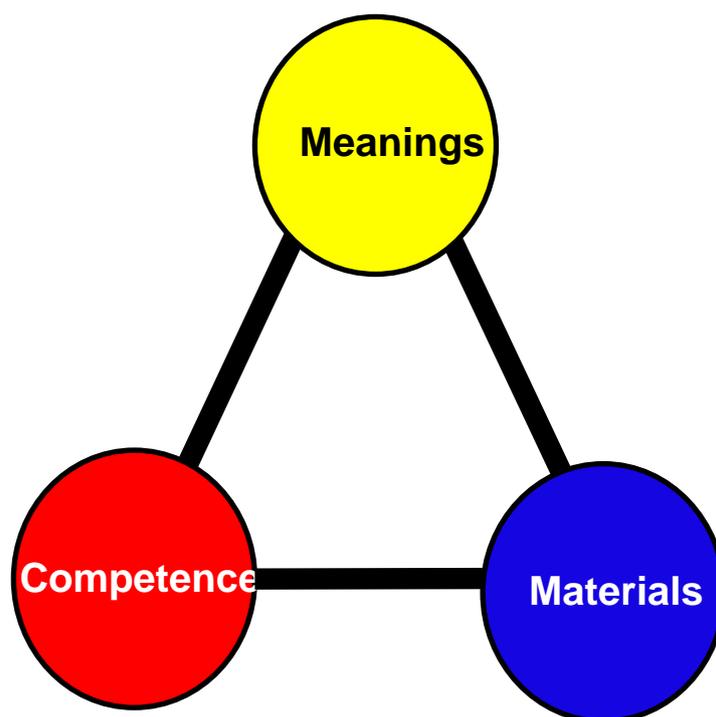
Figure 1 The 3-Elements Model (Shove *et al.*, 2012)

As with any model, it is possible to criticise the 3-elements model for its simplicity and the reduction of complex systems into a very simple framework. Shove *et al.* (2012) admit this when introducing the framework, yet it still remains a useful tool for this research in understanding what is being delivered through the LSTF process.

Shove *et al.* explain that "*Practices are defined by interdependent relations between materials, competences and meanings*" [pp24]. When the links are broken, a practice

changes or develops and this can be achieved through changes to the materials available to undertake the practice, such as a change in the availability of materials, for example the development of motorised transport changed the practice of travel, but also the meanings and competences of travel. It is within these breaks, or disruptions to practices that create incremental and step changes. This is why the 3-elements model is being used in this research, as it provides an opportunity to understand change. To understand how the simplified example in Figure 1 it is useful to understand what the elements represent.

1.4.1. Materials

Materials are by definition the 'things' that make a practice possible (Schatzki, 1996). Shove *et al*. (2012) include objects, infrastructures, tools, hardware and the body as material elements, whilst Giddens (1984) calls them resources and states that: "*resources are the medium which social power is exercised*" [pp93]. There is general consensus within social practice theory that the majority of practices require materials to enable a practice to occur. In relation to travel by private vehicle, materials include: the vehicle, the carriageway, the fuel and the individual to drive the vehicle. Of the three elements, materials can be most difficult to change as they are formed of physical materials (Geels, 2004). Technological changes may be slow for infrastructure, but they do occur. Carriageways that carry motor vehicles have changed significantly in the past 120 years and as the design and technologies used to create carriageways have developed. This change has been incremental rather than innovative.

Many of the materials we use and the infrastructures that carry them remain invisible to the end users (Gram-Hanssen, 2010ii). Giddens (1984) states that material structures both constrain and enable practices. Wilhite (2009) and Shove (2003) both use the example of air conditioning systems in supporting this view, where the materials required for comfort in warm countries influence the design of other materials such as buildings and cars, as well as the societal expectations of what is a 'comfortable' temperature. In relation to consumption of materials, Shove (2003) argues that many studies focus on innovation and acquisition of materials, rather than how they are used and that it is in the use of materials that consumption occurs. For example the emissions formed by the consumption of fuel from the practice of travel by car a material element of practice, rather than the practice itself (Gram-Hanssen, 2010ii). Bartiaux (2008) argues that emissions do not happen because of the opinions and attitudes of the individuals, but because of a practice that uses material elements. By understanding how practices consume certain material elements it is possible to identify where changes can and should take place to create a step change in how people travel and with this reduce the emissions released into the atmosphere.

In relation to the transport network Shove *et al*. (2012) argue that "*Canal systems and railway routes opened the way for more complex and more specialised systems of provision, innovation and distribution*" [pp46]. The ability to move materials has existed for thousands of years although the volume of goods moved was constrained by the size of sailing ships and amount of materials animals could carry (Geels, 2002). With the development of canals and railways it was possible to move goods quickly across land. For the movement of people first the railway and then the development of the motorway network in the UK (Charlesworth, 1984) have both provided the materials to enable people to travel significant distances in a relatively short period. The availability of these materials influences the meanings of how far people can and should be expected to travel.

1.4.2. Competences

Whilst materials are an element of a practice, they are not used without the skills required to undertake the practice and meanings that are placed on why the practice is undertaken. For example having a ball does not make the game of football. Being able to play the game is about knowing what to do with it (Shove *et al.*, 2012). Reckwitz (2002) calls this practical understanding, which the practitioner carries to enable them to partake of the practice and this can be learnt performing practices every day, often without noticing (Shove *et al.*, 2012). Performance of a practice depends on past experience, technical knowledge, learning, opportunities, available resources and peer and family encouragement and actions (Shove *et al.*, 2012). Flyvbjerg (2001) proposes that there are five levels of competence: novice; advanced beginners; competent performers; proficient performers, and experts [pp20-21]. How a practice is performed depends on the practitioner's experience of the practice, the context, situation and choices and how they interpret this in executing the practice. Training is therefore important to 'break people in' to any new practice (Lefebvre, 2004). Flyvbjerg (2001) explains that very few people will achieve the expert status of any practice and that many people will reach the competent or proficient performer status [pp17-20]. Geels (2004) suggests that it can take time to acquire new knowledge and to build up new competences and this makes it difficult for people who have vested interests to change. Whilst Geels (2004) is talking about technical innovation in his example, this can be compared to the vested interest individuals have in driving, as they have spent money investing in the materials and developing the competences to drive.

Shatzki (1996) states that: "*practising is learning how and improving one's ability to do something by repeatedly doing it and carrying it out*" [pp89]. Repetition is an important part of the performance of many practices and without this repetition the practice would not exist. Competence forms an essential part of how a practice is performed and by whom. Competences can lie dormant, preserved in film, writing or retained by enthusiasts (Shove *et al.*, 2012). Examples of this include railway lines such as the Bluebell Railway in Sussex a 17.7km line where the competence of maintaining and running steam trains have been maintained by enthusiasts after the line closed in 1958.

Competent performance of a practice is essential for the practice to exist, although it is suggested that the same practice can be performed differently in different locations and that practices are not perfectly scripted (Shove *et al.*, 2012, Watson 2012). Watson (2012) argues that small interventions can change the competences of how something is performed. This is important to the research project, as LAs may be able to provide training in various different types of 'sustainable' travel modes, which will influence the competence with which a practice is undertaken.

When a competence moves through time and space it is 'abstracted', transferred and reversed with the information codified so that the information can be passed on to new practitioners (Shove *et al.*, 2012). This has happened throughout time with the passing of knowledge and skills through trade corridors such as the 'Silk Road'. Middleton (2004) cites the example of the karez in the Turpan region of China, where meltwater is carried from the mountains through a series of man-made underground channels (karez). The channels have been in place for over 2,000 years and the know-how and skills of creating such a system are thought to originate from Persia were a similar system known as qanat exist [pp59]. The abstraction, transfer and reversed implementation of this technology have allowed the

people of the Turpan region to become competent practitioners and this has allowed them to grow fruits that would not be available to the region without the competence to develop and maintain this system. Similarly the competence to manage transport networks was abstracted from the USA and transferred to the UK (Munby, 1968).

Practices can develop apart and can co-exist in space and time. However with globalisation competences of how to perform a practice may become standardised over time (Shove *et al.*, 2012). This is where the third element, meanings are important to understand how and why practices exist and are performed.

1.4.3. Meanings

Lefebvre (2004) proposes that if you wish to enter a society you have to accept its values. Many practices, although containing the same elements, may be performed differently, for example the drinking of tea which is different in the UK and Japan (Chatterton and Anderson, 2011: 23). Local customs and meanings are not always governed by formal rules (Schatzki, 1996), and an example of this would be in the UK where flashing headlights means 'thank you' or the contrasting 'after you' depending on context, when in the Highway Code it should be done to warn other road users you are there (UK Government, 2013: Section 110). The flashing of lights as a 'thank you' and as an 'after you' are customs rather than the official rules.

The primary difference between a meaning and a competence is that people do not need to understand a meaning in able to perform a practice (Schatzki, 1996). Using the example of driving, people in the UK are exposed to the practice of driving almost daily through cultural meanings from the mass-media (Geels, 2004), friends and family, and infrastructure that has been designed to enable travel by car. People do not necessarily think about driving on a conscious level, yet the meanings are in place and they help to sustain the practice. This makes changing meanings very difficult for policy-makers.

Xie *et al.* (2011) suggest that their research shows that once a minority opinion has reached 10 percent of the population it is possible for this minority opinion to challenge the majority opinion. They believe that this is what happened in the Arab Spring uprisings in 2011 in Tunisia an Egypt where enough of the population were in agreement to challenge the consensus. Opinion does not always lead to action however, if the materials and competences for change do not exist in tandem, as has been demonstrated by the value-action gap (Kollmuss and Agyeman, 2002).

Social sciences tend to focus on the symbolic meanings of the use of items (Warde, 2005), in a way that is not possible through psychological behaviour change approaches. Wilhite (2009) suggests that a fear of sweat and odour contributed the reduction of cycling levels, and cycling became 'abnormal' as the meanings shifted from a form of travel to a form of recreation (Watson, 2012). This change in meaning with regards to cycling did not occur in other European countries such as the Netherlands, Denmark and Germany. Meanings can come from many places, regulative rules, which are explicit such as laws and rights, or normative rules, such as values and norms (Geels, 2004). Rules can be private or shared within society. Rules form part of the structure that allows a practice to exist. Symbolic meanings can be placed on material artefacts and can be detached when they lose their meaning (Shove *et al.*, 2012). This is important in understanding how practices are formed, sustained and how they disappear.

1.4.4. Key issue with the 3-elements Model

The 3-elements model is very good at explaining the system that exists, but it does not provide an analysis of the power relations that exist within the system described. It is clear that politicians and the media have a direct influence on the meanings of social practices, whilst through policy and funding retain the power to influence the materials available to society. Fine and Leopold (1993) suggest that the economics-based *systems of provision* approach in relation to the materials provided would enable a greater understanding of the power relations that exist in the provision of materials. Each system of provision is unique, so that for example the system relating to consumption of food could not be transferred to how and why people purchase a car, as the meanings and power structures are so fundamentally different. The power relationship between car manufacturers and consumers has led to increased fuel consumption due to the design of infrastructure for the car and this has occurred alongside the reduction of public transport services in the UK. This development has created towns and cities that require the use of a car to access goods and services and provided financial benefits to the car manufacturers (Haug, 1986). Whilst the 3-elements model is able to record this change, it does not provide an understanding of why it has happened.

The system of provision of the transport infrastructure and the power relationships that reside within it influence how people travel. For example, Ernest Marples as the transport minister was highly influential in the closure of 4,000 miles of railway network and 3,500 stations between 1963 and 1973 (Lee's *Ian Hislop goes off the rails*, 2008) and the development of the 1,000 miles motorway network during the same period (Charlesworth, 1986). This large scale realignment of the provision of transport infrastructure significantly changed the practices of travelling in the UK. Using a social practice theory approach it could be argued that practices were already changing due to increased private ownership of cars and the decline in passenger numbers (Loft, 2006) and that the Government were duly providing the materials necessary to incorporate this change in practice. This description does not provide a satisfactory understanding influence of power that allowed this change to occur. Understanding the limitations of the 3-elements model is useful when applying it to the research in this thesis to see whether the model is a useful tool for transport practitioners.

1.5. Bundles of Practice

Practices rarely, if ever exist in isolation. For Schatzki (1996) they create causal chains of action. These exist in hierarchies that overlap and are important to understand as they influence how and why a practice is performed (Warde, 2005). Schatzki (1996) uses the example of buying flowers, which involves several practices that are linked to enable the practice of purchasing flowers [pp122]. Interestingly in his example of performing this task he mentions the need to drive to the florist to make the purchase. This shows how ingrained driving is within society, as it is used by eminent sociologists to illustrate examples of everyday practices. Schatzki suggests that there are two types of practices: dispersed and integrative. Dispersed practices occur across time and space and are held together by meanings and competences. These include the building blocks for integrative practices, such as writing or following rules and could be seen as competences.

Shove et al. (2012) explain that: "*Practices link together to form bundles and complexes. Bundles are loose-knit patterns based on the co-location and co-existence of practices*"

[pp81]. The complexity of practices is captured in Figure 2. The diagram is actually from a chemistry paper, but demonstrates that there are many different meanings, materials and competences all linked or bundled together. Whilst the diagram is orderly and structured, in reality this is not always the case, as bonds between links can be stronger or weaker depending on the connection between the elements. The process of driving is a series of discrete practices. Over time these have merged to create what is now recognised as the practice of driving. Discrete practices are 'black-boxed' into one practice e.g. driving (Shove *et al.*, 2012). Similarly the practice of driving then forms parts of other practices, such as commuting and shopping. When practices are bundled they can share elements and can co-evolve. This is evident in the design of supermarkets and out of town shopping centres. The practice of shopping at these centres is heavily dependent on people driving to them (and on occasion travelling by public transport). This reliance on practices due to the material elements is called a 'ratcheting' effect (Shove, 2003). Shove *et al.* (2012) state that: "*The move from a niche to landscape is one in which linkages become denser and paths more dependent*" [pp13]. Understanding how and where driving fits into other practices that form daily life is essential if you wish to change the way people travel.
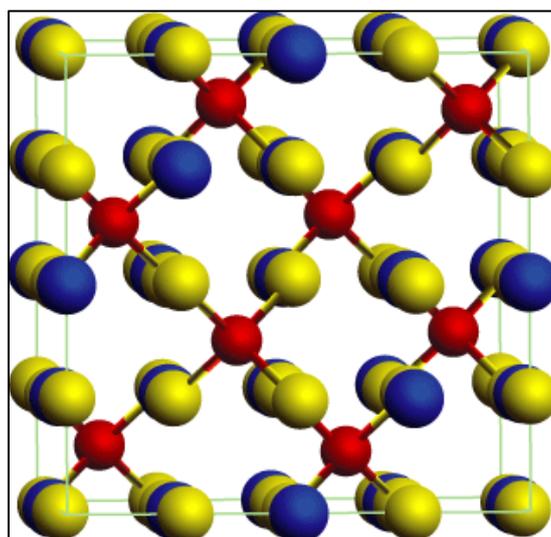
Figure 2 Simplified Example of a Bundle of Practices (Wenic *et al.*, 2006)

Southerton (2003) suggests that households rush certain parts of the day to create 'quality' periods of time elsewhere in the day. The use of the car enables practices to be performed across a greater space than would have been possible in the past. The importance of convenience has allowed people to have greater flexibility over their time (Shove, 2003), with technologies such as freezers allowing people to both plan ahead and condense the amount of times they need to shop into one visit to a supermarket (Shove *et al.*, 2012). This example of time management demonstrates how ingrained car use is within society, as it enables people to perform practices across a greater area, whilst still being able to create the 'quality' periods of time. The meanings, materials and competences of creating this time are bound up in the bundle of practices that save time such as driving between places rather than travelling by public transport.

1.5.1. Commuting as a Practice

To understand how commuting formed as a practice it is useful to understand the context in which was created. Commuting is a routine undertaken on a regular basis. It is a series (bundle) of practices linked together, some of which are co-ordinated (O'Dell, 2009).

Buchanan and Crowther (1963) identified the important link between home and work in their influential report *Traffic in Towns*. The need to commute began as the population began to disperse from town and city centres to the suburbs. Many of these journeys were made by walking and cycling trips or public transport until the 1950s where an increase in the standard of living meant that many people were able to drive to work. This further increased the distance people were prepared to live away from where they worked (Lyons and Chatterjee, 2008). The practice changed and developed as the materials available for travel, cars became available leading to a drop in utility trips by foot and bicycle. Other factors, such as the removal of 8,000 miles of railway track between 1963 and 1973 (Loft, 2006) coinciding with the development of the motorway system further cemented the meaning of how people should travel to work. Similarly media perceptions of public transport being overcrowded, delayed and costly (O'Dell, 2009) are in contrast to portrayals of the car as representing freedom (Jain and Guiver, 2001 [pp578]), when in reality the road network suffers from similar problems to public transport. Whilst the car is a "quasi-private space" (Jain and Guiver, 2001), people on public transport are able to create their own space through technologies and bags to create barriers (O'Dell, 2009).

Commuting practices are not fixed and alter due to life events and everyday changes (Guell *et al.*, 2012), but the repetition of the practice using a car and the media portrayals of various modes continue to maintain the meanings of how commuting is practiced. It is this link between the car and commuting that needs to be broken if a step change is to occur. Whilst focusing on car use for commuting, the car is used for many other types of practices that would also need to be addressed. Economic modelling places zero value on travel time, but only 13% of rail passengers think this time is wasted (Lyons *et al.*, 2012). O'Dell (2009) suggests that the practice of commuting has now become part of the rhythm of the day and as such provides a barrier between work and home. This is in direct contrast to Munby (1968) who believed that: "*Only the psychologically disturbed or inadequate want transport for its own sake*" [pp11]. As our understandings of commuting have changed it has become apparent that the traditional economic model is no longer suitable for assessing transport requirements and this has been demonstrated by the fierce criticism of the business case for High Speed 2 (House of Commons Committee of Public Accounts, 2013).

1.6. Emergence, stability and disappearance of practices

Practices exist through time and space and within a socio-technical regime. This socio-technical system is a seamless web of: physical objects, organisations natural resources, scientific elements, legislation combine to create practices (Geels, 2002). Shove *et al.* (2012) believe that "*defining and classifying an emergent practice is not something that any one actor can control*" [pp54]. This makes it difficult for policy-makers to influence an individual practice. Elements can be relatively stable, e.g. carriageways, although their use can change over time. For the practice to exist the 'layers' of materials, meanings and competence need to exist (Shove *et al.*, 2012). When these elements change, this causes a 'disruption' to how a practice is normally performed and this can lead to the stabilising of the practice or lead to its disappearance. Shove *et al.* (2012) use the example of automobility in wealthy industrialised countries based around private motor-vehicle ownership: citing the work of Sheller and Urry (2000) in that automobility altered how we do things producing: "*distinct way of dwelling, travelling and socialising through an automobilised time-space*" [pp737]. Whilst the competences of driving have changed subtly over time, the materials that allow us to drive (the vehicles and carriageways), and the meanings of where and when to drive, and

the rules governing driving have changed dramatically. These changes have become imbedded into the practices of everyday life due to changes or disruptions to the links between the elements.

Technical changes can influence a practice, but the new technology needs to be adopted in terms of the competences of using it and the meanings of where and when to use it. Whether a new technology is adopted is bound up within, the technological world which provides the new material, but also the social world, where economics (affordability), legislation and social norms influence our decisions to appropriate and use new items. An example of this would be the Segway. The Segway was a new technology designed to allow mobility around towns, negating the need for cars in cities. In 2006 the UK Government legislated against their use on the highway network, meaning that they could not be used for travelling around in the UK (DfT, 2006). This has not allowed the Segway to become associated with a means of travel in UK, although the practice of riding a Segway still exists it is associated with recreation rather than utility.

Watson (2012) suggests that practices are embedded within the socio-technical system and that: "*By understanding the systemic relations in which particular mobility practices are embedded, it should be possible to begin to identify possible points of intervention*" [pp494]. This is important for LAs who are attempting to alter travel behaviour (or practices) as it influences what we are looking to change. Instead of investigating at how the individual chooses to travel we are looking at where the 'unsustainable' practice occurs. When we are able to identify the layer or layers at which this occurs at we are able to create a change that breaks the links between practices (Shove *et al.*, 2012). Shove *et al.* cite the example in Japan where the national Government developed the 'Cool Biz' programme, which was designed to reduce energy demand from climate control to reduce CO_2 emissions. The Government amended the rules to suggest to property owners that no heating or cooling should occur in buildings between 20°C and 28°C. If people were hot or cold they were encouraged to remove or add clothing. Added to this the Government helped to alter the perception of the business suit, with many prominent politicians dressing in a more casual manner changing the meaning of what you should wear in a business meeting. The clothing industry started designing new ranges of clothes to accommodate this development, providing the materials for people to dress informally. The competence of how to heat and cool a building was also changed and this contributed to a significant drop in CO_2 emissions from building climate control (Shove *et al.*, 2012). Whilst it is difficult to foresee all the possible outcomes that may occur from breaking links between the elements, the Cool Biz example demonstrates that intervention by policy-makers and various levels of the Government can disrupt and break the links between the elements and provide a beneficial result. Retrospectively this looks relatively easy the complexity of practices means that there may be unintended consequences from the intervention.

1.6.1. Disruption

Disruptions to practices can break rhythms; throwing out the order of everyday life (Lefebvre, 2004). Lefebvre (2004) calls this Arrhythmia, where there is a problem within the normal ordering of everyday life. He suggests that this creates a 'lacuna', a hole in time that can be filled with invention and creation, which occurs when a practice is in crisis. As the links between the elements are broken, new ways of performing a practice are developed enabling the rhythms of life to be restored. The key is to identify where these lacunae exist

and how to harness them. For example in Workington, Cumbria in November 2009 excessive flooding caused the destruction or significant damage to all road and pedestrian crossing points, leaving the railway bridge as the only possible travel option between the two sides of the town. It took five months for a new road bridge to be restored, and within this lacuna the way people travelled changed (Guiver, 2010). However once the bridge was restored the majority of people who were travelling by sustainable modes returned to driving. LAs need to be looking for these opportunities to create a step change. By identifying where such opportunities exist is the biggest challenge, as for many they wish to see the transport network return to pre-event conditions (Wisner *et al.*, 2004) even if this means that the network fails to operate as effectively as it has done during the disruption. An example of this was the re-opening of Bridge Valley Road in Bristol, were the Council had to apologise for the end of free-flowing traffic in the vicinity of the re-opened road (BBC, 2011).

In the context of social practices disruption breaks the links between the three elements and it is the scale of this break that influences whether a practice disappears for a short period, for a long time or permanently. In general the majority of disruptions are related to the loss of a material, although the loss of a competence e.g. when someone who knows how to operate a type of machinery leaves a company, or an alteration to meanings. Disruption can be a powerful tool for policy makers as it can act as a means of preventing actions and activities that are no longer deemed socially acceptable. The most obvious example of this is the smoking ban in England. The ban was aimed at reducing the number of people who were exposed to second hand smoke in the workplace, but also changed the meanings of where people could smoke (Bauld, 2011). The practice of smoking still exists, but where and when it is performed is now different as the link between materials, competences and meanings was broken.

Changes to practices can happen quickly as in the case of the smoking ban or over a longer period of time. Mass changes have occurred to how we travel in relatively short periods with the rapid growth of the railway network in England between the 1830s and 1850s (Locomotion: Dan Snow's History of Railways, 2013) that enabled people to travel when this had not been possible before; and the rapid removal of railways after the Beeching Report between 1963 and 1973 (Loft, 2006). The levels of cycling in England declined sharply between the 1952 and 1972 in England from 16% to 1% (Watson, 2012), representing a mass change in the practices of travel. The practice of cycling for utility purposes did not disappear in England, but become 'niche' and persisted due to committed practitioners (Shove, 2010b). The current promotion of cycling and the design of cycling infrastructure is therefore able to 'tap' into this niche to allow more people to take up the practice of cycling.

1.7. Disrupting the practice of travelling by private motor-vehicle

LAs have the opportunity to 'create' disruption, by deliberately breaking the links between the elements. The LSTF provides authorities with the opportunity to disrupt the practice of travelling by car and this research will identify if this opportunity has been taken. It is possible that public opinion and the views of Local Councillors may prevent disruption from taking place, but removing road space (the material that makes travelling by car possible) can make traffic 'disappear' (Cairns *et al.*, 2002, Cairns *et al.*, 1998). Cairns *et al.* (1998) reviewed sixty case studies from across the World and found that, despite the media fear that the closure would cause 'traffic chaos', in reality this rarely happened. The report was commissioned after the SACTRA Report (1994) found that the building of new road capacity

generated extra traffic, so the then Department of Transport wanted to see if the opposite (removal of road space) had the opposite effect. Kenworthy (2012) uses the metaphor of transport acting like a gas, expanding to fill a space, as the SACTRA report found, and compressing to cope with a reduced capacity, as suggested by Cairns *et al.*. He also states that the majority of transport models treat traffic as a liquid which retains its volume regardless of the container it is placed in.

For the purposes of this research disruption will be used in the context of breaking the links between the three elements that make up a social practice. This removes the requirement for a context dependent impact of a disruption on an individual and will allow an understanding of how LAs can influence how people wish to travel. By actively disrupting how people travel it should be possible to reduce the emissions from this sector with minimal 'chaos' to the transport network.

1.8. Chapter Summary

This Appendix has described the dominance of the psychological behaviour change paradigm within UK policy and shown how this limits what will be found and the impact of any initiative that is implemented. The Appendix offers a description of an alternative approach, theories of social practices, before introducing Shove *et al.*'s 3-elements model. The research seeks to understand whether this model will provide an alternative to understanding disruption and disruptive events and how they can be used by LAs to create a change to the way people travel in England. This research is novel in both the use of the 3-elements model to understand transport planning and in trying to identify whether opportunities exist that can reduce GHG emissions through disruptive events.

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1.9.   Chapter 3

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Appendix B

USING DISRUPTION AS AN OPPORTUNITY TO CHANGE TRAVEL PRACTICES

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ABSTRACT. Disruption has negative connotations in society, yet it can provide the opportunity for change to reduce our reliance on high carbon travel practices. Using local authorities in England as the unit of enquiry the paper discusses how local authorities currently manage disruptive events. Using a social practice approach to behaviour the paper uses two case studies: the Workington Floods 2009 and the closure of Bridge Valley Road, Bristol between 2010 and 2011 to identify where the opportunities existed to change travel practices to low carbon alternatives through disruptive events in England. The paper identifies several opportunities that may have existed to change practices to low carbon alternatives that were not taken up due to the desire to return infrastructure to pre-event conditions rather than an improved future of low carbon travel.

1. INTRODUCTION

Disruption only becomes apparent to most people when the infrastructure that modern society relies on fails and what is seen as mundane (such as the highway network) comes to the forefront of societal consciousness [1]. Disruption has negative connotations for most people and society seeks to return infrastructure to pre-event conditions as quickly as possible [2]. This paper takes an alternative view to show that disruption can also provide the opportunity for innovation and change to the practices that constitute everyday life. Disruption regularly occurs to the patterns of modern life; and capturing these opportunities for change can help society to meet the significant environmental challenges of the direct and indirect impacts of a changing global climate [3] as well as administrative challenges such as the financial pressures placed on local authorities in England by the 'Age of Austerity' [4].

The paper will focus on understanding what measures can be undertaken by local authorities in England to provide a more efficient use of the existing infrastructure to provide a resilient and adaptive transport network to meet the potential challenges of the future. Local authorities have been selected as the unit of enquiry as they play a

significant role in the function and operation of society, overseeing activity in several areas of everyday life in the UK including: waste management; planning; education; housing; and the transport network [5]. This places local authorities in a unique position to influence the uptake of low carbon travel practices through developing a more overarching and coordinated approach to these functions. Practice-based approaches to interpreting behaviour differ from traditional psychology-based approaches of behaviour change in that they do not focus on the individual, but rather the wider framing of activity at a societal level. From this viewpoint, individuals are seen not as the originators of practice, but carriers of practice [6]. For example, commuting to work forms a sizeable part of many peoples' daily routine for much of the week, yet it is not an activity many people would choose to do outside a complex web of societal contexts. The practice of commuting was derived from the development of first the railway network and then the motorcar. Developments in the transport system increased accessibility and land values, whilst commuting made possible particular spatial forms so that lifestyles based on low residential density, and the physical separation of work activities and home activities became possible. Commuting is now necessary to sustain such individual lifestyles and wider social practices. Practice theory therefore suggests that if we wish to reduce the carbon impact of travel, we should focus not on individuals, but rather the elements of the social and physical world that retain and support high carbon travel [6].

Influencing, rather than simply providing for, societal practices is not new to local authorities in England, as they have played a significant role in improving household recycling rates in the past 10 years. In 2011, 41.5% of refuse was recycled by local authorities in England compared to just 11% in 2001 [7]. Rutland County Council was the best performing local authority in 2011, with 57% of waste being recycled [8]. These differences suggest that the method used by local authorities to engage with and to enable people to change their waste disposal practice can have a significant effect in changing the practices associated with waste. The practice of waste disposal has altered by introducing the materials to recycle (segregated boxes), and changing from weekly collections to fortnightly collections. The practice of waste disposal now involves: washing recyclable items; using separate containers and knowing when each type of waste will be collected, whereas before all items of waste were disposed of in one bin. If local authorities have been successful in changing the practice of recycling in one section of their operation, it is possible that these lessons could be transferred to enabling to low carbon travel options. Local authorities have been able to tap into the 'niche of persistence' [9] that existed around recycling, where glass and metal were collected at community locations. The practice of recycling has changed during this period and is now undertaken in the home. Niches of persistence exist around travel that can be considered low carbon such as walking and cycling. It is important to harness such niches to enable change.

The opportunity for local authorities to change travel practices to favour low carbon alternatives requires effective and coherent management across the authority and the removal of the 'silo mentality' and the horizontal transfer of expertise and working between departments [10-11]. This may be one of the greatest challenges in reducing high carbon travel for the local government sector. This paper is not at the stage of forming conclusions, but is aimed at identifying where the opportunities for change exist during disruptive events.

The paper will review the existing management of the transport network, outlining the procedures followed by local authorities in England that are designed to mitigate and/or

minimise disruption to the transport network when an event occurs. The paper will then discuss alternative approaches to altering behaviour before evaluating two case studies, one which might be perceived of as a major disruption and the second a minor disruption, to examine where the opportunities to improve sustainable travel were available, whether they were taken and will identify what lessons can be learnt in the event of future disruptive events.

2. LOCAL AUTHORITY MANAGEMENT OF A RESILIENT TRANSPORT NETWORK

The pressure on local authorities in England to manage the transport network comes from several sources including legislation, politics and the public. By understanding these pressures it will be possible to identify the opportunities that may arise from a disruptive event to change travel practices. A secure and robust traffic network is seen as a nation builder [12-13] and the most important element of infrastructure to be repaired in a disaster situation [14], as it provides access to the other infrastructure relied on for the function of society. In political terms a strong economy is seen to require a robust and efficient road network to operate effectively [15]. This places a large burden on local authorities to ensure the transport network is safe, reliable and passable at all times. Moreover, it might be argued that in the public's perception, the state's ability to maintain effective functioning of the transport networks despite adversity is a touchstone of an efficient, high-technology, robust civilisation. Local authorities have a statutory obligation under the Civil Contingencies Act 2004 to manage the services provided effectively when a disruptive incident occurs [16]. This obligation includes where possible, continued operation of the local transport network.

2.1 Winter Maintenance

The Traffic Management Act (TMA) 2004 places a duty on local authorities to ensure the "expeditious movement of traffic" through their highway networks and to ensure that this process does not have a detrimental impact on neighbouring local authority networks [17]. This is a requirement throughout the year, but an adequate level of the network needs to be passable during the winter season regardless of any winter weather events.

Due to the availability of weather forecasts, winter weather events are one of the most predictable disruptive events faced by local authorities. Local authorities are expected to ensure areas of the highway network that are deemed strategically important to network operation (by the authority) are passable during winter weather events such as those that occurred in the winters of 2008/09, 2009/10 and 2010/11 in England. The 2008/09 winter weather event was the most severe for 18 years, with a sustained cold period between October and February, and a major snowfall event in February 2009. Many local authorities found they had insufficient resources for meeting their statutory obligations, most publicly so in terms of the availability of salt for de-icing the highway network [18]. Local policies on stockpiling had in several cases been influenced towards economising by a number of relatively mild winters in the years prior to 2008/09. The issue of storing salt is important as if left uncovered outside the salt degrades and is not suitable for use on the highway network. The cost of storing and managing an asset that degrades places a significant financial burden on local authorities.

For the following winter seasons local authorities planned ahead by ensuring adequate stocks of salt and providing plans for revised key routes, in the event of future levels of stock reducing due to an extended winter season [19]. In 2011 the UK Government retained an additional level of salt stocks in case of emergency that could be bought by local authorities in the event of a prolonged winter weather event and the use of their existing supply [20].

2.2 Flooding and Flood Risk

In 2007, England suffered from one of the worst flood events in memory, with insurance companies estimating up to £3bn worth of damage caused to property and businesses. The highway infrastructure in areas of Oxfordshire, Wiltshire, Gloucestershire and Worcestershire was inundated with water making the road network impassable in numerous places throughout the network [21]. Following this disruptive event, the UK Government introduced the Flood and Water Management Act 2010 [22] which stated that local authorities would be responsible for minor waterways and highway drainage. As part of the local authorities' new role as Lead Local Flood Authority they have the power to enter private land and ensure that drainage systems are operating effectively to minimise the impact of significant events on the highway network. The risk of flooding again places a burden on local authorities, as it is expected that such events will become a more regular occurrence in the future due to global climate change [21]. The management of the highway drainage network by local authorities is one of the areas covered by their Transport Asset Management Plan which provide a comprehensive review of all transport assets including the highway drainage systems.

2.3 Asset Management

Asset management is a process that allows an organisation to manage all the physical resources of the organisation and places a monetary value on each asset the organisation owns or controls [23]. Transport Assets are the components that make up the highway network, many of which are obvious, such as the carriageway and bridges. Other assets are not so obvious, such as retaining walls (which hold the carriageway when it is higher than the adjoining land) and highway drainage systems. The Asset Management process allows the local authority to manage assets in the most cost effective way, ensuring that items are properly registered, maintained and replaced when they come to the end of their operational lifecycle. For the example of highway drainage systems, Gloucestershire County Council, Wiltshire County Council and Swindon Borough Council worked collaboratively in 2009/10 to use video technology to survey and record the highway drainage system [24]. This project was designed to improve the understanding of each local authority's drainage assets: to identify areas of improvement to mitigate against future flood events and the disruption caused. By proactively managing the risk of assets failing during a disruptive event it is possible for local authorities to maintain their highway networks to allow access by the emergency services and utility companies during a disruptive flooding event.

The asset management process allows local authorities to optimise funding, to ensure that the highway network remains operational. This enables local authorities to identify and prioritise workloads to ensure that users of the network do not notice a problem. The asset management process has identified a possible risk to many authorities in that current funding levels are inadequate to meet the need for maintaining the network. This has led to a funding gap for many authorities in terms of which works they would like to undertake and what is actually

feasible due to the budget constraints. This means that it is conceivable that in the future many local authorities may have to close highway assets until a suitable level of funding is available to undertake the work, causing potential disruption to existing travel practices. This happened to Bristol City Council in 2010/11 and is discussed in Case Study 2.

2.4 Planned Works and Statutory Undertakers

To ensure that the transport network and other infrastructure networks are maintained to a suitable standard in the long-term, maintenance-related road works are typically required often causing short-term, managed disruption to the operation of the network. These can take two forms: planned works such as the replacement of highway assets undertaken by the local authority or their contractors, and works undertaken by statutory undertakers (primarily utility companies). The New Roads and Street Works Act 1991 allows statutory undertakers access to the highway network to undertake works, after giving notice to the local authority (seven days) that they wish to undertake the work [25]. With many of the pipelines, cables and sewage system placed under the highway network, this can take a great deal of planning and organisation to ensure the minimum disruption to the transport network.

2.5 Pressures on Local Authorities

The nature of most local authority services is that whilst they operate without any problems they receive little or no public attention. However, once a service is problematic or disrupted it can attract significant local and possibly national attention. Local authorities in England occupy the middle ground between central government and the public. They face pressure on all sides due as shown in Figure 1. From below, the customer-facing side of the local authority deals with the public and their expectations of how a local authority should operate and what services they should provide. Local politics also applies pressure, where party politics can delay the delivery of new infrastructure [26], and where the local media sensationalise what the elements of a story that they perceive to be disruptive to peoples' right to drive to increase sales [27] or web traffic.
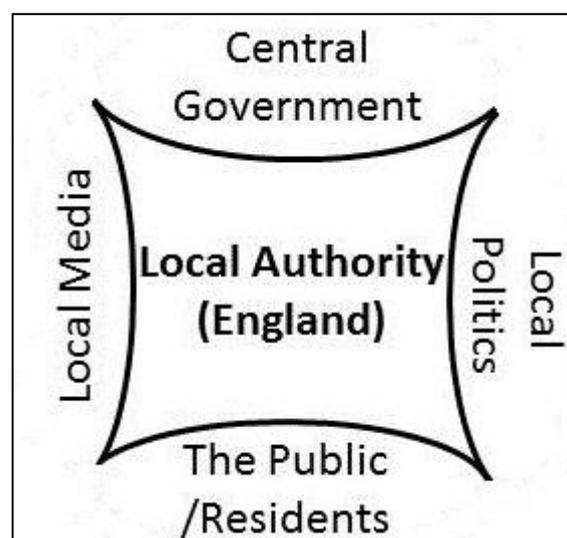

FIGURE 1. Pressures on Local Authorities

At a national level, political and media pressures can also play a significant role in how the local authorities are able to manage their highway assets. In 2011, following the winter season, the road network had been damaged by the significant freeze/thaw effect causing 'pot holes'. Due to extensive media coverage, and despite intentions for an overall reduction in funding for local authorities in the 2010 Spending Review, the Government subsequently found £100m of additional funding to be spent on fixing damaged road surfaces [28]. Whilst the additional finances were welcome, the fresh injection of cash at a late stage in the financial year also meant the redesign of maintenance programmes and the alteration of contracts and staffing levels to deliver the additional works. The 2012 'Pothole Review' was commissioned by the Government following the 2011 winter weather event and uses an asset management approach to manage networks to: prevent future problems; completely fix problems in one step; and provide better communication to the public [29]. This approach is a change to the practice of managing the network and is designed to minimise disruption and improve public understanding of how the highway network is managed.

When a disruptive event occurs and the processes used by local authorities are unable to mitigate the disruption travel practices alter or flex to adapt to the changes in circumstances. The question is how can local authorities use this disruption to provide a more effective use of the network whilst increasing the use of low carbon travel options? If travel practices alter in the short-term during a disruptive event, how can these altered practices be locked in and retained in the longer-term?

3. INFLUENCING TRAVEL BEHAVIOUR

The highway network is designed, where possible, to meet peak demand, yet for the majority of the day the network operates well below this capacity [30]. Local authorities have the potential to change travel practices around peak times in several ways including: altering school opening times, creating school travel plans, liaising with employers to alter shift patterns, moving waste collections to non-network critical streets during periods of peak demand; and ensuring highway works do not take place during peak hours. A local authority which acts as Planning Authority can also impose planning restrictions on new developments, including managing the parking capacity, managing parking charges to influence parking demand and to ensure deliveries are not made at network critical times of the day.

Planning and the decisions on where to locate key amenities are important in influencing how people travel. A new school or hospital located on the outskirts of a town may make sense in economic terms due to land prices, but the long term impacts caused by the necessity of travel to the site by motorised vehicle as the primary option can have a detrimental impact on air quality, levels of public health and reinforce the overall reliance of the local population on high carbon travel [31]. Low carbon travel options therefore needs to be given greater weighting in the decision making process. A review is required of the way highway networks operate as travel patterns are already changing due to the cost of fuel and insurance and the potential shift in status symbol away from ownership of the car to smart phone and tablet devices [32-33]. With less people taking driving tests in England between 2007 and 2012, [34] and other indicators suggesting we may have reached 'peak car' and even 'peak travel' [35-37] it is possible that the existing highway network may already be suitable for future transport needs. The question then becomes how to use it more effectively?

3.1 Local Sustainable Transport Fund (LSTF)

The LSTF is a £560m fund for local authorities in England to provide sustainable transport options designed to make slight improvements to and better use of the existing infrastructure [38]. The fund has been created for both capital schemes, such as cycle paths, and revenue-funded schemes such as cycle training and personalised travel planning. Personalised travel planning has been proven to be successful in the short term in changing peoples' individual behaviour [39-40], but this approach can be expensive, time consuming and is therefore inefficient to deliver on a large scale. It is possible that focusing on a social rather than individual level would improve the success in reducing high carbon travel. Shove *et al.* (2012) state that "*public policy has yet to adopt social practice as a policy tool*" [41], yet it may be a highly relevant approach for local authorities to take on board, due to the overarching role they play in many areas of daily life (as discussed above). In times of financial austerity, a focus at the social level rather than on the individual may also be financially prudent.

At an individual level, household members are under time pressures to conform to societal norms [42] meaning that travel by the private car still remains the most logical and effective means of travel for many people to engage in the increasingly complex and fragmented lifestyles that have built up around ownership of the car. This means that strategies such as personalised travel planning can only have a limited impact as the time pressures faced by individuals increase, the default option of driving is retained as a means of coping with increasingly 'harried' lifestyles [43]. Previous studies aimed at changing behaviour to sustainable modes have found that schemes such as offering incentives such as free public transport 'taster' tickets have not been successful in the long-term, as individuals returned to driving afterwards because it was the most efficient option [44]. Similarly, it is difficult to know what the long term effects of the LSTF funding will be once the local authority support is no longer available to individuals. In order to generate a long-term reduction in high-carbon travel, changes need to be made to the transport infrastructure and elsewhere in society to make driving a less advantageous option.

3.2 The Social Practice Approach

The three basic elements of a practice are: materials, competences and meanings [45]. Connections between these three elements shift and vary over time, so a practice such as driving a car which is seen by many people as relatively static, has changed over time. Shove *et al.* (2012) use the example that, where once people could be amateur mechanics, modern engines are now a 'closed box' requiring qualified technicians and specialist diagnostic equipment to fix [45]. Local authorities have the potential to influence each of the three elements with regard to travel practices. For example, they can affect *materials* through the management of the highway network; *competences*, by providing cycle training (but not driving lessons); and *meanings*, by saying how the network should be used (20mph zones, Traffic Regulation Orders, the promotion of non-motorised options and public transport). It is at the practice level where the local authorities may have the greatest impact on

reducing high-carbon travel by changing the materials, competences and meanings of how we travel.

When the connection between two elements is broken, for example by a disruptive event, travel practices have to flex in the short-term to accommodate or account for the disruption. It is at this point that the opportunity arises to change the practice in the long-term, but identifying *how* to do this can be complex, emotive and politically challenging. Sections 4 and 5 outline disruptive events where the opportunity to change travel practices existed, due to a disruptive event.

4. CASE STUDY 1 – WORKINGTON FLOODS 2009

This case study is taken from the Workington Transport Study (2010) completed by Jo Guiver at the University of Central Lancashire and was funded by Cumbria County Council [46].

4.1 Background

On 19 November 2009, excessive flooding of the River Derwent in Workington, Cumbria destroyed or damaged four of the five crossing points (leaving just the railway crossing). This severed all the existing road and pedestrian crossing points across the river between the two sides of the town. The closure of these road routes meant that the nearest road crossing involved an 18 mile detour and significant congestion as vehicles tried to move from one side of the town to the other via this route. To combat the severance of the community a new temporary railway station was built on the northern side of Workington and completed 10 days after the initial flooding event, with free-of-charge train services running to the southern station at 30 minute intervals. In early December 2009 the Army installed a footbridge linking the two sides for people travelling by foot. The severance of the bridges led to significant disruption to the highway network between November 2009 and April 2010, when a temporary road bridge was opened. This meant that the town had an unusual situation where travel by train and foot was significantly quicker and cheaper than travelling by car.

4.2 Changing Travel Practices

Travel practices in Workington flexed or changed during the disruption in order to adapt to the changes in the transport network. Travel by car reduced, with only 58 percent of trips being made by car during the disruption event, compared to 79 percent prior to the disruption. Rail travel increased from one percent of all trips to nine percent during the disruption. Other low carbon modes such as the bus, cycling and using multiple modes of travel also increased. The fact that the majority of trips were still made by car shows the persistence of high carbon travel, which is difficult to break despite the additional delays and costs in choosing this mode. It would suggest that the benefits provided travelling by car outweigh the detrimental impacts of the additional cost and time. There were however a percentage of trips by car (21%) that were flexible to being transferred to low carbon modes or were suppressed during the period of disruption. It is these trips that need to be identified by local authorities and acted upon in instigating the first steps to reducing high carbon travel practices.

During the period of disruption, the total number of trips made by residents in and around Workington reduced by a third, as the number of what could be deemed 'non-essential' journeys was reduced. This meant that fewer trips were made for leisure and social purposes during the period of disruption. Of the trips made 52 percent were now for work purposes, compared to just 37 percent prior to the disruption and this suggests that there may be a benefit in commuting by car for residents in Workington than travelling by car for other purposes.

After the new road bridge was installed in April 2010, trips by car increased to 72 percent, with train, bus and multi-modal trips reducing. Although trips by car did not initially return to pre-event levels, with the benefits of travelling by car restored, 14 percent of trips that were flexible returned to this mode. What is interesting is that seven percent of trips that were undertaken by car prior to the event were now undertaken by a different mode, suggesting the opportunity to try alternative modes can have a positive impact on reducing high carbon travel. The phenomenon of reduced traffic levels was highlighted by Cairns *et al.* 2002, as disappearing traffic and shows that removal of some elements of the highway infrastructure can be an effective means of reducing overall traffic levels in the longer term rather than just relocating traffic away from the affected location [47].

4.3 Capturing New Travel Practices

With Cumbria County Council (as the highway authority) acting primarily under the pressure to return the network to pre-event conditions to meet their various statutory obligations and public expectation (as outlined above) outlined in Section 2, it is

possible that the opportunity to break the links of travel associated with car trips was lost. This was certainly the case when the train shuttle service stopped in May 2010 and the Workington North temporary station was finally closed in October 2010. The survey found that many comments spoke favourably of the station and the service provided. Once the road bridge was re-opened the number of services and carriages available for rail trips reduced, significantly reducing the attractiveness of travel by train. The management of the railway network is outside the control of local authorities, although new powers set out by the Government may allow rail schemes to be may give local authorities a greater say in the management of railway networks [48]. The opportunity for widespread and a long lasting increase train travel in Workington was unfortunately lost in this case.

Cumbria County Council launched a campaign 'Keep Workington Moving', leafleting 14,000 properties encouraging people to continue to travel by low carbon modes, rather than travelling again by car, but the return to the pre-event bus and train services did not help retain the people who wished to continue travelling by these modes. There were a proportion of trips previously undertaken by car that were undertaken by alternative modes during and after the event. It is important for local authorities in these circumstances to identify and understand what has changed so that similar initiatives can be implemented during other periods of disruption, such as winter weather events and when road works are being undertaken to improve the long-term uptake of low carbon travel options.

4.4 Changes to Other Practices

The results show that the car acts as an enabler, allowing people to complete a variety of different activities (working, shopping, socialising and leisure activities) across a relatively wide area in a relatively short timeframe and when this option is no longer available the practices of everyday life are altered to focus on the important activities of working and education, as work is essential for financial reasons and education is a statutory obligation until the age of 16. Leisure and social trips increased again after the road bridge was restored, as people who continued to drive during the event had more time than during the event when they were making the 18 mile detour, and people who chose not to drive for leisure and social trips decided to make these journeys again.

The Workington Transport Study shows that disruptive events provide an excellent opportunity to change localised travel practices and they are effective during, and to some extent after, a disruptive event. The difficulty is maintaining and 'locking in' this

change if the transport network reverts back to pre-event conditions that favour the car, and temporary facilities provided during the disruption, and that facilitated the changes, are removed. The local authority can help by providing enhanced walking and cycling facilities during the event that can be maintained after the event, but they have less influence on level the services provided by private rail and bus companies at this time.

5. CASE STUDY 2 – BRIDGE VALLEY ROAD, BRISTOL, 2009-2011

This case study is taken from several sources including personal communication with Bristol City Council officers: an interview by The Bristol Evening Post in April 2011 with Bristol City Council's project engineer Phil Lloyd [49]; Bristol City Council Committee Minutes from September 2010 [50] and Department for Transport statistics on traffic flows [53].

5.1 Background

In March 2010 engineers monitoring a Victorian retaining wall on Bridge Valley Road in Clifton, Bristol found that it had moved due to subsidence and decided that it was necessary to close the road. Bridge Valley Road forms what Bristol City Council consider to be part of an important commuter route providing access and egress to/from Clifton and the University of Bristol to the northwest of the city centre. £2.7 million was spent by the Council to secure a disused Victorian railway tunnel below the road network in a time of fiscal austerity for the Council [48]. The scheme was initially delayed as there was no funding was available from Central Government for this scheme, but the potential risks to the A4 Portway and long term risk to property in Clifton meant that the works were deemed essential by the Council and a loan was sought from Central Government to pay for the works [50]. The work was required to secure the tunnel structure and the Council's assessment found that there was little additional cost in reintroducing the road once the works were complete [49].

Cycling charity Sustrans identified the closure as an opportunity to encourage commuters to choose sustainable alternatives to travelling in the city [49], particularly as Bristol City Council had secured central government funding as a 'Cycling City' demonstration town during the period of the road closure. However little of this funding was focussed on the Clifton area, as planning and budgeting for the project took place prior to the closure, [51] meaning it would be difficult to use the opportunity to change high carbon travel practices created by the closure of this road link. During the closure the steep route up Bridge Valley Road was still open to

pedestrians and cyclists, providing better access/egress to the area by these modes compared with cars. The road eventually reopened to motorised traffic in September 2011, with Bristol City Council's executive member for Transport having to apologise to users of the A4 Portway for the reinstatement of Bridge Valley Road bringing an end to free flowing traffic [52]. As with the example in Case Study 1, the disruption caused by this event provided an excellent opportunity to change travel practices in the Clifton area.

5.2 Traffic Movements During Closure

During the closure Bristol City Council provided several diversionary routes for drivers, which included a northern route that bypassed Clifton (using the A4 Portway), and an internal city route that used Whiteladies Road, Jacobs Well Road and Queens Road to enter/exit the city centre. Bristol City Council's research found significant increases in traffic flows and levels of congestion around Queens Road with an average 56 percent increase in traffic between 0600 and 1800 for the months of March to May 2010, compared to the previous year [49] and an 18 percent increase in traffic across the Clifton Suspension Bridge. However, this increase in traffic flows in on Queens Road does not show in the Department for Transport's Annual Average Daily Flow (AADF) results, which display average daily traffic flows for a whole year [53]. These results show that total number of vehicle movements on Queens Road reduced by just 0.16 percent between 2009 and 2010 from 25,500 to 25,100 vehicle movements and there was a negligible difference between 2010 and 2011 average flows.

Both sets of results are captured using Automatic Traffic Counts in place on the highway network. The AADF results show a reduction in trips through this area during the disruption event. This could be a problem with the way that traffic flows are taken and the difficulty of comparing the results for a 12 hour period, as opposed to the average number of trips over a year. It may be possible that following the days of congestion on this route demand was suppressed; people altered the time of day they travelled; or used alternative routes and means of travel causing the volume of traffic to level out across the year, although this cannot be proven through the evidence available. This uncertainty indicates that during periods of disruption, more attention needs to be given towards assessing finer details of how actions change in order that a better assessment can be made of what measures would be most appropriate for securing longer term benefits, as opposed to simply restoring the status quo.

To the south of Clifton traffic mitigation measures were put in place to minimise traffic movements through residential streets and traffic flows did not increase dramatically during the disruption on these routes. During the period of the closure traffic levels fell across the city, possibly due to the economic downturn, and overall congestion was reduced across the network, particularly on the A4 Portway, where anecdotal reports to the Council suggested that congestion levels dropped considerably.

5.3 Missed Opportunity to Change Travel Practices?

The closure of Bridge Valley Road altered travel practices to and from Clifton across of the city. This break in the *material* associated with travel practices (car access via Bridge Valley Road) meant that new *meanings* emerged related to the speed of travel on the A4 Portway and how and when to drive in Clifton. New *competences* emerged around travelling had to improve their navigation of the city or choose alternative modes. With the network operating more efficiently due to the closure of this link an opportunity existed to review the highway and transport network in Bristol. The anecdotal evidence suggests that Bridge Valley Road being open for car trips does not benefit the network, as traffic speeds and journey times improved on the A4 Portway and, due to this freeing up of previously congested road space on this route, elsewhere on the network. The greater network efficiency was however at the detriment to the Queens Road area of Clifton where traffic levels increased during the disruption. From this example it is possible to identify whether there are other areas of the network that could be closed that would provide benefits to the network and trialling schemes to test their impact. Through such measures it may be possible to improve network operation and improve take up of low carbon travel options. However political and media support of these trials could provide significant challenges to local authorities in instigating such schemes.

6. SUMMARY

Local authorities play a significant role in the operation and management of many areas of society and through this position have a greater opportunity to reduce high carbon travel practices than individuals have of changing their own behaviour. The results from the changes to recycling levels in England show that local authorities have the ability to change practices through exploiting niches of persistence associated with low carbon travel that exist around existing travel practices. Disruptive events offer local authorities the opportunity to evaluate and change the existing material infrastructure and meanings associated with high carbon travel practices to enable changes to be locked in for the long-term rather than reverting back to the pre-event situation. Disruptive events provide a trigger for developing

new competences regarding travel, as routine patterns are rapidly altered. Much of the work conducted by local authorities is designed to minimise or mitigate disruptive events, yet it is these relatively predictable small scale events themselves that offer the opportunity for real change to high carbon travel practices. This requires a change of focus at a societal level of the meaning of travel during events such as adverse weather conditions, particularly when home working options are available for many people who usually work in an office environment. By looking at how these changes have worked it is then possible to identify how these can be locked in during non-event conditions.

The examples from both case studies show that travel practices flexed or changed (or had the potential to) during each disruptive event. It was however difficult to sustain these changes once the road network was restored. The key for local authorities is to identify and understand what opportunities may exist during disruptive events and to include them at the appropriate point in the response process. It is only when these opportunities are included in the response to an event that disruption will become a useful tool in reducing high carbon travel practices.

ACKNOWLEDGEMENTS

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Appendix C

Chapter 1. The Transport Planning System

1.1. Introduction

The purpose of this Chapter is to set out the need for a step change in travel and to discuss whether the current transport planning system in England will be able to create this change. The chapter describes the role of the LA in transport planning in England before considering the backgrounds of people who become transport planning practitioners. The chapter concludes by discussing the factors that influence transport planning, but fall outside the remit of transport planners.

1.2. Dominant approaches in Transport Planning

Transport planning grew in prominence in the 1950s in the USA around the mitigation of the impacts of the motorcar such as congestion (Weiner, 1992). Following the apparent success of the 'Great American Transport Surveys' in the 1950s, many of the ideas an methods were introduced to the UK in the 1960s (Munby, 1968). The growth in computing power further aided this development and these type of studies were known as 'Predict and Provide'. The availability of funding for transport planning changed in line with the dominant political agendas of the next three decades (Billington and Wenban-Smith, 2000) and this influenced the type of transport planning provided. The DfT's (2000) 'Transport Ten Year Plan 2000' identified need for new transport planners at the start of the 21st century and whilst the sector has grown in the number of transport planners in the 2000s the methods used remain predominantly based on a positivist approach, using quantification and economic modelling approaches in an attempt to resolve traffic issues such as congestion, maintaining a predict and provide methodology within transport planning.

The traditional transport planning approach is in contrast to the behaviour change paradigm, in that 'structure', rather than 'agency' (Giddens, 1984), is the focus of the majority of transport models used by local authorities and their consultants to plan transport network. Sheller and Urry (2006) state that the problem with transport planning is related to the assumptions made at the start of the process: "*Transport researchers take 'demand' for transport as a given, as a black box not needing much further investigation, or as derived from the level of a society's income*" [pp212]. This is evident in the modelling software used which uses simplified models of behaviour which assume route choice is the only decision made by a driver. In reality many other elements such as the cost of fuel, changes to employment, and domestic arrangements affect our need to travel on a daily basis (Holdsworth, 2013 [pp77-78). The dominant paradigm of economic modelling is discussed in more detail in chapter 3.

Although economic modelling is dominates transport planning, psychological behaviour change policies developed within a niche the transport planning sector in the 2000s in the UK, although the such policies have been trialled internationally since the 1980s (Chatterjee, 2009). Niches provide the opportunity for new elements to develop before becoming main-stream (Shove et al., 2012, Geels, 2004). This research will be focused, looking for the opportunities that exist for change from the psychological behaviour change niche as it becomes part of the wider socio-technical regime through the delivery of the LSTF projects. Shove (2011) states that paradigms can exist in parallel, as economic modelling and

behaviour change methods have within transport planning, but the dominant paradigm tends to win; particularly in framing policy. Even though psychological behaviour change policies are often trying to achieve a more holistic change, there remains a requirement for the schemes to identify the benefits of the scheme in relation to costs (Trevithick, 2013). In reality the benefits of psychological behaviour change can more difficult to prove and quantify than traditional infrastructure schemes.

Psychological behaviour change polices where trialled in the UK, as part of the *Sustainable Travel Towns* pilot project between 2004 and 2009 (Sloman *et al.*, 2010). This followed the research by Cairns *et al.* (2004) which assessed various initiatives being undertaken in the UK but lacked the detail for comprehensive assessment (Chatterjee, 2009). The aim of the Sustainable Travel Towns project was to assess sustainable travel and Voluntary Travel Behaviour Change (VTBC) initiatives, known in the UK as Smarter Choices, within three towns in the England: Darlington; Peterborough; and Worcester. The report concluded that the pilot was successful in reducing travel by car and increasing use of other "sustainable" modes. The scheme was able to show that in economic terms VTBC schemes in the England provided good value for money when delivered in conjunction with improvements to sustainable transport infrastructure (Sloman *et al.*, 2010). The conclusions of the report show the need to provide clear evidence of the benefits of the schemes in economic terms. The success of the *Sustainable Travel Towns* pilot led to the DfT funding the LSTF project in 2011, with £538m being invested in sustainable travel initiatives across England.

This research provides an assessment of the LSTF projects being delivered in England between 2011 and 2015 in reference to the SPT and the 3-elements model. With the apparent success of VTBC within the Sustainable Travel Towns pilot it will be useful to understand whether these schemes are attempting to deliver change through, agency, structure or a mixture of the both, what Giddens (1984) calls structuration. Structuration forms the basis Shove *et al.*'s (2012) interpretation of SPT that has been used to design the 3-elements model, so this suggests that it will be a useful tool to understand what the behaviour change initiatives within the LSTF are trying to deliver as well as identifying other areas where improvements can be made. To understand the benefits that SPT can provide it is useful to understand the basics of the theories of social practice.

1.3. The need for a step change in travel

There is near global consensus within academic literature that anthropogenic carbon dioxide (CO_2) emissions are having a significant impact on the global climate (Cook *et al.*, 2013, Soloman *et al.*, 2007, DEFRA, 2007, Oreskes, 2005). In response to this challenge the UK Government of 1997 to 2010 set a legally binding target to reducing GHG emissions by 80% by 2050 (DECC, 2009). To achieve this target a change is required to how society produces and uses energy: and how and why people choose to travel. Without this change, if the research published in academic literature proves to be correct, it is likely that there will be increased occurrences of disruptive events and other associated impacts from climate change that will adversely affect society's ability to survive and continue to thrive.

This research focuses on the opportunities that exist to change the way we travel and the factors that prevent such a change. The specific focus of the research is on transport planning at the LA level. Within the UK transport sector, GHG emissions have remained relatively constant since 1990. This is despite the overall level of emissions from other sources falling during this period. (DECC 2012 [p9]). GHG emissions have not fallen despite

improvements in automotive technology, transport planning interventions and the design of our transport infrastructure. Technological solutions will play some part in the required change, but will not be able to provide the complete solution due to the difficulties of regulation and adoption (Schäfer *et al.*, 2011 [p25]) despite the assumption that within government policy that scientific solutions to global problems will be found (Tyfield, 2012).

1.3.1. Impacts of GHG Emissions

Focussing on the output of GHG emissions within the UK, CO_2 accounted for 84% of UK emissions in 2009. In total 25% of GHG emissions were from transportation (69% of which were made up of travel by road) (DECC, 2011). Therefore travel by road contributed 17.25% of all UK CO_2 emissions in 2009 and this is approximately equivalent to the total UK emissions target for 2050. Road travel may not be the largest emitter of CO_2 emissions in the UK, but the lack of success in reducing the level of emissions suggests that novel solutions are required to how people travel and how goods are moved. In addition to CO_2 emissions motor vehicles also emit other pollutants including: particulate matter (PM), nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compounds such as benzene, butane, isoprene (DEFRA, 2007). As Figure 3.2 shows, particulate matter is often far smaller than the width of a human hair. All these pollutants have a significant impact on human health at a local level close to the source of emission, compared to CO_2 emissions which have a greater impact at a global level. It is estimated that air pollutants cost the UK economy £15 billion annually due to the health impacts they cause (DEFRA, 2010).
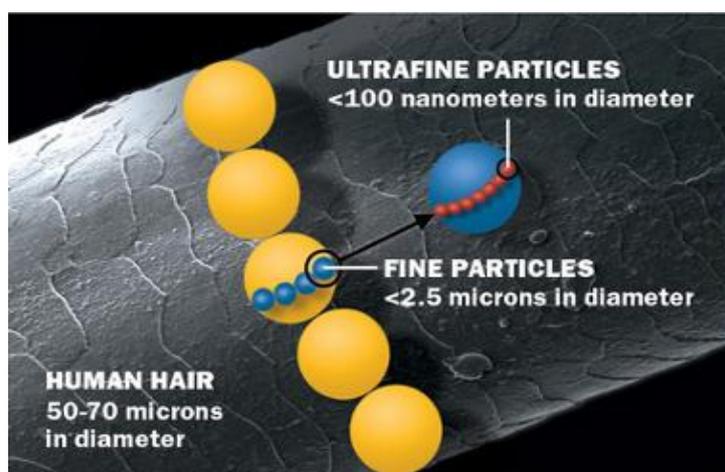

Figure 1-1 Diagram of Fine Particulates PM$^{2.5}$ (Levin, 2012)

CO_2 emissions can last in the atmosphere for up to 150 years (DEFRA, 2007) and although the UK is only the 10th largest emitter at present (IEA, 2012), the nation's cumulative fossil fuel emissions may be having a more significant impact on the current climate than the comparatively recent high emitting nations of China and India. It is important to understand the importance in comparison between annual emissions as presented by the IEA and the cumulative impacts of nations such as the UK that have been releasing emissions since the start of the industrial revolution. It is therefore important to understand that the actions of the present are having an impact on people today through local air pollution, as well as future generations through CO_2 emissions. This is why there is a need for a step change in how people travel in the UK.

1.3.2. Rise in Sedentary Lifestyles

The Department of Health (DoH) state that 61% of adults and 30% of children between 2 and 15 are either overweight or obese (DoH, 2013). The risk of excess weight includes: type-2 diabetes; heart disease; certain types of cancer; and mental health issues (DoH, 2013). The DoH state that this costs the NHS £5bn every year and if it remains unchallenged this could continue to increase dramatically in the future. As with many behaviour change approaches used by government, the policies have been based on individual change through the provision of information on 'Change4Life', labelling systems and advice on how much physical activity should be undertaken (DoH, 2013). Sedentary lifestyles designed around automobile use are seen as one of the contributory factors in weight gain, as people increasingly use the car through choice and necessity to fulfil their daily requirements. Healthy travel has therefore become an area of interest for medical research in recent years (Guell, 2013). Evidence has started to be amassed that shows that mortality rates were higher for people who did not cycle, compared to those who did (Anderson *et al.*, 2000). Other factors, such as health and wealth, which may preclude people from taking up cycling, influence the figures, but the results suggest that there would be significant benefits for people if they were to travel by walking and cycling rather than by car. It is clear that there is a strong case for a change to travel practices, but is the current transport planning approach fit for purpose to meet these various challenges?

1.4. Is Transport Planning fit for purpose in meeting the challenges of the 21st century?

The origins of transport planning are based in civil engineering and economics, using Cost Benefit Analysis (CBA) to provide a scientific and rational response to transport issues (Dudley and Preston, 2013, Munby, 1968 [p9]). The CBA model is favoured by politicians as it is easy to understand and as the name suggests it provides a clear link between the costs and benefits of implementing a scheme. By the 1960s traffic congestion was creating a significant problem for many towns and cities in the UK that did not have highway networks that had specifically been designed for motorised transport. The *Traffic in Towns* report (Buchanan and Crowther, 1963) proposed several solutions to the issues of traffic congestion making several recommendations that still affect modern transport planning. The authors of the report state that their theoretical basis was the "*desire of society to use the motor vehicle to the full*", (Buchanan and Crowther, 1963 [pp33]) to demonstrate the consequences of this approach. The option to promote the use of the motor vehicle to the full is no longer available in the UK, due to our awareness of the links between emissions from motorised travel and its impact on climate change and local air quality, yet the economic basis of transport planning still retains the viewpoint that travelling by car is the most economical way to travel.

The economic paradigm became dominant with the growth of computing power from the 1960s through the influence of then Transport Minister Barbara Castle creating the role of Director of Economic Planning to give economics greater importance in planning (Dudley and Preston, 2013). This occurred at a time when it became possible to forecast future road traffic demand (Munby, 1968, pp12) and model it. Weiner (1992) provides a comprehensive background to transport planning in the USA and the techniques and methods (competences) used, many of which were abstracted and transferred to the UK in the 1960s. The interest in transport planning in the USA started in the 1920s and 1930s, where suburban areas of cities grew in line with increases in private car ownership. The original

networks were not designed for the volumes of traffic that were attempting to access the cities as ridership on public transport declined in favour of travelling by car. Early studies in this period were based on travel surveys focussed on origin and destination studies, a method still used in the 21st century, although adapted and refined.

Other concepts that continue to form the core competences of transport planning practice were also developed in this time such as; traffic counting; highway inventories; highway classification; cost estimating; and system planning (Weiner, 1992). During this period the theory that the relationships between land-use and travel could be measured allowing for predictions in future travel demand embedding the meanings of importance of these factors into transport planning methods. This still forms the essence of what transport planners are trying to do: 'predict the future' and creating the infrastructure to meet this prediction.

The Department for Transport released the latest forecasts from the National Transport Model (NTM) for road transport in July 2013 (DfT, 2013a). This model is based on a set of assumptions regarding population, economic growth and the cost of fuel and predicts how the demand for road traffic will change in the future. The projections, shown in Figure 3.2 are for continued significant growth in private car use, despite the identified need to reduce emissions associated with travel. Many critics of this demand modelling highlight the flaws and over-estimation of demand that have continued to this day (CfBT, 2013, Goodwin, 2012, Næss *et al.*, 2006). The latest predictions from the National Transport Model, released in 2013, continue to show an increase in car use at a time when we need to consider alternatives to travel by motorised transport (DfT, 2013a).
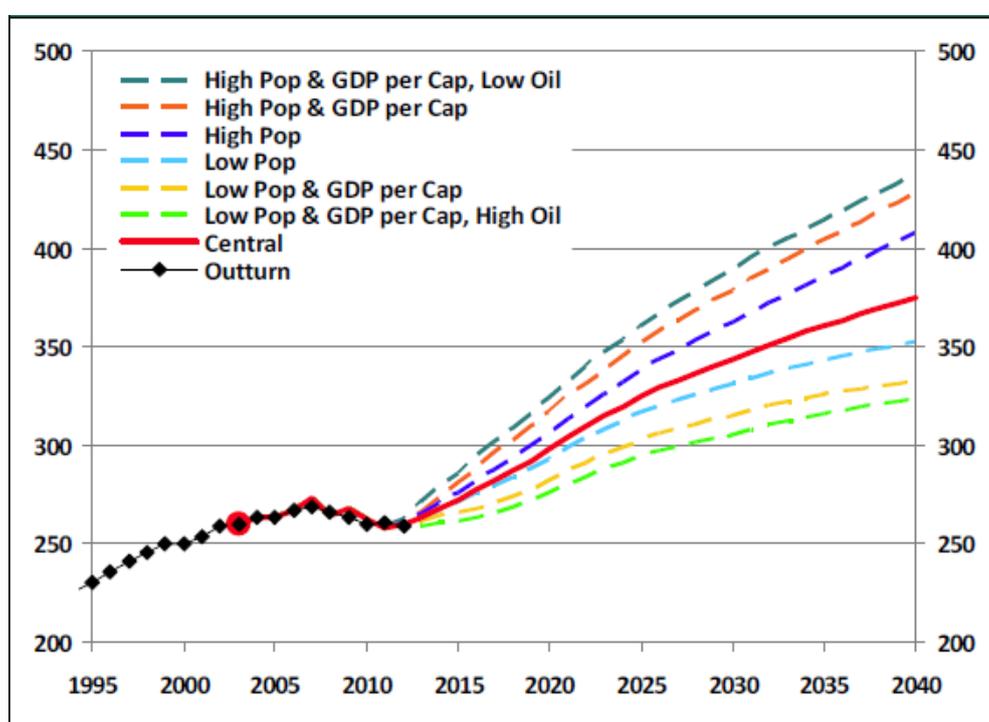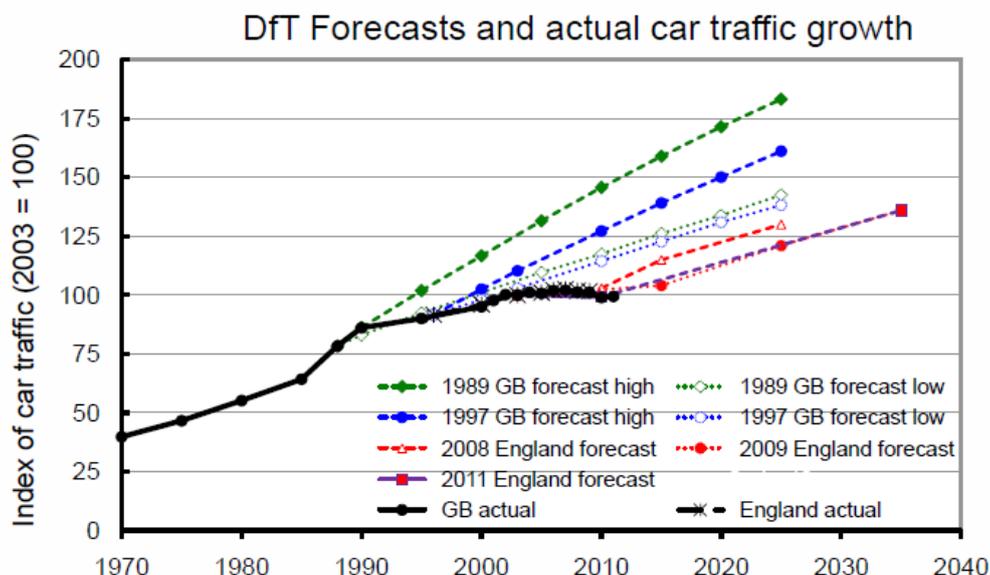

Figure 1-2 Predicted levels of Traffic on English Roads 2013-2040 (DfT, 2013a)

Figure 3.3 suggests that these figures should be read with caution, as historically the figures of predicted travel growth from the NTM, have always tended to over-estimate the level of increase in traffic.

Figure 1-3 Previous Predicted levels of Traffic on English Roads 1989-2013 (Goodwin, 2013)

The continued over-estimation of traffic is to do with the assumptions that are placed on the model and the difficulty in predicting major events, such as the global economic downturn, which was not included in the models that suggested continual growth from the 1980s onwards. George Box (1987) said that: "*All models are wrong, [but] some of them are useful*", pp424. It could be suggested that the basis from which transport planning was created has led to assumptions about demand for transport that may be wrong. An example of this comes from the debate around 'peak car'. Many phenomena, such as 'Peak Car' are dismissed by the DfT (2013a), despite Jones and Le Vine (2013) identifying that fewer young people are applying for a driving licence. Delbosc and Currie (2013) suggest that this is not a problem confined to the UK. In dismissing this as being a problem the DfT suggest that as groups where car use is declining only make up 30% of the overall population, then their predictions of significant growth in road traffic remain true. They have also based the findings on the growth in traffic on the strategic network, rather than the decline on the local road network, suggesting that if your assumption is that traffic will increase this is what you will find (DfT, 2013a [pp22]). The arguments above support the forecasts of the NTM, but fail to capture the nuances of the argument and an understanding about what influences how people travel.

Examples of models that include simple and possibly inaccurate assumptions of demand include the strategic *Atkins-ITS Transport* modelling programme SATURN (Simulation and Assignment of Traffic to Urban Road Networks). SATURN provides a simplistic interpretation of behaviour (agency) based on Wardrop's Principle (Van Vliet, 2013 pp7-1, 7-2). Wardrop's Principle is mathematically rigorous and can be applied cheaply and quickly to assess transport issues (Cairns *et al.*, 1998) helping to explain why such models remain dominant within transport planning. The main criticism of Wardrop's Principle is that behaviour is based on the assumption that journeys are fixed in number between each origin and destination, so the only choice is which route the driver takes (Cairns *et al.*, 1998). Journeys are rarely fixed and can be disrupted by unplanned disruptions (Guiver, 2009, Kitamura *et al.*, 1998), planned disruptions (Shove and Walker, 2010), the economic downturn and many other factors that occur on a daily basis. By simplifying behaviour into

one type of choice using Waldrop's Principle the transport model is failing to adequately reflect how people may travel in the future.

Other models are more adept at dealing with behaviour change, such as TUBA (DfT, 2006a), which is based on a multi-modal concept (where users are able to switch between use of the car and public transport). The assumptions in such models remain that whilst some trips may be suppressed the majority of the trips will switch modes as sustainable travel grows, when there is the possibility that they may disappear from the network (Cairns *et al.*, 1998).

1.4.1. Economic basis of Transport Planning

Due to the excessive cost of construction of highway transport infrastructure The American Association of State Highways (AASHO) developed a manual on user benefits in the USA in the 1940s (Weiner, 1992). The theory was that profit should be returned on investment and costs to the user, construction and maintenance costs were all included. The costs were based on differences when evaluated using the following criteria when comparing to alternative routes: fuel, operating costs, time value, comfort and convenience, vehicle ownership costs and safety (Weiner, 1992). Cost Benefit Analysis (CBA) has been incorporated in transport planning to show that benefits outweigh the costs of implementing any transport scheme. This is particularly the case on large infrastructure projects, delivered by LAs. The DfT's WebTAG guidance (2012b) states that CBA is an: "*analysis which quantifies in monetary terms as many of the costs and benefits of a proposal as feasible, including items for which the market does not provide a satisfactory measure of economic value*". This monetised approach creates financial costs for impacts such as noise and GHG emissions so that the total costs of the scheme can be assessed, rather than just the financial costs of implementing the scheme.

The DfT provides COBA software for transport practitioners to work out the costs of a scheme which uses fixed journey assumptions within the origin and destination matrices that make up the model. This model is regularly updated with the latest version available from their website (DfT, 2012i). Figure 2.1 shows the method used by COBA to calculate the 'User Costs' for a scheme.
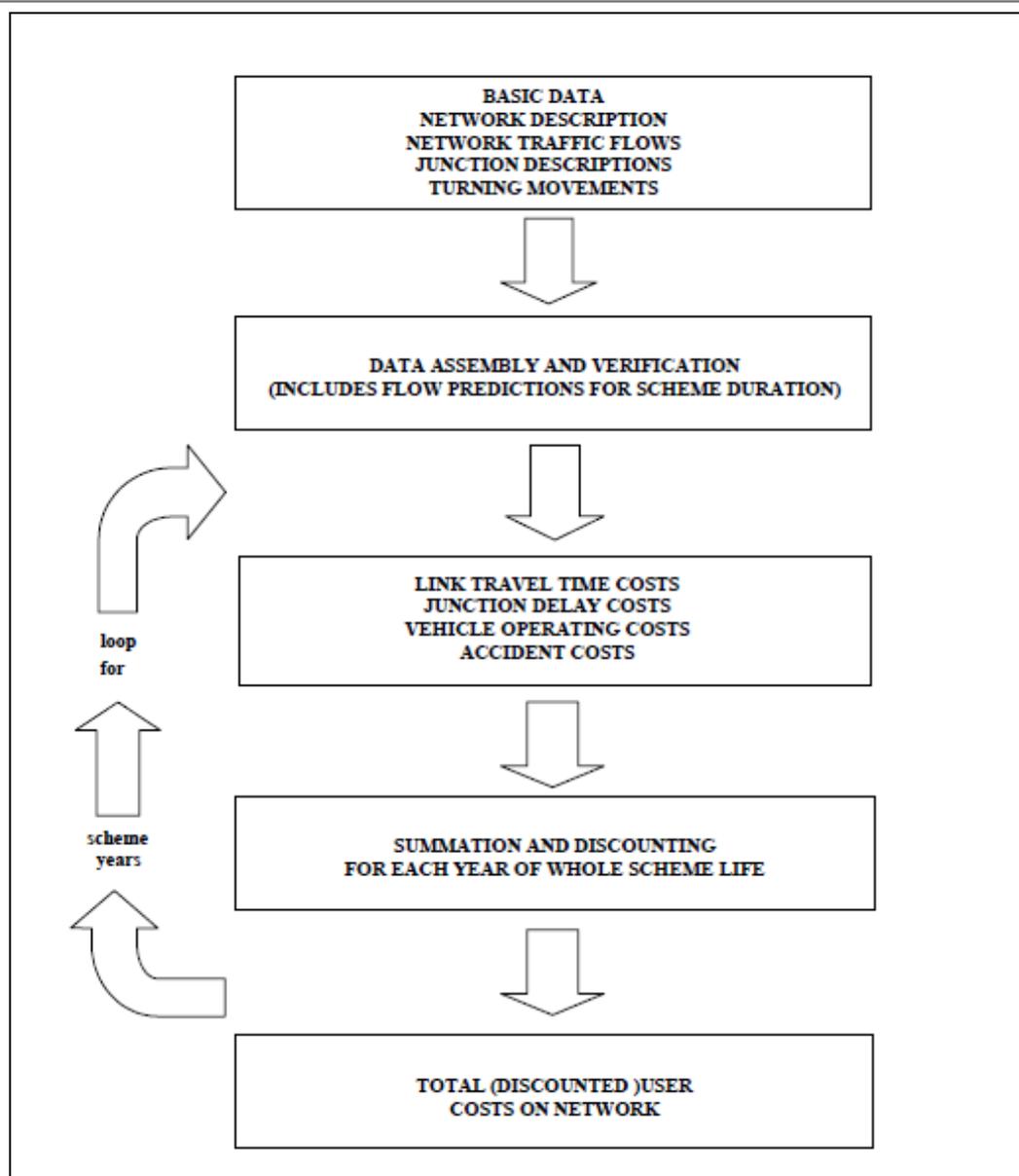
Figure 1-4: Process for Calculating User Network Costs (DfT, 2006)

The COBA analysis is based on defining the options available to users: this is based on 'do minimum' or 'do something' scenarios. The models provide a basis for assessing the benefits of implementing a scheme 'do something' against what is likely to happen if no scheme goes ahead. Transport planning's current economic paradigm fails to adequately capture the intricate elements of behaviour and the wider social system. The models are based on assumption that how people have travelled in the past and where they will travel to will remain relatively static and that all travellers work 9-5. This is not always the case. A study by the University of Leeds in 1984 found that only 50 percent of vehicles on one stretch of road were the same from one day to the next (Cairns *et al.*, 1998). In reality many other elements such as the cost of fuel, changes to employment, and domestic arrangements affect our need to travel on a daily basis (Holdsworth, 2013).

1.4.2. Structure versus Agency

The historic background of transport planning has been from both an engineering background (planning and designing) and an economic background (justifying cost) (Dudley and Preston, 2013). This means that the industry has traditionally been based on structure, rather than dealing with how people use transport (agency). Within these models behaviour was reduced to simple decisions, rather than the complex set of decisions that are made every day. Although economic models remain dominant in transport planning, other areas developed, particularly in academic studies of transport, which have been influenced by geography and more recently psychology-based behaviour change approaches grounded in social psychology and behavioural economics (Dudley and Preston, 2012). Dudley and Preston (2012) note that whilst behaviour change started to become a topic in academia in the 1970s and 1980s there was a lead time before this started to filter into policy and transport delivery. At present, psychologically-based approaches to behaviour are politically favoured and have been given the general term 'Behaviour Change' at the exclusion of all other options by the UK Government. Approaches focused on changing an individual's behaviour include providing information and more recently a by a more subtle approach of 'nudging' behaviour to a preferred (less environmentally damaging) action (Dolan *et al.*, 2010). Whilst the evidence supplied by Dolan *et al.*, (2010) suggests that many of the methods mentioned are successful at changing behaviour, the nudge approach will only have a relatively small impact on behaviour compared to the level required.
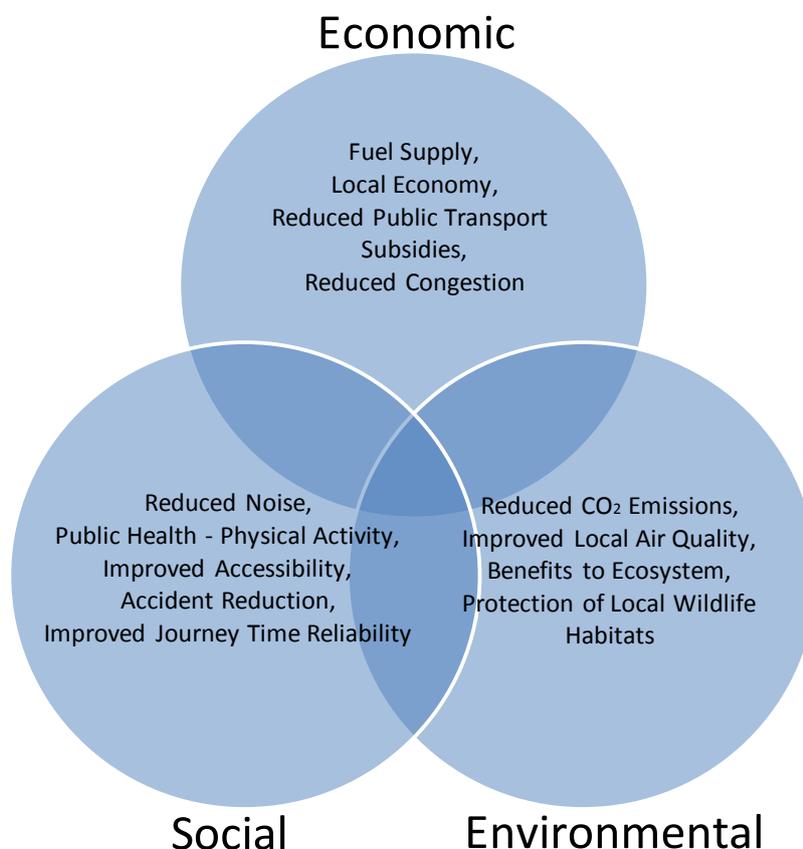
The LSTF is the first national attempt to deal with agency in travel, by using behavioural economics and psychology techniques through the implementation of Voluntary Travel Behaviour Change (VTBC) techniques such as Personalised Travel Planning (DfT, 2011a). This has taken behavioural approaches to travel from the niche into the mainstream of transport planning.

1.4.3. Defining Sustainable Transport

The thesis is focused on reducing the number of trips by private vehicle, but what are the alternatives for people if they are not able to travel by this mode? Two options exist: firstly, not to travel; and secondly to travel by 'sustainable transport' modes. Not travelling has been an option for many people in office-based roles since the late 1990s as modern communications mean people are able to connect with the office and work from home (Lyons, 1998), purchase goods from the internet for home delivery (Jones, 2012) or contact friends and family through social media (Rettie, 2008).

What is defined as 'sustainable' transport depends on how the word sustainable is used. For example economic (financial) sustainability is different from environmental sustainability in that the focus of what you are trying to 'sustain' is fundamentally different. The Department for Transport (DfT) defined 'sustainable transport' in their 2011 White Paper 'Creating Growth, Cutting Carbon: Making Sustainable Transport Happen' as: *"Genuinely sustainable modes – environmentally sustainable as well as fiscally, economically and socially sustainable"*, DfT, 2011a: 8). This definition of sustainable transport includes references to the environment, economics and the social, but does not place any weighting to the importance of each element. Using this definition it is possible to argue that driving by car is economically and socially sustainable due to the benefits of connectivity provided and the time savings created. Figure 3.5 provides the type of elements that may be included in a sustainable transport network. Many of the elements cross boundaries, such as reducing

congestion and improving journey time reliability, whilst others may conflict, such as securing a fuel supply, which may impact on CO_2 emissions and local air quality.

Economic

Fuel Supply,
Local Economy,
Reduced Public Transport
Subsidies,
Reduced Congestion

Reduced Noise,
Public Health - Physical Activity,
Improved Accessibility,
Accident Reduction,
Improved Journey Time Reliability

Reduced CO_2 Emissions,
Improved Local Air Quality,
Benefits to Ecosystem,
Protection of Local Wildlife
Habitats

Social   Environmental

Figure 1-5: The elements of Sustainable Transport

In the Government White Paper, the car remains part of the sustainable transport options, with reference to car sharing and car clubs (pp68), Park and Ride schemes (pp72) and electric and low emission vehicles (pp7, p72) within the document (DfT,2011b). This framing of sustainable transport suggests that both the economic and social needs of travel still outweigh the environmental concerns, as although fewer emissions are being produced there is still an environmental impact from car travel over other modes. Other modes included as sustainable transport include: walking; cycling; and the use of public transport services including, bus, rail, light-rail and trams systems (but not trips by aeroplane). Whilst public transport services emit pollutants, the level of emissions per journey is generally lower than that of individual journeys by car (Pritchard, 2013). As the research will be reviewing sustainable transport schemes delivered through funding based on the DfT white paper, this definition will be used.

1.5. Who are transport practitioners?

The DfT's Ten Year Plan 2000 recognised the changes required for transport in the 21st century in the UK (DfT, 2000), whilst Billington and Wenban-Smith (2000) identified the need for a change in the type of transport planners required to meet the demand due to the issues relating to mobility and the environment that could not be addressed by the traditional approaches to transport planning. Billington and Wenban-Smith (2000) used an example

from the Transport Planning Society in 1997, shown in Table 3.1 that described the many jobs undertaken by transport planning practitioners. The table has been adapted to incorporate whether the skills identified are designed to deal with the agency of travel (individuals), the structure of transport (both physical and political); or both.

Table 1-1 Roles and Functions undertaken by Transport Planners (adapted from Billington and Wenban-Smith, 2000 [pp26-27].

Transport Planning	Agency or Structure? Or Both?
Help formulate transport policy	Structure (Policy)
Forecasting travel demand	Both. Structure (Policy), Agency (Behaviour)
Influencing land use planning	Structure (infrastructure)
Designing new infrastructure	Structure (infrastructure)
Devising new traffic management systems	Structure (infrastructure)
Promoting travel awareness and encouraging modal shift	Agency (Behaviour)
Designing Traffic Control Systems	Structure (infrastructure)
Appraising the costs and benefits of new schemes	Structure (Economics)
Devising green commuter plans	Agency (behaviour)
Studying road user behaviour	Agency (behaviour)
Devising traffic calming measures	Structure (infrastructure)
Improving road safety	Both. Structure (infrastructure), Agency (Behaviour)
Predicting patronage and revenue	Both. Structure (Policy), Agency (Behaviour)
Evaluating parking provision	Structure (policy)
Determining public attitudes	Agency (behaviour)
Promoting integration between modes	Both. Structure (infrastructure), Agency (Behaviour)
Designing pedestrian and cycle facilities.	Structure (infrastructure)
Assessing the transport impact of new developments	Agency (behaviour)
Developing telematics applications	Both. Structure (Policy), Agency (Behaviour)
Restraining traffic in town centres	Structure (infrastructure)
Encouraging efficient freight transport	Both. Structure (infrastructure), Agency (Behaviour)
Designing bus priority measures	Structure (infrastructure)
Modelling transport patterns	Structure (infrastructure)
And many other tasks	-

Table 3.1 shows that by 1997 there was a significant increase in the tasks undertaken by transport planners are based on agency. Many of these tasked were based on understanding and predicting future behaviour based on simple assumptions. The assumptions are still based on economic models of behaviour, which remain set in how transport is modelled. The LSTF has further altered the requirements of transport planners in that there is a requirement for practitioners to have an understanding of behaviour change techniques (DfT, 2011a) and an ability to interpret the results.

1.5.1. Who are Transport Planning Practitioners?
Understanding the meanings and competences of transport planning practitioners is important, as these are reflected in the transport network that is provided. In the 1960s and 1970s the industry was male dominated, but the change in focus toward human behaviour

(Dudley and Preston, 2013) has slowly increased the number of female practitioners. Clark and Lyons (2012) conducted a survey of members of the Chartered Institute of Highways Transport, The Transport Planning Society and the Royal Town Planning Institute in 2012. The survey received a 10 per cent response rate and produced the following demographics:

Table 1-2 Demographics of the respondents to the Transport Planning Professional Qualification Survey (Clark and Lyons, 2012).

Gender	Number	Per cent
Male	239	70%
Female	102	30%
Education Status		
Hold First Degree		
Yes	311	90%
No	36	10%
Hold Masters Degree		
Yes	207	60%
No	140	40%

The results show that the industry is still dominated by male practitioners and this is supported by the gender split of the Transport Planning Society, where males make up 78% of the 900 members (Hill, 2013). The findings show that the majority of practitioners have been educated to at least first degree status. Table 3.3 shows the types of degree have also changed with a reduced emphasis on engineering, with only 20% of practitioners holding an engineering first degree. Geography graduates provide the highest level of respondents, suggesting that the change Billington and Wenban-Smith (2000) identified has been achieved. Whilst transport planning only made up 5% of first degrees transport planning and transport planning and engineering make up 37% of second degrees held (19% transport planning and 18% transport planning and engineering). This supports the success of Billington and Wenban-Smith's (2000) aim to improve the provision of post graduate training for transport planners.

Table 1-3 Type of degree held by respondents to the Transport Planning Professional Qualification Survey (Clark and Lyons, 2012).

Subject	Number	Per cent
Hold First Degree		
Geography	127	37%
Engineering	66	19%
None	36	10%
Other	23	7%
Maths	20	6%
Natural / environmental / computer sciences	17	5%
Transport planning / Engineering	16	5%
Economics / Business	15	4%
Town / country planning	14	4%
Social sciences / Politics / History	13	4%
Hold Second Degree		
None	140	40%
Transport Planning	66	19%
Transport Planning and Engineering	62	18%

Subject	Number	Per cent
Other	29	8%
Town and country planning	19	6%
Engineering	16	5%
Transport Engineering	15	4%

Transport Planning Society has been successful in increasing membership, as in 1997 there were just 70 members. Of the current membership 45% of them are between 25 and 40 and this demonstrates the success of the Billington and Wenban-Smith approach to garnering new practitioners to the industry through training and education through the delivery of second degrees in transport planning..

Transport planning practitioners are very important to understanding what transport provision will be supplied in the UK. In relation to the highway network, the majority of practitioners will either sit within a LA or within a transport consultancy and assist the LA in delivering transport planning measures. The values of these individuals are important as they influence the meanings and competences of those delivering transport schemes in the UK and transport practitioners have the difficult task of convincing local politicians, who are non-technical experts to approve transport initiatives, even if they go against popular opinion or the views of the local media. Transport planning practitioners have the ability to create the necessary step change in travel in England and it is important to understand their views on how this process is currently operating and what factors will influence transport planning in the future. This is why the thesis will focus on transport planning practitioners.

1.5.2. Why focus on LAs? Importance of LAs in transport planning

LAs are placed at the centre of this research as this is where the practice of transport planning predominantly takes place within the UK context. Whilst central government and its departments are in control of the design and formation of policy and predominantly responsible for the allocation of funding it is within the LAs (and their consultancies) that transport solutions are planned, designed and implemented. LAs are therefore the 'bridge' between the socio (public, policy and politicians) and the technical (infrastructure) of what Geels, (2004) defines as the socio-technical system. This places a significant level of responsibility on the transport planners to ensure that the schemes that are designed and implemented in terms of delivering a network that is fit for purpose and that is able to meet the changing demands for transport.

LAs are complex systems (Mitleton-Kelly, 2003) and are involved in many aspects of daily life. It is from this unique position that they are able to influence, rather than simply providing for, social practices. LAs face pressure on all sides due as shown in Figure 3.6. From below, the customer-facing side of the local authority deals with the public and their expectations of how a local authority should operate and what services they should provide. Local politics also applies pressure, where party politics can delay the delivery of new infrastructure. For example following the change in lead party at Bath and North East Somerset Council led to the significant reduction of the Bath Package major scheme bid (The Bath Chronicle, 2012). The last issue relates to the local media who sensationalise what the elements of a story that they perceive to be disruptive to peoples' right to drive to increase sales (Dickinson, 2006) or web traffic.

At a national level, political and media pressures can also play a significant role in creating the meanings and providing the materials for travel. In 2011, following the winter season, the road network had been damaged by the significant freeze/thaw effect causing 'pot holes'. Due to extensive media coverage, and despite intentions for an overall reduction in funding for local authorities in the 2010 Spending Review, the Government subsequently found £100m of additional funding to be spent on fixing damaged road surfaces (DfT, 2011c). Whilst the additional finances were welcome, the fresh injection of cash at a late stage in the financial year also meant the redesign of maintenance programmes and the alteration of contracts and staffing levels to deliver the additional works.
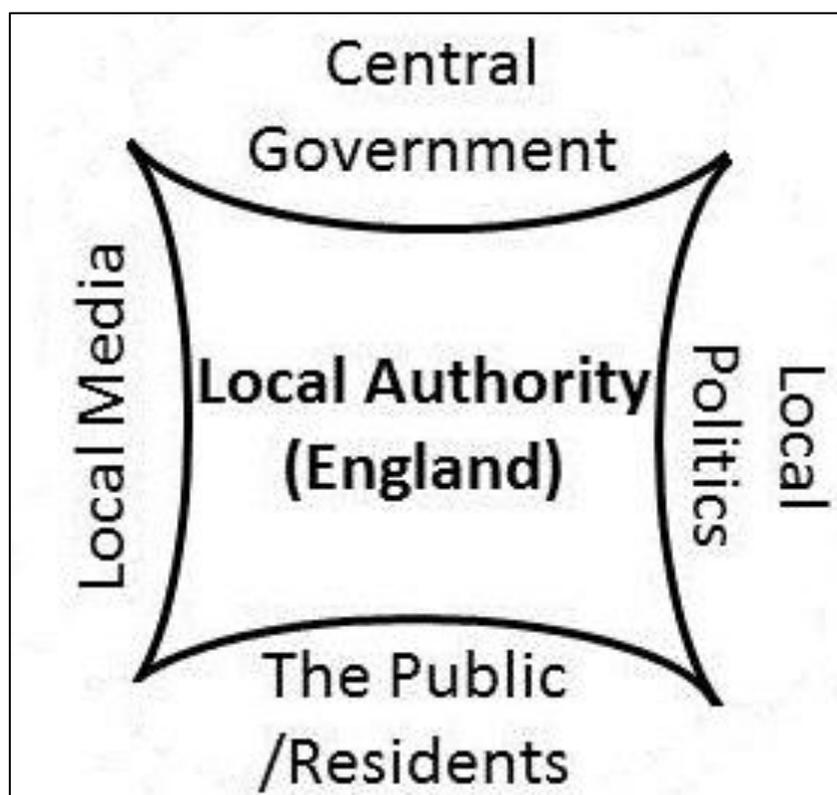
Figure 1-6: Pressures on Local Authorities

LAs in England have played a significant role in improving household recycling rates in the past 10 years. In 2011, 41.5% of refuse was recycled by local authorities in England compared to just 11% in 2001 (DEFRA, 2011). Rutland County Council was the best performing local authority in 2011, with 57% of waste being recycled (Let's Recycle, 2011). These differences suggest that the method used by local authorities to engage with and to enable people to change their waste disposal practice can have a significant effect in changing the practices associated with waste. The practice of waste disposal has altered by introducing the materials to recycle (segregated boxes), and changing from weekly collections to fortnightly collections. The practice of waste disposal now involves: washing recyclable items; using separate containers and knowing when each type of waste will be collected, whereas before all items of waste were disposed of in one bin. If local authorities have been successful in changing the practice of recycling in one section of their operation, it is possible that these lessons could be transferred to creating a change in travel practices. Local authorities have been able to tap into the 'niche of persistence' (Shove, 2012) that existed around recycling, where glass and metal were collected at community locations. The

practice of recycling has changed during this period and is now undertaken in the home. Niches of persistence exist around travel that can be considered low carbon such as walking and cycling. The delivery of the LSTF is designed to harness such niches to enable change.

The opportunity for local authorities to change travel practices to favour low carbon alternatives requires effective and coherent management across the authority and the removal of the 'silo mentality' and the horizontal transfer of expertise and working between departments (Olowoporoku *et al.*, 2011, Bundred, 2006, Rashman and Radnor, 2005). This may be one of the greatest challenges in reducing private vehicle trips for the local government sector.

1.5.3. Factors outside the LA's control

Although LAs have been given the task of creating behaviour change in relation to transport, in reality there is only so much that they can do. This is because many factors that affect transport sit outside LAs control. Actions of central Government have a significant impact on the meanings associated with travel, even if they are unintended. The Education Reform Act 1988 gave parents the 'choice' to send their children to their preferred school (Gillard, 2011). This has had implications for the journeys made to and from school. Jarvis and Alvanides (2009) show in Figure 3.6 the complexity of journeys that this Act has created with the red lines showing the closest school to home locations (although not by road) and the purple lines show the actual journeys made. The DfT's National Travel Survey 2011 shows that the average length of journeys to school has increase between 1995/7 to 2009 from 2.1 miles to 2.5 miles and during this period the number of car trips in the AM peak that are attributed to 'escort education' trips has increased from 10% to 14% (DfT, 2012c). This increase in travel is outside of the control of LA transport planning teams although they may be able to work with the education department to resolve some of the issues.

Changes to working life patterns and the desire for 'quality' time also influence how people chose to travel (Southerton, 2003). The changes to the UK employment market towards a service sector (Green *et al.* 1999) altered the job market and saw an increase in women in employment increasing the number of dual income families (Washbrook, 2007). This has altered the dynamic of the family, with both partners responsible for household income, childcare and other domestic arrangements. This change is reflected in Le Vine and Jones' (2012) findings that showed significant increases in the level of driving by women in the 30-39 age group.

The 3-elements model should enable transport practitioners to identify the elements that are outside their control. By understanding the factors that can be controlled it should be possible to create initiatives that can influence and possibly change travel practices. This is one of the benefits of using a social practice approach to understanding travel, as it does not rely on individual choice. By understanding the wider influences and the limitations of transport planning it should be possible to use the existing tools and techniques to change the assumptions within transport planning to reflect what is actually taking place.
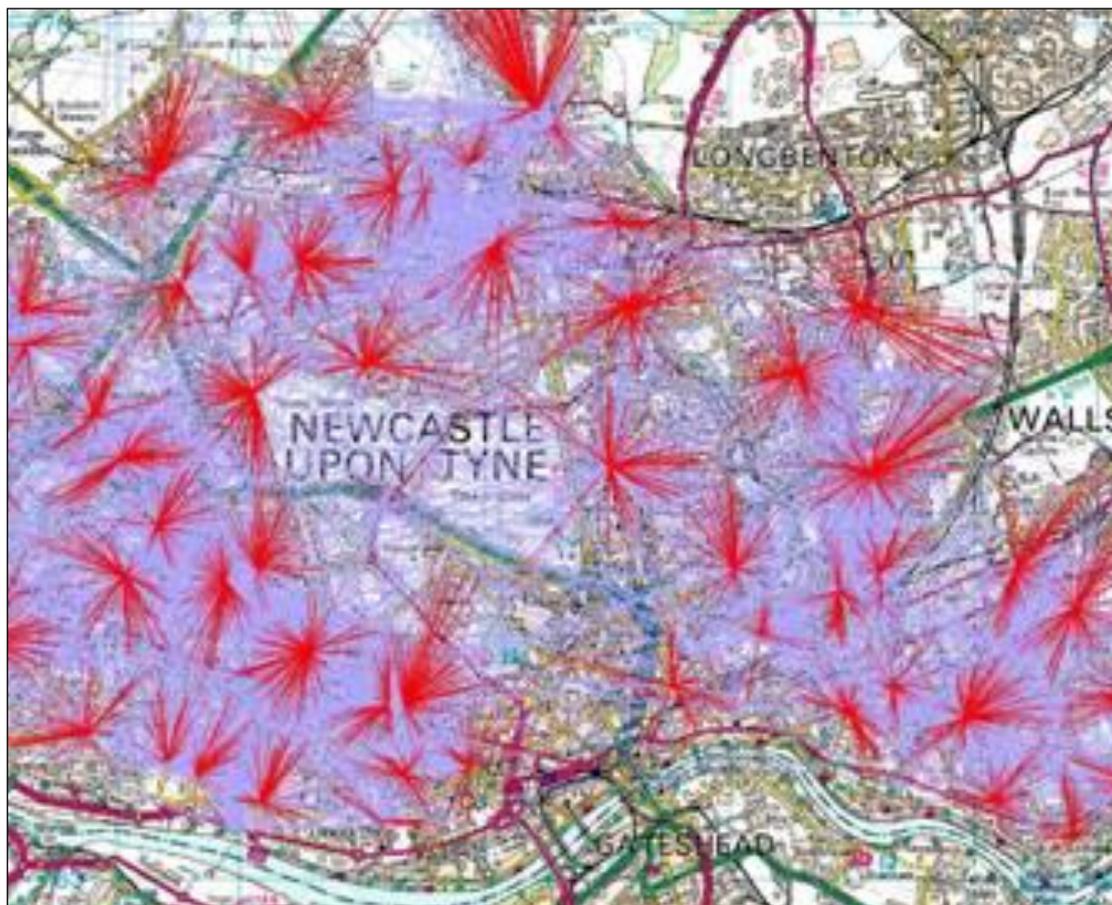
Figure 1-7: Journeys to School in Newcastle (Jarvis and Alvanides, 2009).

1.6. Transport Planning as a Practice

To assess what is being delivered through the LSTF we have to understand transport planning as a social practice, with reference to the 3-elements model. The materials, meanings and competences that form transport planning will influence what transport practitioners deliver through the LSTF process. As the sections above show the meanings and competences of transport planning as a profession have changed and adapted over the past 50 years, as there has been a move away from an infrastructure led industry towards an economic and modelling based approach. Table 3.4 provides a breakdown of the 3-elements of transport planning at the time of the inception of the LSTF programme.

Table 1-4 3-Elements of Transport Planning

Element	Factors
Materials	Infrastructure design, transport planning practitioners, transport models, volunteers, government and local government structure
Competences	Dealing with stakeholders, consulting with councilors and the public, designing transport schemes, providing PTP, interpreting policy, managing budgets and timetables, behavior change techniques
Meanings	Mobility, individual choice, enabling movement, economic benefits, carbon reduction, government policy

The table suggests that transport planning already has many of the requisite elements for creating a step change in travel by private car, but the meanings relating to individual choice

and economic benefits create assumptions that are incompatible with creating a step change. This is because removing road space and providing enhanced sustainable transport options, would reduce individual choice and environmentally sustainable options are not always compatible with economic (financial) sustainability. Whilst transport planning has the skills to create the required step change, it is the assumptions in models and the meanings associated with transport that need to change.

1.7. Chapter Summary

This Chapter explained the need for a step change in reducing trips by private car and discussed whether the existing transport planning paradigm was suitable for creating such a change. The chapter discussed the importance of transport practitioners and LAs in creating change before assessing the practice of transport planning in relation to the 3-elements model.

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Appendix D

Department for
Transport

Local Sustainable Transport Fund - Application Form

Guidance on the Application Process is available at:

www.dft.gov.uk/pgr/regional/

Bids for both small projects and initial proposals for large projects should be no more than 20 pages long.

Applicant Information

Local transport authority name(s)*:

*(If the bid is a joint proposal, please enter the names of all participating local transport authorities and specify the co-ordinating authority)

Senior Responsible Owner name and position:

<Name and position of the senior official responsible for delivery of the proposed package of measures>

Bid Manager name and position:

<Name and position of the official with day to day responsibility for delivering the proposed package of measures>

Contact telephone number:

Email address:

Postal address:

Website address for published bid:

SECTION A - Project description and funding profile

A1. Project name:

A2. Headline description:

<Please enter a brief description of the package of measures in no more than 100 words>

A3. Geographical area:

<The area covered by the bid>

A4. Type of bid (please tick relevant box):

Small project bids

Tranche 1 bid   ☐

Expression of interest for Tranche 2   ☐   (please complete sections A and B only)

Tranche 2 bid   ☐

Large project bids

Key component bid   ☐

Large project initial proposals ☐

A5. Total package cost (£m):

A6. Total DfT funding contribution sought (£m):

A7. Spend profile:

Details of the funding sought over the period 2011-12 to 2014-15, broken down by financial year and split between revenue and capital. Details of any local contribution should also be included. Please enter figures in £000s (i.e. £10,000 = 10).

£K	2011-12	2012-13	2013-14	2014-15	Total
Revenue funding sought					
Capital funding sought					

Local contribution					
Total					

A8. Local contribution

Please provide details of the source of any local contribution to the overall cost of the proposed package. Where the contribution is from external sources, a letter confirming their commitment to contribute to the cost of a specific package element(s) will be required.

A9. Partnership bodies

Details of the partnership bodies (if any) you plan to work with in the design and delivery of the proposed package of measures. This should include a description of the role and responsibilities of the partnership bodies such as Civil Society Organisations, Private Sector bodies and Transport Operators, with confirmatory evidence of their willingness to participate in delivering the bid proposals.

SECTION B – The local challenge

B1. The local context

A brief description of the economic environmental and social issues in the geographical area, including plans for housing and jobs growth, and the role of transport in addressing those issues . This should draw on the contextual factors identified in preparing the Local Transport Plan.

B2. Evidence

Details of the transport issues in the geographical area with supporting quantified evidence on use of the transport network (e.g. on journey patterns, volume and proportion of journeys by different modes), on particular problems (e.g. congestion hotspots) and how they give rise to wider consequences (e.g. levels of air quality, access to employment and services). Baseline data relating to the transport challenges that the proposed package of measures are designed to address should be provided to help inform later evaluation of the Fund programme.

B3. Objectives

The objectives set out in the Local Transport Plan with an explanation for how the proposed bid package would support these objectives.

SECTION C – The package bid

C1. Package description

Please provide a detailed description of each of the package elements being bid for.

C2. Package costs

A breakdown of the proposed package of measures with the DfT funding required for individual elements identified by financial year and split between revenue and capital. This should align with the funding profile in Section A.

Scheme element 1	£K	2011-12	2012-13	2013-14	2014-15	Total	
	Revenue						0
	Capital						0
Scheme element 2	£K	2011-12	2012-13	2013-14	2014-15	Total	
	Revenue						0
	Capital						0
Scheme element 3	£K	2011-12	2012-13	2013-14	2014-15	Total	
	Revenue						0
	Capital						0
Scheme element 4	£K	2011-12	2012-13	2013-14	2014-15	Total	
	Revenue						0
	Capital						0
Scheme element 5	£K	2011-12	2012-13	2013-14	2014-15	Total	
	Revenue						0
	Capital						0
GRAND TOTAL							0

C3. Rationale and strategic fit

An explanation on how the individual measures interlink and mutually support each other and represent a coherent package to successfully address the local challenges identified in Section B. The package proposal should demonstrate a good strategic fit, that it complements policies and proposals in the Local Transport Plan and other relevant local strategies and plans, and that it does not impact negatively on particular groups within the community or locations within or outside the geographical area covered by the bid.

C4. Community support

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*Please provide evidence of the extent of support within the community for the proposed
package of measures.*

SECTION D – Value for money

D1. Outcomes and value for money

***Please refer to paragraphs 24-28 of the guidance when completing this section.
Authorities can draw on their own evidence or use the results from recent similar
packages of measures implemented elsewhere to explain the impacts and benefits
expected from their proposals.***

*The proposal will need to set out what specific outputs will have been delivered by the end of
the Fund period (i.e. 2014-15) and demonstrate what the expected impact and outcomes will
be in terms of economic growth and reducing carbon emissions.*

Where possible, in order that the Department can calculate the likely <u>quantifiable</u> *benefits
from the package proposals, information should be provided of the impacts each year over
the period of the Fund, starting from the year before the measures come into operation. The
information should include relevant supporting data, such as the following:*

 - Number of trips per annum and the proportion of trips by different modes

 - Overall vehicle mileage per annum

 - Average length of trip per annum

 - Decongestion benefits (unit costs by type of road and area are available in   sections
3.9.5 and 3.12.2 of DfT WebTAG guidance)

 - Environmental benefits (same source as decongestion benefits)

Non-quantifiable benefits should also be stated.

D2. Financial sustainability

Bids should describe how the benefits can be sustained without the need for ongoing financial support beyond the Fund period. Where the measures are not expected to become fully financially viable in the short term, the basis for provision to be sustained after the Fund period should be explained and the expected local authority and/or external sources of future funding support stated and quantified.

SECTION E – Deliverability

E1. Implementation

Please provide details below of how implementation would be managed within the authority and through partnership bodies.

E2. Output milestones

Details of key milestones in the delivery plan in terms of defined output measures (NB. please see paragraph 44 of the guidance for further details).

E3. Summary of key risks

Please identify the key risks to delivery and planned measures for managing those risks.

E4. Project evaluation

Please indicate your willingness to co-operate with the Department in evaluating the benefits of the Fund programme.

Submission of bids:

- Tranche 1 small projects - by close on 18th April 2011

- Expressions of interest for Tranche 2 small projects - by close on 6th June 2011

- Tranche 2 small projects – by close on 24th February 2012

- Key Component bids for large projects - by close on 18th April 2011

- Large project initial proposals - by close on 6th June 2011

3 hard copies should be submitted to:

LSTF bids

Department for Transport

3/27 Great Minster House

76 Marsham Street

London

SW1P 4DR

An electronic copy should also be submitted to lstf@dft.gsi.gov.uk

Appendix F

RCUK Disruption project: Local Transport Planning Survey

Dear Mr xxx,

Research Project: Understanding the value of 'disruption' as an agent for changing unsustainable travel practices: a local authority perspective

I am writing to invite you to participate in the above project.

This research is part of the RCUK Energy Programme funded Disruption Project and is being conducted by the Centre for Transport and Society, at the University of the West of England to explore whether planned and unplanned disruptions to the local authority transport network might provide an opportunity to reduce carbon emissions associated with transport. A summary of this research will be provided to you as soon as it is available.

You have been selected for this study as you previously provided me a copy of your local authority's Local Sustainable Transport Fund (LSTF) bid: *"Southampton Sustainable Travel City"* that was submitted to the Department for Transport in 2011. I therefore believe that you will be the best placed person to understand the development of sustainable travel initiatives within your local authority. Please could you spare 10-15 minutes of your time to give your personal opinions on the current state of local transport planning in England, by completing my survey: http://www.surveymonkey.com/s/localtransportsurvey2013

It would be greatly appreciated if you could complete and submit the questionnaire before 30/06/13 via the link above. Please email me with your postal address if you would prefer to complete a hard copy version of the survey. If you think that other members of your delivery team would like to assist with the study, I would appreciate it if you could kindly forward the link to them as well.

If you have any queries regarding the survey or the wider project please get in touch with me via the contact details below or alternatively please follow this link: http://www.disruptionproject.net.

Yours Sincerely

David Williams
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BS16 1QY

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Appendix G

RCUK Disruption project: Local Transport Planning Survey - Final Reminder

RCUK Disruption project: Local Transport Planning Survey

Research Project: Understanding the value of 'disruption' as an agent for changing unsustainable travel practices: a local authority perspective

I am writing to remind you that the Local Transport Planning Survey for the RCUK Energy Programme funded Disruption Project closes on 30 June 2013. If you have already completed the survey thank you for your response and please ignore this email.

You were selected for this study as your local authority submitted a bid to the Department for Transport's Local Sustainable Transport Fund in 2011 and 2012. Please could you spare 10-15 minutes of your time to give your personal opinions on the current state of local transport planning in England, by completing my survey: http://www.surveymonkey.com/s/localtransportsurvey2013

It is hoped that the outcome of this research will provide evidence to support a second round of LSTF funding post 2015. Your views are therefore very important to build this case.

If you have any queries regarding the survey or the wider project please get in touch with me via the contact details below or alternatively please follow this link: http://www.disruptionproject.net.

Yours Sincerely

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RCUK Disruption project: Local Transport Planning Survey - Final Reminder

Appendix H

TPS Newsletter - June 2013

Changing unsustainable travel practices

Research Project: Understanding the value of 'disruption' as an agent for changing unsustainable travel practices: a local authority perspective

Research student David Williams at the University of the West of England is currently conducting a survey designed to understand transport planner's views on the Local Sustainable Transport Fund (LSTF) and sustainable travel planning in general. The survey is primarily focussed on people who were involved in the scheme design and bidding process for the LSTF. If you would like to take part in the survey and express your views about the LSTF please click on the following link: http://www.surveymonkey.com/s/localtransportsurvey2013.

The survey is open until 30th June and should take 10-15 minutes to complete. David's research forms part of the wider RCUK Energy Programme funded Disruption project. For more information on the project go to:
http://www.disruptionproject.net or you contact David directly at david23.williams@uwe.ac.uk.

Appendix I

Chapter 1. Local Transport Survey 2013 – Summary Report

Headline Results

Local Sustainable Transport Fund (LSTF)
- The survey failed to capture any respondents who worked for a local authority that was unsuccessful in winning funding as part of the LSTF.
- Consultation occurs within transport teams in local authorities, but this may be more informal in nature.
- The lack of working with parking teams would suggest that demand management measures do not play a significant part of the LSTF bids.
- Stakeholders within the local community were actively consulted during the bidding phase of the LSTF.
- Few respondents state that property developers have been consulted with in designing LSTF schemes.
- The LSTF schemes have not been designed in 'silos' but have been designed through consultation and working with various departments within the Council and external stakeholders.
- The LSTF offered the opportunity to deliver both pre-designed schemes and completely innovative and new transport schemes.
- The LSTF made it easier to deliver sustainable transport schemes than the traditional Local Transport Plan (LTP) process. However there is concern that the Local Transport Boards (LTB) will ignore sustainable travel options in favour of infrastructure schemes.
- Fewer than half the respondents (46%) do not believe the LSTF schemes will reduce the impact of disruptive events on either the transport network or the individual traveller.

1.7.1. Transport Planning Survey
- Practitioners see traffic congestion as a bigger problem than the public perceive it to be.
- Practitioners believe that local authorities have a responsibility to support existing travel choices, enable people to travel and manage disruption.
- Practitioners understand the theory that building more roads induces traffic and removing road space reduces congestion.
- Practitioners in general do not think people should be allowed to travel by car as much as they like.
- The majority of practitioners believe they have a greater influence on limiting climate change as a practitioner than they do as an individual.
- Local politics is likely to become increasingly more influential in transport planning after the LTBs are introduced to decide on funding within the local area.
- 71% of practitioners, compared to just 41% of the public think that we are already experiencing climate change effects.
- The responses show that the respondents believe that a fuel shock may occur before electric cars have 50% of the market share.
- There is uncertainty as to whether car trips will increase or decrease over time.
- Practitioners appear to be confident that public transport, walking and cycling trips are already increasing.
- 32 out of the 55 respondents think it is possible for the UK to achieve a 80% reduction in carbon emissions from transport by 2050, but only 15 think that this is likely, with some difficulty.

1.8. Introduction

This summary report presents the main findings from the Local Transport Survey conducted in May and June 2013. The invite to complete the survey was sent by personalised email to 165 contacts derived from the Local Sustainable Transport Fund (LSTF) bid documents. Of the original emails sent 19 addresses were no longer in use, giving a pool of 146 respondents. A summary of the survey was presented at the QUEST LSTF Practitioners Workshop held in Birmingham on 16 May 2013. A link to the survey was also posted on the Transport Planning Society (TPS) website and was included in the TPS monthly newsletter for June 2013; emailed to all members of the society.

In total there were 70 individual responses to the survey, 58 of which either completed or partially completed the survey giving a response rate of 40%. It is not however possible to demonstrate whether these respondents all came from the original email list, as the responses were completely anonymous.

The remainder of this report will discuss the responses to key themes raised in the survey including: silo design and planning; innovation in design; funding of sustainable transport; the local transport authorities' role; disruption and long term sustainability; and climate change.

1.9. Silo design and planning

One of the research questions for the study is to understand whether sustainable travel options were designed in a transport silo, too solely resolve transport issues. The majority of large infrastructure schemes are designed to solve transport issues: for the good of the economy. If this dominant paradigm of transport scheme design and implementation is to be challenged then evidence that the bid design teams involved other parts of the council and the wider community in the process would need to be evidenced.

1.9.1.2.1 Transportation Department

Graph 1, shows that there was a high level of consultation within the transportation department of the local authorities when designing the bids, although the majority of work in designing the schemes came from the strategic and local planning departments. The level of consultation over actually working with another department suggests that much of this consultation may have been informal in nature and this is a topic that will be discussed at the interview stage of the research.

Although parking teams have been consulted, on only one occasion has the parking team been involved in the final bid design. This would suggest that measures such as demand management for parking which are disruptive/disincentivising to car use do not feature prominently in the final scheme design of many bids.
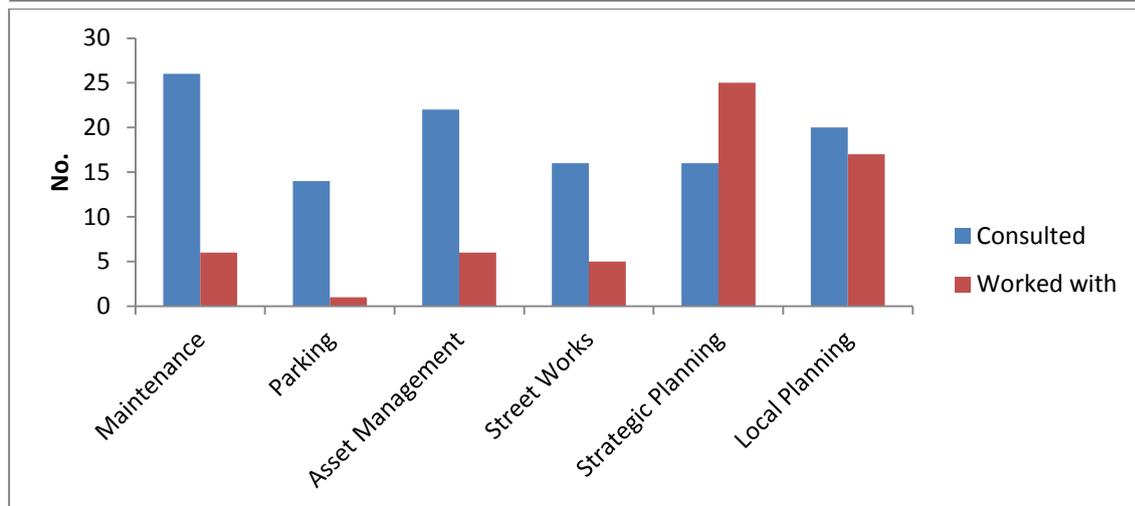
Graph 1 – Transport department teams 'consulted with' or 'worked with' as part of the LSTF bidding process

1.9.2.2.2 Wider authority

When it comes to working across the local authority the results show that there is again a high level of consultation between teams, as shown in Graph 2. It makes sense that consultation took place with both the finance and legal departments as the authorities were bidding for substantial amounts of funding, so would need to comply with all the requirements to enable them to receive the LSTF funding.
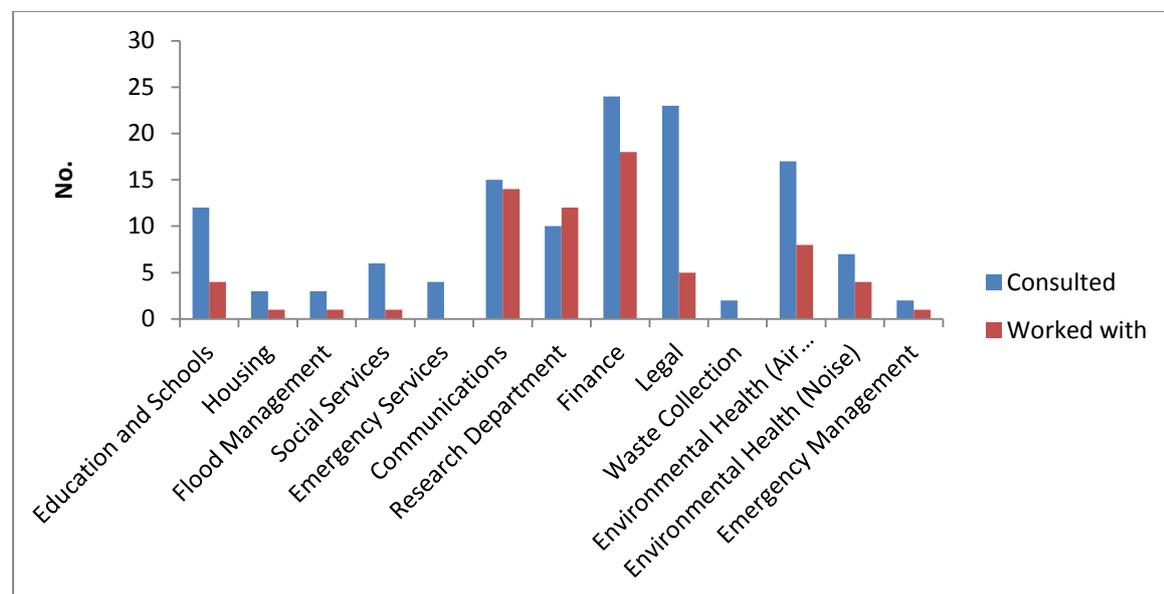
Graph 2 – Cross authority teams 'consulted with' and 'worked with' as part of the LSTF bidding process

Graph 2, also shows that almost every department was consulted with across the various bids, which helps to reject the theory that sustainable transport measures were designed in a transport planning silo. The other teams that worked on a number of bids were the communications and research teams. This reflects the nature of the revenue funding and how personalised travel planning and the dissemination of information play important roles in the LSTF process.

The air quality team were also consulted on 17 of the bids, with the air quality experts actually working on eight of the final bids. Whilst air quality was mentioned in the 73 of the 145 bid documents submitted to the DfT, it appears that there are still barriers to transport planners and air quality experts working together on delivering transport schemes as highlighted by Olowoporoku, 2009.

1.9.3.2.3 External to the authority

The survey also revealed that the design of the LSTF bids involved many other bodies including other local authorities, private businesses and government and non-government organisations. Graph 3 shows that the level of consultation and working with these bodies was relatively high for most types of organisation. The most interesting result is the relative lack of consultation and the low level of working with property developers that has taken place as part of the process. This raises an interesting issue, as these companies are responsible for designing and supplying new housing estates. If they are not actively designing their estates to include or link up to sustainable transport infrastructure being designed by the Council, this has implications for how effective the LSTF measures will be overall and the retention of the car as the principle means of travel for many people who live in new housing developments.
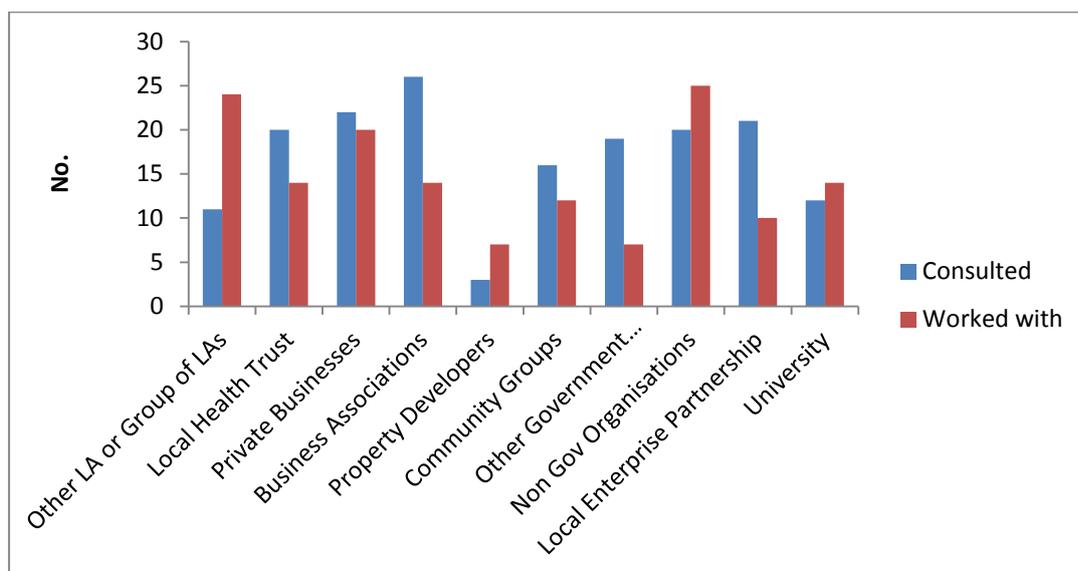
Graph 3 – Organisations external to authority 'consulted with' and 'worked with' as part of the LSTF bidding process

1.9.4.2.4 Questions for the interviews

The results show that rather than the schemes being designed in 'silos' within Councils there is active engagement when designing sustainable schemes with other parts of the local authority's operation as well as with stakeholders and the local community. This dismisses the initial question about silo thinking, but will help to open a question in the interview stage as to whether this approach is normal for the Council, or unique to this project. It will also raise the question of whether the austerity measures have forced this joint working approach.

Other questions that are raised are as to why there is such a low use of demand management techniques designed to deter drivers; whether the level of consultation within the Council was of a formal or informal nature and the reasons for the lack of consultation with property developers.

1.10. Innovation in scheme design

The second research question that the survey was designed to answer regarded innovation in scheme design: "*Has the LSTF been used to resolve existing (strategic) issues or been used as an opportunity for new innovation in transport planning?*"

The results show that the schemes were a relatively even split between schemes that were pre-designed as part of Local Transport Plan 3 (LTP3) and schemes that were designed specifically for the LSTF. The scheme types were broken down into two categories: capital which relates to infrastructure schemes; and revenue, which is related to the 'soft' measures such as travel planning. The responses show that 18 capital schemes where already identified as part of the LTP3 process, with 13 revenue schemes being included in the authority's strategic plan. In all, 18 revenue schemes and 13 capital schemes were designed specifically for the LSTF process. This shows that the LSTF is a complete mixture of existing schemes and new schemes. This shows that there was a relatively high amount of innovation within the design of the projects.

The survey also showed that 23 of the 36 respondents strongly agreed that the LSTF enabled them to meet their LTP3 objectives, by funding schemes that were in the strategic plan but were not funded by any other sources. Also 20 of the respondents strongly agreed the LSTF gave them the opportunity to deliver sustainable transport measures that were not included in the strategic planning process.

1.10.1. 3.1 Questions for the interviews

The primary question drawn out of this stage for the interviews would relate to the level of innovation and whether this was derived from working with people from outside the transportation planning department.

## 1.11. Funding of sustainable transport

Transport planning at the local level is currently undergoing several changes in the way it will be funded. Under the LTP plan authorities were previously given a budget to deliver the schemes set out in the LTP period (five years). Following the change in Government in 2010, the LTP changed purpose from being a practice (delivery) document to a strategic document. This left a vacuum for local authorities of how they would fund schemes. The LSTF funding package announced by the Government in December 2010 was designed to allow local authorities to meet the sustainable transport challenges identified in the strategic LTP3 documents.

At present there has been no confirmation from the government that there will be a second round of LSTF funding post 2015. There have however been changes to local government management of transport schemes, with the development of Local Enterprise Partnerships (LEPs), partnerships between local authorities and businesses. These are designed to replace local authority partnerships to give economic focus to transport scheme design. LEPs, working voluntarily with local authorities will form Local Transport Bodies (LTB), who will determine where funding should be spent, devolving this power from central government and the Department for Transport. This shift in power was identified in the survey with respondents stating that local politics and LEPs will have an increase in significance in transport planning after the LTBs are introduced. This is reflected in the results shown in Graph 4.
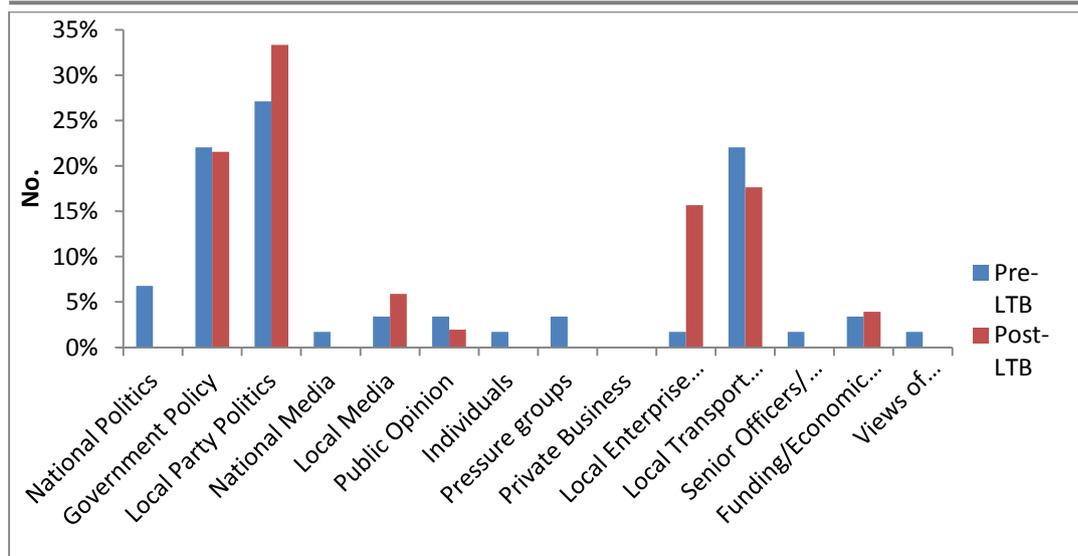
Graph 4– Which factors have the most influence on transport planning in your LA area before and after the LTBs have been introduced?

The survey also asked whether the changes to funding from the LTP to the LSTF made it easier to deliver sustainable travel schemes. The results in Graph 5 show that the majority of respondents agreed that the LSTF made it easier to fund sustainable transport schemes than the LTP: although it is worth noting none of the respondents were from local authorities that were unsuccessful in receiving funding. Graph 5 also shows that there is uncertainty as to whether the development of the LTBs would make delivering sustainable transport easier, once the power had been devolved to the local area. Respondent 4 said that the LTB will be involved in the implementation of large capital infrastructure schemes and that the power for sustainable travel initiatives will pass to the LEP. Respondent 50 believes that the devolution of funding power will be to the detriment of sustainable travel, as the focus will be on the economic benefits and only small amounts of money will be available for sustainable transport again post 2015.
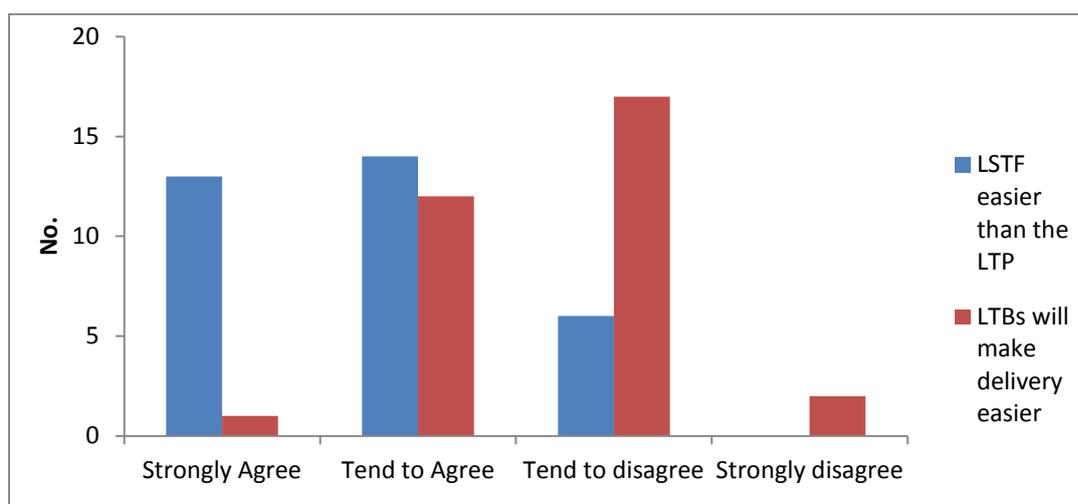
Graph5 – Did the LSTF make delivering sustainable schemes easier and do you think the LTBs will continue to make delivering sustainable transport schemes easy?

1.11.1. 4.1 Questions for the interviews
The responses are clear that the uncertainty over funding makes the future of sustainable transport delivery uncertain in England. At this time it is not thought that this will lead to any further questions at the interview stage.

1.12. Who should be responsible for transport
It is clear that the role of the local authority with regards to sustainable transport is changing due to the devolution of funding power to LTBs and the economic focus on transport through the LEPs. The line of questions moved to the role of central government, the local authority and the importance of individual travel choice. The questions were designed to enable the respondents as transport practitioners to give their view on a range of topics.

Several of the results were conflicting, as 46 of the 57 respondents to question 12 believed that the local authority had a duty to support existing travel choices, with only one respondent disagreeing that the local authority's role was to enable travel. The finding that local authorities should support existing travel choices contradicts the findings of question 14a, shown in Graph 6, were practitioners in general believed that people should reduce their use of cars.
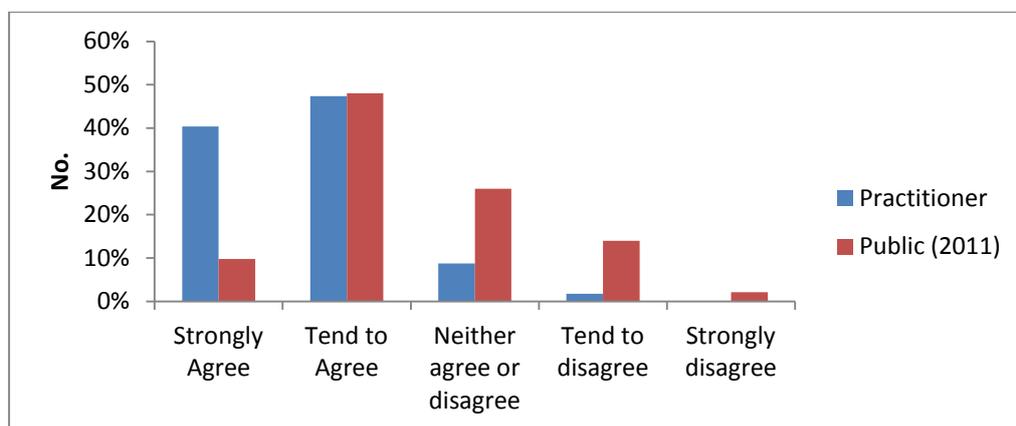
Graph 6– For the sake of the environment everyone should reduce how much they use their cars.

This second view is backed up by the results of question 14b where the majority of respondents disagreed with the statement: *"People should be allowed to use their cars as much as they like, even if it causes damage to the environment."*

The role central government should take in the choice to drive was mixed, with just over half of the respondents agreeing that central government should ban cars with high carbon emissions, compare to just 42% of the public. All these responses show the uncertainty over how much input the central and local government should have in influencing the way individuals' travel, with mixed responses as to whether central government involvement.

The importance of individual choice is at the core of many of the LSTF revenue schemes that involve schemes such as personalised travel planning and the provision of travel information for individuals to choose to travel sustainably. Yet when the respondents were asked whether they could have an influence on limiting climate change as an individual, rather than a practitioner, only ¼ believed that they would have some influence as an individual. When the same question was asked of their role as a transport practitioner and their impact on climate change then 60% of respondents believed that they could have some influence and

5% believed that they could have a large influence. This supports the study's belief that sustainable transport schemes should be focused at a practice level rather than focusing on the individual, who has a limited impact on the transport network that is provided. The practice of providing the transport network and the information to negotiate it are taken at the local authority level, so this is why the research project is focused at studying the local authority level.

1.12.1. 5.1 Understanding traffic inducement and disappearing traffic

Question 13b asked whether building more roads encourages more traffic, whilst 13c asked if reducing road space reduces overall traffic. 79% of respondents agreed that building more roads induces more traffic, which was the finding of the SACTRA report in 1994. This view is not shared by the public, with only 45% agreeing with this in the results from the British Social Attitudes Survey 2011. The second element, where reducing road space reduced traffic was included to see whether practitioners were aware of the findings of the Cairns *et al.*, 2002 paper Disappearing Traffic. 37 respondents agreed with this statement, with ten respondents neither agreeing nor disagreeing and eight disagreeing with the statement. This suggests that there is an understanding at the local authority level that the building of new infrastructure is unlikely to resolve the transport issues that they are hoped to and that actually reducing space for cars has a better impact at congestion reduction. Whether the practitioners will be able to convince the local politicians and LTBs who will be funding large scale infrastructure projects that this is the case will be a key challenge in the future.

Also of interest, practitioners view that traffic congestion is a more serious problem than the public perceive it to be. 79% of practitioners see congestion as either a serious (66%) or very serious (13%) problem, compared to just 41% of the public. The public perception could be due to the fact that traffic congestion has become 'normalised' in peoples' minds, so that there is an expectation that some congestion is inevitable. For many of the practitioners one of the objectives of the LSTF was to reduce congestion and the associated impact (to the economy, health and the environment), so the problem is therefore seen as being more serious.
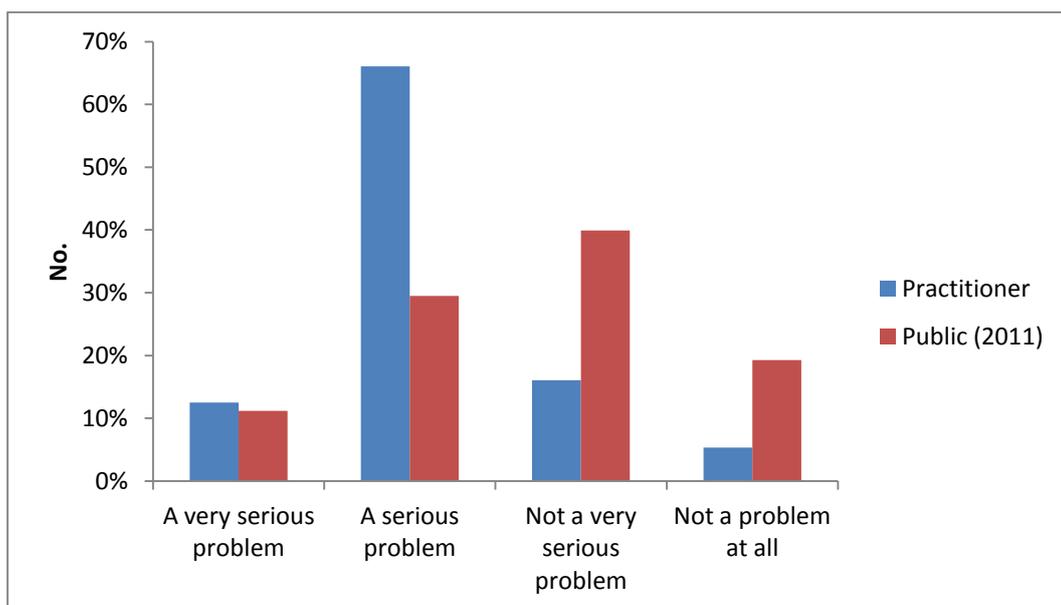
1.12.2.
Graph 7–How serious a problem is traffic congestion in towns and cities in England? Practitioner and public responses.

1.12.3. 5.2 Questions for the interviews

Several questions arise from this section for the follow up interviews. Further discussion is required to clarify the confusion over whether individual travel choices should be supported, even if they involve driving. More clarification over what role the local authority should take needs to be considered at the interview stage along with an understanding of how much influence an individual truly has on their travel choices.

Another interesting area for a possible question relates to how local authority practitioners can convey the messages of SACTRA and Disappearing traffic to local politicians and the LTB, whilst promoting sustainable transport initiatives to non-technical experts who are focused on improving the local economy. This is a challenge that many of them already face, but the challenge could become more difficult in the future, with the increasing power of local politicians over funding.

1.13. Disruption and long term sustainability

The "S" in LSTF stands for sustainable, so the survey investigated how sustainable schemes were designed to be. Questions 8d and 8e where designed to understand how resilient the LSTF schemes would make the transport network and individual travel options to disruption. Surprisingly 16 out of the 36 respondents did not agree that the LSTF schemes would reduce the impact of disruptive events on either the transport network or the individual traveller. This raises the question of what the point of the LSTF schemes were if they do not provide alternative travel options and make the network more resilient to disruption.

This issue is particularly pertinent as 70% of the respondents believe we are already feeling the effects of climate change and 74% believe that climate change will have either a major impact (14%) or some impact (60%) on the way we travel.

When designing the schemes during the bid process the maintenance department within the transport teams were consulted, however only six respondents stated that this department worked on the final bid. It is useful to know that the maintenance departments have been consulted in the majority of cases (26 out of 36 responses), as without regular maintenance there is the possibility that the infrastructure would become unusable for people wishing to travel sustainably. Graph 2 in Section 2 suggests that from a disruption perspective there appears to be little consultation or working with emergency and flood management; or the emergency services. This could cause access issues to cycling and walking routes that may not be accessible by emergency vehicles if they are not designed correctly.

### 1.13.1. 6.1 Questions for the interviews

Clarification is required as to how practitioners view sustainable travel and whether this includes designing a travel network that provides multiple travel options, so is therefore more resilient to disruption.

Although not discussed in the survey, the interviews will also explore the opportunities that exist when disruption occur and whether these have been considered in the design of LSTF schemes and if not whether they will be included in future sustainable transport schemes.

1.14. Climate Change and sustainable travel

Linked to disruption is the issue of climate change. As mentioned in section 6, many practitioners believe that this will increase disruption. Also of interest is the UK Government's commitment to reduce carbon emissions by 80% by 2050. Graph 8 shows that 32 out of 55

respondents believe that it is possible to meet this target with difficulty, but only 15 think that it is currently likely at this point.
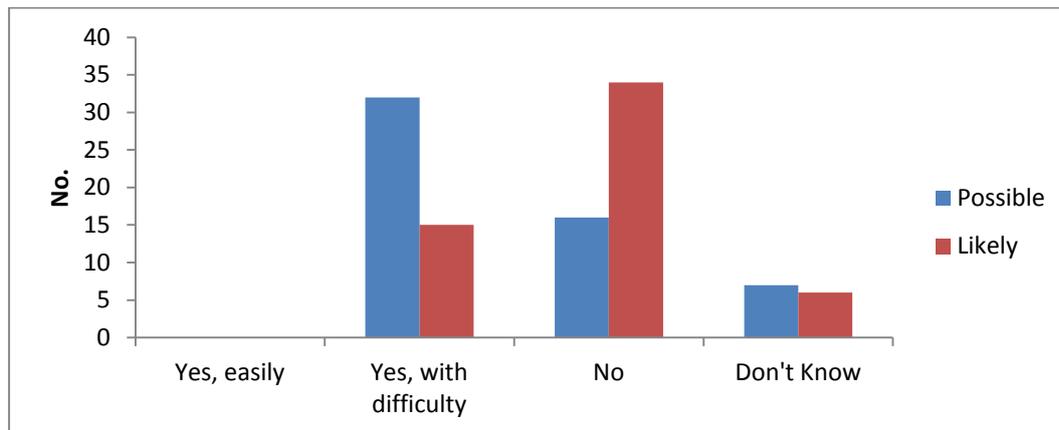
Graph 8 – Possibility and likelihood of UK achieving 80% reduction in Greenhouse Gas Emissions from transport by 2050.

The respondents were also asked as part of an open question how travel may change due to climate change. Disruption was the main problem that was raised, along with increases to travel costs. Six respondents did not believe there would be any change to the way we travel due to climate change. Respondent 25 raised an interesting point: "*If the media attributes climate change pollution from fuel used for transport, it will change choice of workplace to home place distance and so reduce travel modes that produce global pollution*". This concept is interesting as it lays the blame of the problem with the media portrayal climate change. However the findings from questions 20 and 21, shown in Graph 9, identify that there is no single cause for low uptake of sustainable travel options. This shows that it is very difficult to tailor a sustainable travel scheme for individuals, as there are many reasons why an individual would choose to travel by car.

The results show that when respondents were asked to select their reasons that reduce uptake of sustainable travel no one option dominated out of the 13 options given. In addition 10 other options were raised as part of the open question. When respondents were asked to rate the most important factor the factors that received the most responses were: multi-trip journeys (16%), the transport network design 15%, public transport provision (13%) and home location (11%). Family commitments did not rank as highly for the most important factor, but scored well as a top 3 factor. Conversely convenience scored highly as an important factor despite being ranked lower as part of the top 3 options.
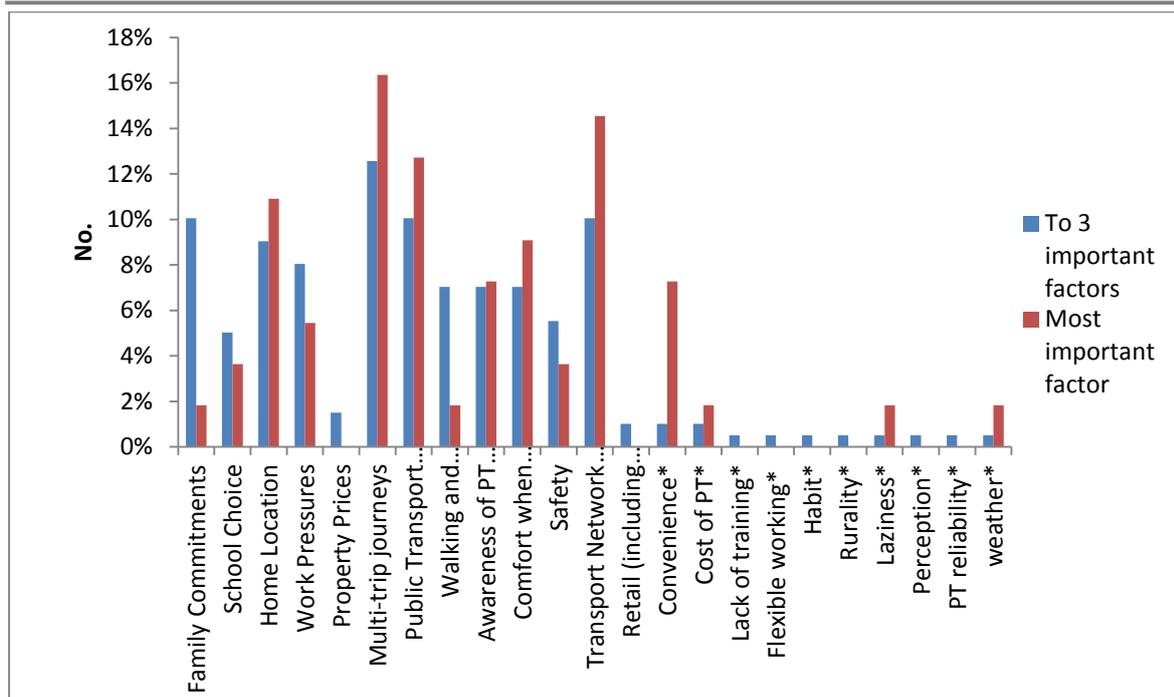
Graph 22– Which factor do you think is the most important in reducing sustainable travel uptake in your local authority area?
* Respondents own options included in question 21 (open question).

1.14.1. 7.1 Questions for the interviews

The key points to raise at the interview stage will be around the difficulty of providing a transport network for individual needs against the needs of the majority. The results show that practitioners are aware of the importance of multi-trip journeys as a reason for people choosing to drive. The issue of multi-trip journeys is often linked to issues such as: escorted education trips, visiting elderly relatives, as well as fixed working hours and supermarket shopping; all areas that are outside the traditional realm of transportation planning. The LSTF has shown that transport planners have worked with other sectors in designing the schemes, but it will be useful to know if any of these issues have been challenged within the LSTF process.

1.15. Summary

The survey has answered many key questions regarding how the LSTF projects were designed, how funding and localism changes are likely to alter sustainable travel provision and the practitioner's own views on the role of government, local authorities and the individual within sustainable travel. The key challenge will be to link the findings back to the social practice agenda, in relation to who is in total control of how we travel.

The survey shows that the sustainable transport schemes were not designed in transport planning 'silos' and that a great deal of innovation has been involved within the process. If local authorities are able to demonstrate the success of such schemes it will be possible to challenge the dominant infrastructure for automobile paradigm that currently prevails within the industry.

The next stage of the research will follow up on the key themes identified at this stage of the research to enhance the understanding of the future of sustainable travel in England

Appendix J

Assessing the Local Sustainable Transport Fund Submissions in Relation to Disruption

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Chapter 2.

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Chapter 3.

Chapter 4.   Abstract

Chapter 5.   The Local Sustainable Transport Fund (LSTF) is a £560m investment by the UK Government in local authority transport schemes in England (excluding London). The fund will be matched by local authorities' own investments from their transport budgets, meaning a total spend of over £1bn. The schemes are a mix of capital and revenue projects designed to cure a panacea of societal issues, including: enabling economic growth, reducing carbon emissions, improving safety and increasing physical activity. This paper reviews LSTF bid documents to identify how and why bids were chosen for funding in relation to Government objectives and to identify the spread of funding across the country, comparing this funding to highway infrastructure funding for the same period. The paper undertakes a detailed review of the measures that will be implemented in the LSTF process to identify whether they go far enough in attempting to change travel practices and whether 'disruptive' transport measures have been included in any of the bids as a delivery tool. Previous research found that disruptive measures such as the closure of traffic routes had the effect of removing car trips from the network and altering the practices associated with travel. Network closures may become more common in future due to extreme weather events and growing funding gaps for repair and replacement of network assets, so it is important that local authorities understand how best to manage these closures, whilst promoting the benefits of sustainable travel options.

Chapter 6.   Introduction

In 2010, the Minister for Local Transport Norman Baker announced that a significant fund had been set aside by the UK Government for English Local Transport Authorities (LTA) outside London to deliver schemes designed to enhance sustainable travel options within local communities (Department for Transport [DfT], 2010a). As part of the LSTF, LTAs could apply for a range of funding for: Small Projects (SP), Large Projects (LP) and Key Components (KC) (as quick implementation aspects of the LP bid). Small bids were for schemes up to £5m and applicants were notified of the funding decisions in two tranches: Tranche 1 announced SP and KC bids in May 2011 (DfT, 2011a), and Tranche 2 announced in May and June 2012 (DfT, 2012a, DfT, 2012b). LP bids were for schemes between £5m and £50m and the successful bids were announced in June 2012 (DfT, 2012b). As of June 2012, £560m has been provided to LTAs (which has been matched from LTA budgets to total over £1bn) to deliver capital schemes to provide new infrastructure and revenue schemes designed to inform the public how to travel sustainably, and to enable change by providing schemes including personalised travel planning and adult cycle training. The funding for revenue schemes is a move away from the traditional capital-led transport planning model and provides an opportunity to engender a change to travel practices in the UK which could lead to a reduction in the use of cars on short (local) trips and by replacing cars with low carbon alternatives, such as public transport, walking and cycling.

The focus of the LSTF is on encouraging individuals to change to sustainable travel modes (DfT, 2010a). However, it is difficult to know to know whether any potential changes in the way people travel through the LSTF will be maintained in the longer-term. The LSTF follows on from two successful trial schemes, Sustainable Travel Towns (Sloman *et al.*, 2010, pp.166) and Cycling Towns and Cities (DfT, 2012c). Both projects had an evaluation period of just one year after the completion of the project. It is therefore difficult to know what the long-term impact of such schemes is and, in the case of the LSTF schemes, what will occur once the funding ceases and the local authority support is no longer available to provide individuals and business with high levels of support, post 2105. This paper considers these schemes through the sociological lens of 'social practice theory' in order to assess the potential for these schemes in changing the way we travel, rather than through the sum if changes made by individuals.

Social Practice Approach

Practice-based approaches to interpreting behaviour differ from traditional psychology-based (individualist) approaches of behaviour change in that they do not focus on the individual, but rather the wider framing of activities at a societal level. From this viewpoint, individuals are seen not as the 'originators' of practice, but 'carriers' of practice (Darnton *et al.* 2011). For example, the practice of commuting was derived from the development of first the railway network and then the

motorcar. Developments in the transport system increased accessibility and land values, whilst commuting made possible particular spatial forms so that lifestyles based on low residential density, and the physical separation of work activities and home activities became possible (Williams *et al.*, 2012). Commuting is now necessary to sustain such individual lifestyles and wider social practices. Analyses through practice theory suggest that if we wish to reduce the carbon impact of travel, we should focus not on individuals, but rather the elements of the social and physical world that retain and support high carbon travel (Darnton *et al.* 2011). By focussing on the practice of travel rather than on the individual actions of the 'carriers' of the practice it may be possible to identify measures that 'disrupt' current practices and reconfigure them to lock-in long-term changes that reduce the carbon emissions associated with travel.

The three basic elements of a practice are: *materials*, *competences* and *meanings* (Shove *et al.*, 2012). Connections between these three elements shift and vary over time. Whilst a practice such as driving a car is seen by many people as relatively static, it has actually undergone many changes over time. Shove *et al.* (2012) use the example that, where once people could be amateur mechanics, modern engines are now a 'closed box' requiring qualified technicians and specialist diagnostic equipment to fix. When the connection between two elements is broken, for example by a disruptive event or a local authority intervention, travel practices such as driving have to flex or change to accommodate or account for the disruption. In many cases this can be a shift from car travel to other modes, or the decision not to travel at all. Local authorities have the opportunity to break the links between elements or remove elements that sustain high carbon travel practices through interventions, creating new links to low carbon options. This can be achieved through alterations to the *materials* (e.g. transport infrastructure, cars and bicycles), *competences* (e.g. reading maps and timetables, learning to drive or cycle), and *meanings* (e.g. where and when people can drive, walk or cycle).

The paper will look at whether any long-term changes have been included in the funded schemes as a means of reducing carbon emissions. Such changes to the network can potentially have a bigger long-term impact on whether travel is undertaken sustainably. For example, Cairns *et al.* (2002) found that a disruptive measure such as the closure of sections of the network resulted in the removal of car trips from the wider network, and although not captured in the research, are likely to have altered the practices associated with travel. Shove and Walker (2010) found that where, when and how we move can be influenced by transport policies that disincentivise car travel, such as the London Congestion Charge. Network disruptions may become more common in future due to a greater incidence of extreme weather events (Solomon *et al.*, 2007) and growing funding gaps for repair and replacement of network asset due to austerity budgeting (Osborne, 2010). It is therefore important that local authorities understand how best to manage any potential closures, whilst investigating any potential benefits this will have for the

way people travel. This paper will investigate whether any of the LSTF schemes are seeking to provide sustainable travel benefits through a focus on disrupting the option of driving.

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Chapter 7.   The paper is part of a wider study into the impacts of disruption on travel and how it is managed at a local level, with the aim of providing a long-term low carbon travel network (www.disruptionproject.net). This novel approach looks at interventions in the existing network that are designed to enable, incentivise/disincentivise or disrupt travel practices. Enabling interventions are ones that make it easier to undertake a specific mode of travel or link up various modes of travel, such as the building of a pedestrian link, or provision of a new bus service, where this option has not previously existed. Incentives can be both financial and non-financial in nature. Financial incentives offer a reward or saving to the person who is travelling by a particular mode: whilst non-financial make a particular mode or modes of travel easier, such smart-ticketing, which covers a journey on several modes of travel. Disincentives and disruption vary in that disincentives are schemes that deter a certain practice that has been deemed as undesirable by the policy maker. In comparison disruptive schemes remove an element (*material, meaning* or *competence*) or a link between the elements, altering how a practice is undertaken. For example the closure of a bridge for maintenance will change the *competence* of how someone navigates an alternative route or possibly their choice of mode (*material*) by which they choose to undertake the journey. The closure may alter the *meaning* of the journey and determine whether it is essential or non-essential to the person travelling. If it is deemed non-essential and the detour is too onerous the decision may be made not to travel at all.

Chapter 8.

Chapter 9.   The paper provides a brief summary of transport policy in the UK before discussing the analysis framework that will be used in assessing the bid documents. The paper will then compare government funding of LSTF schemes in comparison to highway infrastructure schemes four year period of the LSTF project (2011/12 – 2014/15). The paper will then review the funded and non-funded LP and SP Tranche 1 bids to identify what made a bid suitable for funding and review the extent to which disruption is evident as a tool to change travel practices within the LSTF proposals in England. The paper concludes with the key points and the discussion of the implication of the findings.

Local Transport Policy - UK

To assess how the LSTF was developed it is important to understand local transport policy in England in the thirteen years prior to 2011, as they form the basis of the policy goals the LSTF is designed to deliver. The concept of a Local Transport Plan (LTP) was first discussed in the 1998 Transport White Paper – *A New Deal for Transport: Better for Everyone,* and this passed into legislation as part of the Local Transport Act 2000 (Marsden *et al*., 2012). LTPs outline how LTAs would manage their transport budgets in the delivery of new infrastructure and other schemes designed to enable movement of people through the network. As of 2012 there have been three rounds of LTPs: 2001/06, 2006/11 and 2011 onwards. LTAs were also able to apply for Major Scheme funding for large-scale projects that could not be funded through the budgets available for LTPs (DfT, 2004). The first two LTP periods were five years by statute. With the introduction of LTP3 the document has become a more strategic vision of transport change with a 15-year horizon, rather than its previous form as a working document. To fill the void created by the change in focus of the LTP from a delivery mechanism to a strategy document other means of funding and delivering schemes have been required to deliver transport projects at LTA level.

With the change of Government in 2010 and the subsequent move towards 'localism' through the Localism Act 2011 (Parliament, 2011), transport policy in England has changed to include the delivery of schemes that could be classed as 'local' and 'sustainable'. The Sustainable Transport White Paper 2011 was an attempt to meet the government objectives "*to help create growth in the economy and to tackle climate change by cutting carbon emissions*", (DfT, 2011b).

The LSTF is the policy instrument that the government has been set up to attain the dual goals of the 2011 white paper. Hall, 1993, identified that policymaking comprised three variables: "*Overarching goals that guide policy;* t*he policy instruments; and the precise settings of these instruments",* (Hall, 1993, pp. 278).

The recent history of UK transport policy provides a background to understand what the LSTF is designed to achieve which was codified by DfT in providing bidding authorities with a list of objectives that would provide the overarching goals for the LSTF:

- Support for the local economy through reducing congestion, increasing journey time reliability and predictability and improving access to employment;
- Reduction of carbon emissions through the provision of walking and cycling measures;
- Delivery of wider social benefit such as accessibility and social inclusion;
- Improved safety;
- Improved air quality; and
- The promotion of physical activity, (DfT, 2011c pp.13,14).

Chapter 10.   Analysis Framework

The objectives and scheme descriptions of SP Tranche 1 and LP Bid documents have been reviewed to identify where the overarching goals have been included within the bid documents. The number and type of schemes included in LSTF bid submissions will be analysed to understand the differences (if any) between funded and non-funded schemes. Whilst the government's spend on sustainable measures does not equate to understanding what their impact on travel will be, it will provide a useful indication of what measures are deemed 'sustainable' by government. It is assumed that the strength of the link between proposals and the overarching goals was the primary reason bids were selected for funding.

In the current context, it might be logical to argue that to achieve a reduction in carbon emissions a reduction in the number of trips by car would be a desired outcome from any sustainable transport project. Therefore, as a secondary assessment, the bid documents have also been analysed to identify whether the schemes have elements that would be 'disruptive' to travelling by car. A sustainable transport network should also be able to meet the external pressures through moving to a transformed state that has reduced levels of travel by car.

Chapter 11.

Chapter 12.   Comparative Investment in LSTF and Highway Capital Expenditure
The announcement of the LSTF funding has been given by region, despite the abolition of a regional focus on development as part of the Localism Bill 2010 (BIS, 2010). Therefore the results have been assessed at a regional level. The results show that the South East received the highest overall amount of funding from the LSTF, £111m, but per head of population both the West Midlands and South West are higher, with spend between £13.55 and £16.55 per head of population compared to £12.90 in the South East.

When the breakdown of funding for the LSTF is compared to the government funding for highway schemes for the four year LSTF period (2011/12 - 2014/15), the results in Table 1 show that government has committed to spending approximately £4.8bn on highway infrastructure projects during the same period. This is a 9:1 spend on highway schemes compared to LSTF schemes (DfT, 2012d, 2011d. 2011e, 2010a, 2010b, Highways Agency, 2012, Mersey Gateway, 2012, HM Treasury, 2011). Table 1 provides a breakdown on spend per region for both LSTF schemes and highway infrastructure schemes.

The East of England has the largest variation in spending on LSTF and highway schemes with £22 being spent on highway infrastructure for every £1 of LSTF funding. In this context, road building can be seen as significantly reinforcing current travel practices i.e. driving, by predominantly providing highway infrastructure as the new *materials* to travel by within the transportation network. Such a ratio suggests that the overall, high carbon travel practices will be sustained, rather than reduced, and will be made more resilient to change as the new infrastructure provides people with the opportunity to travel by car to access areas opened to development by these schemes. Such a large investment in one type of transport infrastructure instils the *meaning* that high carbon travel is the most logical means of travel locking-in the unsustainable travel practices in the long-term.

Table 1 – Government Funding for LSTF Schemes and Highway Schemes by Region

Region	Population* (m)	LSTF Spend (£m)	Highway Schemes Spend (£m)	LSTF Spend / Head (£)	Highway Schemes Spend /Head (£)	Spend Ratio LSTF: Road
ENGLAND minus LONDON	44.8	543.07	4,769.06	12.11	106.36	**1:9**

Region	Population* (m)	LSTF Spend (£m)	Highway Schemes Spend (£m)	LSTF Spend / Head (£)	Highway Schemes Spend /Head (£)	Spend Ratio LSTF: Road
NORTH EAST	2.6	26.29	115.84	10.12	44.61	**1:4**
NORTH WEST	7.0	95.47	1,098,92	13.54	155.83	**1:12**
YORKSHIRE AND THE HUMBER	5.3	50.30	664.81	9.52	125.82	**1:13**
EAST MIDLANDS	4.5	37.50	510.90	8.27	112.70	**1:14**
WEST MIDLANDS	5.6	92.44	505.81	16.50	90.29	**1:5**
EAST	5.8	41.56	936.36	7.11	160.14	**1:22**
SOUTH EAST	8.6	111.43	670.86	12.90	77.69	**1:6**
SOUTH WEST	5.3	88.08	265.57	16.65	50.21	**1:3**

* Population data from the Office for National Statistics licensed under the Open Government Licence v.1.0.

By comparison, the South West has by far the best ratio of LSTF funding to highway infrastructure funding at £1 being spent on LSTF funding to every £3 on highway schemes. The South West LTAs were awarded a mix of SP and LP funding, which will provide improvements for communities across the region. In comparison to other regions, this area does not have any significant highway infrastructure schemes, which may affect the difference in spending. For example, the North West's highway infrastructure funding is raised by the government's long term investment in the Mersey Gateway Project, which includes a £86m initial grant and an annual revenue grant of £14.55m for 26.5 years (Mersey Gateway, 2011). This means that the government have committed £589m to this scheme for the duration of the project.

The extensive investment in new highway capacity provision follows the previous thirteen years under the Labour government where spending on new road schemes was significantly reduced and highway budgeting policy focused on improving the performance of existing transport networks (Parkhurst and Dudley, 2011). The current coalition government's approach to funding transport schemes shows the polar opposite approach is being taken with the aim of improving the UK economy through the funding of transport schemes focusing on both large and small scale

interventions. In 2011 Chancellor George Osborne announced in the Autumn Statement that "*we can today give the go ahead around the country to 35 new road and rail schemes that support economic development*" (Osborne, 2011).

Like the various highway infrastructure programmes, the LSTF is also designed to support economic development in the UK, albeit at a local scale and, as the name suggests, through sustainable means. The significant funding of large-scale highway projects offers a confusing message to the public: if people are to travel sustainably now and in the future, why is the government funding so many road schemes, which by their very nature promote high carbon travel, which by its nature is unsustainable? The discrepancy in the funding of LSTF schemes and highway schemes calls into question whether there is a desire within central government to promote sustainability or whether transport is solely a means of growing the economy through means that will enable high carbon travel practices to persist.

Chapter 13.

Chapter 14.   LSTF SP Tranche 1 Bids – Policy Goals

The results from Tranche 1 of the SP bids were announced in May 2011, with 39
LTAs being awarded funding for schemes totalling £155.4m. Of these bids, 11 were
classified as KC bids which were designed to precede the subsequent LP bids.
Another 13 LTAs were offered the opportunity to resubmit a new revised case as
part of Tranche 2, with 21 LTAs being informed that their bids had been refused
funding.

In the most part the funded bids made clear reference to the DfT policy goals within
the project objectives and how the scheme would be delivered. All 39 bids stated
that the scheme was designed to support the local economy and that this would be
achieved through: reducing congestion (38 bids) and enhancing access to
employment (32 bids). Journey time reliability was less prevalent as a means of
supporting the economy, with 'reliability' mentioned 18 times and 'predictability' 11
times. Merseyside was the only funded bid to not explicitly mention reducing carbon
emissions as an objective of the bid, although it did refer to this indirectly with an
objective to provide and promote clean/low-emission transport. Only three bids did
not contain walking schemes, with just one not including a cycling scheme.
Plymouth's Smart Ticketing bid obviously had no reference to these modes, whilst
Birmingham and Southampton included no specific walking schemes, other than as
part of general travel planning initiatives.

For the bids that were invited to resubmit, all 13 referred to helping the local
economy, but only 11 to reducing carbon emissions as an objective. The biggest
differences in the bids invited for resubmission compared to the funded bids was
that only nine bids out of 13 highlighted reducing congestion as a means of
supporting the local economy. All 13 bids referenced improving safety as a key goal
of the scheme, but less than half referenced improving air quality.

For the unsuccessful bids two did not explicitly set out 'supporting the local
economy' as an objective. Overall, where it was included there were fewer examples
of how this would be achieved, with just 15 out of 21 bids referencing reducing
congestion, and 14 stating that enhancing access to employment was a key target.
Improving air quality also featured relatively few times, with just eight bids stating
this as an objective.

Chapter 15.

Chapter 16.   LSTF SP Tranche 1 Bids – Delivery

The overview of how the LSTF policy goals were referred to within the bid documents provided some insight into the importance of explicitly highlighting the local economy and carbon emissions as main factors in the bids. The next step is to see what delivery methods were preferred in funded bids, compared to the resubmitted and rejected bids. The most popular approach was through marketing and communications initiatives including: marketing campaigns, events and web-based information. Improvements to the walking and cycling infrastructure were the next most frequently deployed type of intervention, with 31 successful bids referring to how the scheme was designed to improve links to employment sites, stations and schools. The Chi Square Test results in Table 2 indicate four types of intervention that may have been a contributing factor in the success or failure of being awarded funding. A P-value below 0.05 indicates a relationship between the frequency of an intervention and whether the bid received funding. Travel planning had the most significant relationship (p. 0.01033), as 35 successful bids included this type of intervention. Travel planning interventions included measures such as personalised travel planning and school travel plans.

Providing interventions that enabled people to travel to new jobs such as: travel passes, journey planning and travel assistance training were also statistically significant (p.0.04207), featuring with greater frequency in bids that were invited to re-submit or were rejected. Both bus infrastructure and bus service improvements also were significant, but were very close of 0.5, which suggests the influence of these factors was probably negligible. This indicates that 'soft' travel planning measures rather than infrastructure schemes were important in determining whether SP bids received funding in Tranche 1. Relatively few bids included schemes that were designed to reduce the need to travel.

Table 2 – Breakdown of the type of improvements bid for as part of the SP Tranche1 Bid Funding

Schemes included in Tranche 1 Bids	Funded Bids (39)	Resubmit Bids (13)	Refused Bids (21)	Significance (P Value)
Marketing and communications	38	13	20	0.71088
Walking and cycling infrastructure improvements	37	13	16	0.53936
Travel planning	35	12	14	**0.01033**
Bus information / marketing improvements	31	10	11	0.10698
Workplace engagement	29	11	11	0.11712
Route planning and mapping	27	8	18	0.34124
Bus infrastructure improvements	26	10	7	**0.04809**

Vehicle-based initiatives	25	8	13	0.72685
Skills training	24	8	15	0.84296
Bus service improvements	23	7	7	**0.04983**
Access to cycles	23	9	8	0.70476
Schools active travel	22	5	8	0.41717
On road improvements	22	9	9	0.57444
Rail improvements	19	5	8	0.72493
Workplace active travel	17	5	5	0.52147
Reducing the need to travel	10	1	5	0.32973
Access to work	8	7	7	**0.04207**

LSTF Small Bids – Tranche 1 – Disruption

The majority of schemes proposed within the bids were designed to enable
movement through the network rather than reducing/removing trips that could be
deemed 'non-essential'. Removal of 'non-essential' trips can be seen as a means of
freeing up capacity on the existing network thereby reducing the requirement for
further highway capacity improvements and enable the funding to be spent on other
sustainable travel initiatives. From a practice perspective, the *meaning* of what
constitutes an essential and non-essential journey is complex, with different people
having differing interpretations of the same journey through their own norms and
values.

Elements of travel reduction are included in some of the bids which include work
hubs in rural areas, high speed broadband and teleworking opportunities, which
offer the materials to change travel practice provided people have the competences
and agreement from management (*meaning*) to use these options. Southampton
City Council also plans to promote home deliveries of large objects, which will alter
the *meaning* and *materials* required to travel into the city centre. However, the
majority of schemes are designed to enable or encourage travel by sustainable
modes, by providing new materials to aid more sustainable travel modes, such as
new walking, cycling and public transport infrastructure. Many LTAs are also using
the LSTF funding to provide enhanced competences e.g. skills training to enable
travel. Other skills training is also being offered, including bicycle maintenance to
enable people to gain the *competence* of fixing their own vehicle so that they feel
more in control of their transport mode and are able to travel sustainably in the
longer term. Of the funded bids, 22 out of 39 include measures that enable people to
continue to travel by car (but in a potentially more sustainable way), through on-road
improvements such as junction improvements, traffic and parking management and
Urban Traffic Management Systems. Interestingly, those bids that were refused had

fewer on-road improvements than the funded bids, with just nine out of 21 of these bids including measures that enabled travel to continue by car.

The LSTF schemes have a focus on incentivising sustainable travel by providing training, competitions and personalised travel planning designed to encourage people to change their behaviour. The majority of these incentives are non-financial, however but are focused on giving people the skills to travel sustainably. Only nine of the successful bids have schemes that could be termed as disruptive to car travel. These include 20mph zones, which will slow rather than completely disrupt car travel, bus gates and corridors, removal of parking spaces and camera cars operating around schools in Tyne and Wear to deter illegal parking. Hertfordshire County Council's plans to close the town centre of St Albans to cars during the hours of 0700-1900 is the only truly disruptive measure identified in all reviewed bid documents, as it creates an outright ban on the existing practice of driving within the town centre. This disruption changes: the *materials* available for travel e.g. removal of road space for cars and the creation of a pedestrianised area of the town: the *meanings*, where people can drive and where they can walk and cycle, where they will get fined for driving illegally; and *competences*, where to travel through and around the town by car and by foot.

In terms of the funded bids, overall there appears to be very little disruption to the practice of driving, but rather a focus on encouraging or incentivising the use of alternative modes.

Chapter 17.   LSTF Large Project Bids – Policy Goals

Nineteen large bids were submitted by LTAs for LSTF funding, with thirteen bids being successful in receiving funding, three authorities invited to resubmit bids and three bids being refused. The thirteen successful schemes have been awarded a combined £230.4m, which local authorities will match in delivering the schemes.

Nottingham City Council's bid was the only one out of all nineteen submitted not to explicitly include the policy goal of supporting the local economy in the scheme objectives. The means of improving the economy put forward in the other bids were primarily through reducing congestion, improving journey time reliability and enhancing access to employment. Two funded bids, South Hampshire and Surrey, did not specifically cite reducing carbon emissions as a desired outcome from the LSTF as a scheme objective. All thirteen funded bids involved some aspect designed to enable people to walk or cycle as a means of reducing carbon emissions. Of all the nineteen bids, Devon County Council's (invited to resubmit) bid was the only one not to include on road improvements.

Improving accessibility, safety and air quality, along with promoting healthy living also featured highly in all bid documents as a means of fulfilling the policy goals of the LSTF. In general there does not appear to be much difference between the funded bids, the bids that were invited to resubmit and the refused bids in their design to meet the policy goals.

Chapter 18.

Chapter 19.   LSTF Large Project Bids – Delivery
Table 3 highlights that there was little difference in approach adopted by local
authorities in identifying delivery tools for the LTSF. The LP bids are all principally
infrastructure focussed, with on highway improvement, bus infrastructure
improvements and walking and cycling improvements all featuring heavily in the
successful bids as well as the three rejected bids. The Chi Square test does not
identify that any particular type of intervention significantly influenced the success or
failure of an LP bid in receiving funding.

*Table 3 – Breakdown of the type of improvements bid for as part of the LP Bid
Funding*

Schemes included in Tranche 1 Bids	Funded Bids (13)	Resubmit Bids (3)	Refused Bids (3)	Significance (P Value)
On road improvements	13	2	3	0.05992
Bus infrastructure improvements	12	2	3	0.34634
Marketing and communications	12	3	3	0.78381
Walking and cycling infrastructure improvements	11	3	2	0.53298
Vehicle-based initiatives	11	3	3	0.59700
Bus information / marketing improvements	10	2	3	0.57572
Rail improvements	10	1	3	0.16035
Workplace engagement	10	1	1	0.18710
Travel planning	10	2	2	0.89462
Bus service improvements	9	1	3	0.21246
Skills training	9	2	1	0.50441
Access to cycles	9	1	1	0.33787
Route planning and mapping	8	1	2	0.63511
Access to work	7	0	0	0.07748
Workplace active travel	6	1	1	0.87075
Schools active travel	6	1	0	0.32460
Reducing the need to travel	4	1	0	0.52714

As with the Small Bids in Tranche 1, there is very little evidence of an intention to
reduce the overall need to travel, but the mode of travel, with just a third of schemes
identifying measures clearly targeted towards a reduction. Only six schemes

designed to reduce the need to travel have been included in all 13 funded bids and these are:

- Improving access to high speed broadband (in one bid);
- Helping employers reduce business-related travel (in three bids);
- Home working marketing and promotion (in one bid); and
- Home deliveries promotions (in one bid).

The fact that none of the large bid submissions seek to establish work hubs in rural areas and market towns is a reflection of the fact that successful LP bids were predominantly awarded to urban LTAs, with 11 out of 13 being awarded to urban unitary LTAs or groups of unitary LTAs.

Despite the general similarity between the bids, there was one noteworthy bid amongst the funded LP projects. This was the award of £6.1m to Telford and Wrekin Council. Whilst the majority of bids generally offer a variety of different 'soft measures' and infrastructure provision designed to encourage low carbon travel, Telford and Wrekin propose what is essentially a road network enhancement scheme. The bid identifies a vague provision for sustainable travel by walking and cycling through "*Junction, pedestrian and cyclist movement improvements*", however the bulk of the scheme is designed around road network improvements such as junction redesign, integrated traffic management and 'urban realm' improvements. In reality this appears to be an alternative, and successful, attempt to fund a road scheme that will continue to support the practice of driving within Telford. The Telford scheme has been designed to benefit the local economy through a reduction in congestion, but does not provide any specific long-term sustainable benefits to the area in relation to alternative modes of travel.

LSTF Large Bids – Disruption

Seven of the thirteen successful bids include elements that could be considered as disruptive to travel by car. These include reviewing the existing Traffic Regulation Orders regarding parking, loading and the movement of traffic. Bournemouth Borough Council will enforce these changes through a mobile camera vehicle. Other initiatives include introducing 20mph zones, general traffic management changes, and providing enhanced public transport to support the Work Place Parking Levy in Nottingham. Arguably such schemes are attempts to disincentivise travel by car, without completely disrupting car use practices.

In general the LSTF LP bids are designed to enable the movement of people through the network, primarily by improving bus, walking and cycling infrastructure and assistance to the public through non-financial incentives such as smartcard ticketing to make it easier to travel between modes, personalised travel planning

and the provision of information through various formats such as the internet and mobile phone apps.

Ten of the funded LP bids included schemes that retain travel by car as part of the local sustainable transport network. These schemes include electric charging points for cars, car sharing, car clubs, and economical driver training schemes. Reading Borough Council's funded bid includes the construction of a new park and ride site on the outskirts of the town. This scheme will alter where people should be driving to in Reading, (acceptable on the outskirts, but not in the centre) changes the *meaning* of driving within the town, yet continues to lock in the practice of driving by the creation of *materials* (new infrastructure) that is designed to enable of driving for part of the journey.

Conclusions and Discussion

The current funding levels of the LSTF are dwarfed by the funding for highway infrastructure during the same period. The decision to fund so many highway projects is at odds with the findings of research such as Sloman *et al*. 2010 (funded by the DfT), who found that the number of trips and the distance travelled reduced during the intervention period of the Sustainable Travel Towns and Cities Project and produced an average of 49.7kg saving per car in CO_2 emissions across the three towns (pp.608). If similar results to the Sustainable Travel Towns and Cities project were to be achieved by the LSTF then this would help reduce carbon emissions and improve air quality at the local level. Unfortunately the development of new highway infrastructure in the same period is likely to more than negate any benefits of carbon reduction achieved through the LSTF process. The evidence of a 22:1 spend on highway schemes in the East of England region is likely to lock-in high carbon travel practices in the region in the long-term as the new *materials* being provided in this region are predominantly new highway infrastructure. In England the average of £9 being spent on road building for every £1 on sustainable schemes sends a contradictory message and the meaning of travel will remain closely linked to the car under this spending regime. As yet, it is unclear whether there is a particular reason for there being such a discrepancy between regions. It could be due to political, the quality of bid writing in various regions or another unaccounted for factor.

The message on sustainable travel is possibly confusing for the public: when and where is it ok to drive? Nearly all long distance trips start and end within a 'local' networks, so where does the distinction lie? The benefits of the LSTF project in terms of *materials* and *competences* will be lost if the *meanings* are not reinforced throughout society and the messages supplied by government and the media.

In general the majority of funded schemes adhere to the overarching goals of the LSTF, by explicitly identifying them as objectives of the bids and identifying the means by which these goals will be achieved. The Chi Square results for small bids indicate that implementing travel planning initiatives through the bid were a significant factor in deciding which schemes were funded, with this type of intervention appearing in the majority of funded bids.

Overall there is little focus in the bids on reducing the need to travel, and thereby increasing capacity on the network created by people not having to travel. The LSTF is designed to enable travel, reinforcing the *meanings* and expectations that currently exist within society about peoples' right to travel where, when and how they wish. This is an accepted freedom of democratic society, but in England (as with most other modern western societies) has led to high carbon practices remaining dominant, as driving provides the most logical mode of travel for the fragmented practices such as work, retail, social and leisure, undertaken across the course of a day.

Few schemes in the LSTF can be seen as actually being disruptive to travel, focusing instead on incentivising low carbon alternatives. St Albans stands out as the only scheme that actively disrupts car travel for a significant area of the network, whilst monitoring camera schemes will disrupt socially unacceptable practices such as parking illegally outside schools. Travelling by car appears to feature heavily, particularly in the LP bids, where the implementation of an electric vehicle charging network is the objective of many major cities bidding for funding. This may reflect the urban nature of the majority of funded LPs, where centrally located sites will provide more people with the opportunity to charge their vehicle. The success of Telford and Wrekin's bid further supports the assertion that the meaning of where and when we can drive is not being tackled as a central part of the LSTF process. Other measures such as car clubs and park and ride sites may create a marginal shift in driving habits (Parkhurst *et al.*, 2012), but they do not act to significantly reduce levels of driving.

The LSTF is a positive move by the UK Government towards a more sustainable transport network, but it is just the first step on the journey. However the significantly greater amount of funding being given to highway infrastructure expansion/development schemes over a similar timeframe equates to pound for pound nine steps back. Disruption can change and reduce traffic levels, as Cairns *et al.* 2002, found and may provide a low cost solution to reducing carbon emissions. Greater understanding of how disruptive opportunities can be utilised is required within government, both centrally and locally, and this is being undertaken as another part of this project (Williams *et al.*, 2012). If we are to meet the challenging UK carbon reduction targets and provide a transport network that is able to meet the demands of increasing disruption through environmental and fiscal pressures facing

the transport network in the 21st century, it will be necessary to promote sustainable travel through materials, competences and meanings.

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Appendix K

This paper is produced and circulated privately and its inclusion
in the conference does not constitute publication.

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LSTF categories by components and initiatives

LSTF Components	LSTF Initiatives
Public Transport	
Bus infrastructure improvements	real time information at bus stops and interchanges
	hybrid and other low emission technologies for buses
	new buses
	low carbon park and ride vehicles
	park and ride extensions / enhancements
	new / extended bus lane(s)
	bus corridor improvements
	improved public transport interchange(s)
	bus gate provision
	bus priority technology
	bus shelters and bus stops
	off-bus ticket machines
Bus service improvements	new / improved bus services / routes
	bus services for rural residents
	bike bus services
	driver disability / customer awareness training
	community transport
	integrated services development
	new / enhanced park and ride services
Bus information/ marketing	free / discounted bus 'taster' tickets
	travel advice (incl. at main employment sites)
	bus services information and promotions
	web-based services and smart phone apps for bus times and routes
	smart / integrated ticketing
Rail improvements	railway station / forecourt improvements
	real time information on trains and at stations
	cycle parking at station(s)
	cycle hire scheme at station
	electric vehicle charging points at station
	rail service improvements
	targeted rail promotions / travel awareness campaign
	station travel plans
Active Travel	
Walking and cycling	pedestrian / cycle facilities
	pedestrian crossings

LSTF Components	LSTF Initiatives
infrastructure	links to employment sites, stations, schools
	access to parks / recreational areas / National Parks
	cycle contra-flows
	greenway / off-road cycle route improvements (incl. lighting)
	town / city centre accessibility
	cycle parking (incl. storage / lockers)
	cycle route signage improvements
Skills training	adult cycle training
	children's cycle training (Bikeability level 3)
	children's pedestrian road safety training
Workplace active travel	promotions and events (incl. workplace cycle challenges)
	employer grants for cycle shelters, lockers etc
	Dr Bike services
Schools active travel	promotions and events (e.g. cycle challenges, Dr Bike, Bike It, transition programmes)
	schools grants for cycle shelters, lockers etc
	cycle trains / walking school buses
Access to cycles	loan bike service and cycle hubs
	cycle hire scheme
	bike recycling scheme / maintenance training
Route planning and mapping	maps, signs and route planning support (incl. guided walks/rides to school/work)
	community route audits
	journey planner promotions
	partnerships and events
Traffic Management and Private Vehicles	
On road improvements	20 mph zones / lower speed limits
	junction improvements / upgrades
	sustainable transport corridor(s)
	traffic and parking management
	enforcement
	streetscape/access improvements (including safety)
	urban / integrated traffic management and control and signals review
Vehicle based initiatives	car share / park and share / lift share
	car clubs
	eco-driver training / advice

LSTF Components	LSTF Initiatives
	electric car (and bike) charging points
	pool low-emission / electric cars for workplace travel
	freight measures
	Wheels to Work
Marketing and Engagement	
Workplace engagement	employer engagement / workplace packages (incl. travel planning)
	business grants for sustainable transport solutions
	targeted engagement with hospitals / further education / universities
Travel Planning	area / personalised travel planning / individualised travel marketing
	travel planning (general)
	schools travel plans
Reducing the need to travel	improving access to high speed broadband for rural locations
	helping employers reduce business-related travel
	home working marketing and promotion
	home deliveries promotions
	establishment and promotion of work hubs for rural areas and market towns
	reducing the need to travel to access services
Access to work	travel passes for people seeking employment
	journey planning and travel assistance training
Marketing and communications	marketing campaigns
	travel mapping and information
	incentives / events
	travel hubs
	web-based travel information
	sustainable tourism promotion
	road safety / 'share the road' awareness campaigns