Social Practice Theory and Sustainable Transport: An Analysis of English Local Transport Planning as a System of Provision

THESIS

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Abstract

The UK Government is committed to reducing Greenhouse Gas (GHG) emissions by 80% from 1990 levels by 2050. Reducing emissions from motorised transport and changing travel behaviour of people wishing to travel are two possible means of achieving this. To support schemes designed to change behaviour the UK Government provided a five year funding stream to local authorities in England (excluding London) called the Local Sustainable Transport Fund (LSTF). The LSTF funding creates an opportunity for people to change the way they travel, through the provision of new infrastructure and training. This research is designed to understand how the transport system influences creates this opportunity.

This thesis investigates an alternative approach to the existing dominant behaviour change paradigm of behavioural economic theory, favoured by the UK Government. The research examines using the potential benefits of applying the sociological method of Social Practice Theory (SPT). SPT is different to psychology-based approaches as it considers the *'practice'* that is being undertaken, rather than focusing on the individual undertaking the action. The research explores Shove *et al.*'s (2012) 3-Elements model, an accessible representation of the complexities of SPT, to demonstrate whether the *materials*, *meanings* and *competences* that make up a social practice are reflected in the design of the sustainable transport bids for LSTF funding and, if not, how the bids could be improved by incorporating the SPT perspective. The research applies SPT in two ways. Firstly, an analysis was undertaken of LSTF bid documents to understand what elements of the practice(s) of travelling the proposed schemes were trying to alter. Secondly, it examines the practices of transport planning itself (in the context of the LSTF).

Through the development of the research it became evident that the 3-Elements model would not provide a sufficient explanation of the practices of transport planning. A new conceptual model was therefore created incorporating Fine and Leopold's (1993, 2002) Systems of Provision (SOP) model to identify the structures, processes, agents and relationships that exist within the Transport Planning SOP (TPSOP) that influence how practices are performed and how this ultimately influences the practices of travelling.

The research has been developed from a critical realist perspective and constructs a narrative to explain what the 3-Elements and TPSOP conceptual models tell us about the transport planning sector and the practices of travel. As such the research does not seek an absolute truth as to the influences on the practices of travelling. The research uses a mixed

methods approach to gathering data. This includes content analysis of all 145 LSTF bid submissions, a survey of the bid managers and semi-structured interviews with 23 transport professionals from across the TPSOP.

The analysis of the results from the data collection found that the meanings within transport planning of what is defined as a sustainable transport initiative come from national government and this meaning has a direct influence on the types of schemes that were bid for by Local Authorities (LAs). The findings also identified that the national government exerted its power through the provision of funding to LAs who met their vision of what is defined as a sustainable transport scheme.

Using the TPSOP conceptual model it was possible to demonstrate the importance of funding as a process, used to exert power. The research found that although the national government was able to exert this power through the delivery of sustainable transport initiatives, the use of funding only created the opportunity for change to occur, rather than creating change.

The thesis provides a contribution to knowledge by exploring the applicability of the 3-Elements model to understanding the practices of transport planning and how they ultimately influence how travelling is performed. For example if funding is provided for the construction new carriageways to enable people to drive private motor vehicles, then this is how the practices of travelling are likely to be performed. The 3-Elements model is therefore a more useful tool for use in the design stage of transport initiatives to ensure the meanings that the initiative will create are better understood and mitigated at an earlier stage of the process.

The research also demonstrated that the TPSOP model provided a means of describing the underlying mechanisms that exist within the complexes of practices, as defined by Shove *et al*. (2012). This is because the TPSOP model is able to highlight power relations and the processes used to control the system when attempting to create change.

In addition to these conclusions, the research identified changes required within the TPSOP to improve the performance of sustainable transport initiatives. These include changing the type of funding supplied to LAs to deliver sustainable transport initiatives to include more consistent funding for revenue based schemes to provide marketing, training programmes and the subsidising of key public transport services. Alterations are also required to the evaluation process for transport schemes to place a far greater emphasis on social, environmental and health impacts of transport.

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Glossary of Terms

APPG	All Party Parliamentary Group
BIT	Behavioural Insights Team
CBA	Cost Benefit Analysis
CC	County Council
CCTV	Closed Circuit Television
CBT	Campaign for Better Transport
CLG	Department for Communities and Local Government
CO_2	Carbon Dioxide
DECC	Department of Energy and Climate Change
Defra	Department for Environment, Food and Rural Affairs
DETR	Department for Environment, Transport and the Regions
DfT	Department for Transport
DH	Department of Health
GHG	Greenhouse Gas
HA	Highways Agency
HM Treasury	Her Majesty's Treasury
ICE	Institution of Civil Engineers
KC	Key Component (as part of the Local Sustainable Transport Fund)
LA/LAs	Local Authority/Local Authorities

LEP	Local Enterprise Partnership
LEZ	Low Emissions Zone
LHT	Local Health Trust
Lib Dems	Liberal Democrat (political party)
LP	Large Project (as part of the Local Sustainable Transport Fund)
LTB	Local Transport Body
LTP	Local Transport Plan
LSTF	Local Sustainable Transport Fund
MB	Metropolitan Borough Council
MOVA	Microprocessor Optimised Vehicle Actuation (Traffic Signals)
MP	Member of Parliament
NAEI	National Atmospheric Emissions Inventory
NPSNN	Draft National Policy Statement for National Networks
NO_x	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
NTM	National Traffic Model
NVivo	Qualitative data analysis software produced by QSR International
ONS	Office for National Statistics
P&R	Park and Ride
PM_{10}	Particulate Matter
PTP	Personalised Travel Planning

RTI	Real Time Information
SACTRA	The Standing Advisory Committee on Trunk Road Assessment
SEP	Strategic Economic Plan
SLGF	Single Local Growth Fund
SOP	Systems of Provision
SP	Small Project (as part of the Local Sustainable Transport Fund)
SPT	Social Practice Theory
SRO	Senior Responsible Owner
TA	Transport Authority
TP	Transport Planning
TPS	Transport Planning Society
TPSOP	Transport Planning Systems of Provision
UA	Unitary Authority
UCL	University College London
UK	United Kingdom
UTSG	Universities' Transport Study Group
UWE	University of the West of England, Bristol
VTBC	Voluntary Travel Behaviour Change
WHO	The World Health Organisation
WPL	Workplace Parking Levies
WW1	World War One

WW2	World War Two
4DB	Four Dimensions of Behaviour

Chapter 1. Introduction

"Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius -- and a lot of courage -- to move in the opposite direction" (Albert Einstein[1])

1.1. Introduction

Transport and how people travel are contributory factors to global climate change due to the emissions released through motorised transport. Motorised transport emits many different gases and particulate matter into the atmosphere (Defra, 2007). Carbon Dioxide (CO_2) emissions are a significant contributor to global climate change and there is now near global consensus within academic literature that anthropogenic CO_2 emissions are altering the global climate (Oreskes, 2005; Cook *et al*., 2013). The UK Government is committed to reducing Greenhouse Gas (GHG) emissions (including CO_2) by 80% of 1990 levels by 2050 (DECC, 2009). The purpose of this research is to provide greater understanding of how the impact of the emissions created by human activities through transport and travel can be mitigated or reduced, through changes to the transport system and the way people travel.

There has been much debate surrounding transport policy as to the best means of planning and delivering transport initiatives designed to create more '*sustainable'* outcomes in terms of the reduction of GHG emissions from transport sources. In 1991 Goodwin *et al*., released *Transport: The New Realism* in response to the UK Government's release 1989 White Paper of *Roads for Prosperity,* a white paper that set out *"biggest road-building programme since the Romans"* (Sadler, 2006). The plans were eventually dropped in 1996 due to increasing evidence of the environmental impacts of private motor vehicles and the public reaction to new road schemes (Shaw and Docherty, 2008). In 1997 the new Labour Government published a new white paper on transport *A New Deal for Transport: Better for everyone* (DETR, 1998). This white paper was designed to deliver the party's election manifesto pledge:

[1] Attributed to Albert Einstein, Harris (1995) *Collected Quotes from Albert Einstein*. Available from: http://rescomp.stanford.edu/~cheshire/EinsteinQuotes.html. [Accessed 10/01/2013].

"We will safeguard our environment, and develop an integrated transport policy to fight congestion and pollution", (*Ibid*, 1998).

Whilst road building did not cease in the ten years after the introduction of the New Deal for Transport, with the network expanding 8% between 1996 and 2006, road building was no longer the last resort for new transport schemes (Parkhurst and Dudley, 2008). Alternative schemes and approaches were both delivered and trialled by Government during this period as a means of meeting travel demand, including the 1996 National Cycling Strategy (Cambridge Cycling Campaign, 2003) and the Local Transport Plan approach to Local Authority (LA) funding for transport that evolved from the *Transport Act 2000* (Olowoporoku, 2009).

1.1.1. Voluntary Travel Behaviour Change

Cairns *et al*., 2004 were commissioned by the UK Government to investigate alternative modes of transport. Their findings were published in the influential 2004 report *Smarter Choices: Changing the Way We Travel'*. The authors concluded that investment in what were referred to as *'soft'* measures or *'Smarter Choices'* in the UK and *Voluntary Travel Behaviour Change* (VTBC) approaches internationally (Chatterjee and Bonsall, 2009) can influence peoples' mode choice in favour of environmentally sustainable options. The authors also highlighted that VTBC schemes reduce the number of trips and provide good value for money, compared to large-scale construction-based solutions. Eddington built on this work in the 2006 *Eddington Report* when discussing schemes to reduce GHG emissions. Eddington recommended that the delivery of many *'smaller projects'* provided a better financial return in relation to the level of funding invested by the national government compared to investment in large-scale infrastructure schemes.

In 2010 the UK Government's *Sustainable Travel Towns* programme (Sloman *et al*., 2010) concluded that the introduction of behaviour change initiatives in three towns in England had provided reductions in the number and distance of trips by private motor vehicle compared to other towns in the UK over the same period. The findings of this project led to the UK Government in 2010 announcing a new transport funding stream: the *Local Sustainable Transport Fund* (LSTF) (DfT, 2010a). The LSTF allowed Local Authorities (LAs) in England to bid for funding to deliver a package of small VTBC initiatives in line with the approaches identified by Cairns *et al*. (2004) and supported by Eddington (2006). This research uses the LSTF an example of how sustainable transport initiatives are delivered, to identify whether

VTBC schemes are the best means of changing behaviour in terms of reducing GHG emissions in England.

1.1.2. Behaviour Change – Behavioural Economics

A psychology-based approach to behaviour change that has become popular with the UK Government in recent years is behavioural economics. Behavioural economics is a non-regulatory approach to behaviour change. Dolan (2013: 191) describes behavioural economics as seeking: *"to combine the lessons of psychology with the laws of economics"*. Behavioural economics therefore seeks to use existing psychological models that were originally intended to explain human behaviour, as applied tools to actually create a change in how people behave (van der Linden, 2013).

Behavioural economics takes ideas from a range of psychological theories and Table 1-1 provides Metcalfe and Dolan's (2012) summary of the basis of behavioural economics. The behavioural economics approach enhances the understanding of the types of policies that are likely to work in changing behaviour and how best to deliver them to create the biggest change. For example the *valuing of right now*, included in Table 1-1, comes from the theory of *time preference* which is used extensively by economists (Frederick *et al*., 2002). This value of time forms the basis of the rational model of cost-benefit analysis that is used extensively within transport planning.

The first incentive in Table 1-1, *People really dislike losses* suggests that individuals may change their behaviour if they feel like they are losing money. Glaister and Graham's (2000) findings estimated that a 10% increase in fuel price would only reduce petrol consumption by 2.5%, due to other factors influencing peoples' decision to drive. This is known as elasticity of price (Goodwin *et al*., 2004), and is observable, particularly in short-term trends of fuel pricing. People may be averse to any losses and will seek to minimise them by reducing the distance they travel for example. This type of change towards environmentally sustainable travel options may be insufficient to change how people travel in the longer-term, as was found by Goodwin *et al*.'s (2004) study where people got used to the change in price and reverted to their original travel habits.

Table 1-1 Behavioural Economics Incentives (Metcalfe and Dolan, 2012)

Incentive	Summary
People really dislike losses	Losses impact more than gains. Losing £10 causes more pain than gaining £10 gives pleasure. Losing time or money in transport can be more important than saving time.
People focus on changes	People have reference points which are important in their perception of changes.
People overweigh small chances	People overweigh small probabilities hence fear of flying, when statistically more people die in road traffic accidents.
People think in discrete bundles	People have 'mental accounts' for money and they can often change according to context.
People value right now very highly and inconsistently	People prefer smaller immediate payoffs rather than more distant ones.
People care about other people	Other peoples' wellbeing is important to our wellbeing.
People can be negatively impacted by incentives	Providing financial incentives can often remove the intrinsic motivation for an action.

1.1.3. Behavioural Insights Team

In 2010, the UK Government set up of the Behavioural Insights Team (BIT) to improve the performance of policies through using psychological theories, such as behavioural economics, to help the public select the Government's preferred choices (BIT, 2012). This includes switching to pro-environmental behaviours that reduce GHG emissions. BIT was set up as a means of finding alternative ways to change behaviour or as they state in their Annual Update 2010-11:

> *"To find intelligent ways to encourage, support and enable people to make better choices for themselves"* (BIT, 2012: 4).

The purpose of the team was to provide a greater understanding of psychological behaviour change approaches in terms of the benefits they can have to policy makers. BIT uses behavioural economics to address issues with policies that are not delivering what was

intended. Chatterton and Wilson (2013) highlight that a range of policy documents from across UK government departments promoted the behavioural economics approach prior to the inception of BIT. Many of the tools identified by BIT to deliver psychological behaviour change policies were already included within the HM Treasury's Magenta Book, published in 2011 (HM Treasury, 2011) which provides a summary of the methods of policy evaluation used by government. The formation of BIT was therefore a means of providing government departments with additional support in developing policies designed to change behaviour, or helping to adapt existing policies to improve their performance through behavioural economics approaches.

1.1.4. Models of Behaviour Change

Several different behavioural economic models exist that provide policy makers with the tools to influence behaviour. Two of these models that are used by the UK Government are Nudge Theory and MINDSPACE. Thaler and Sunstein's (2008) based their book *'Nudge: Improving decisions about health, wealth and happiness'* on behavioural economic theory. This book was claimed to be the then opposition leader David Cameron's favourite book in 2008 (Sparrow, 2008). The book argues that people in positions of power should adopt a *'libertarian paternalist'* approach to governance, where they guide people towards decisions that will enhance their lives rather than passing laws to restrict choice (Thaler and Sunstein, 2008).

Dolan (2013) argues that people are not super-computers with access to all information available, and even if people had it they may not choose to act on it. Humans do not always make rational choices and Cialdini (2001: 3-6) uses the example of pricing an item at a higher cost to make the item sell, when it failed to at a lower price. The item sold because the new price was interpreted by purchasers that they were buying something that was good quality. This type of action, which is not economically rational, is inadequately modelled by neo-liberal economic theory, which is based on a rational actor (Fine, 2002). A rational actor or *'Econ'* is a person who has access to all of the information available, acts rationally and does what is in his or her best interests (Bevan and Fasolo, 2013: Thaler and Sunstein, 2008). Dolan (2013) explains that policies are generally designed around cognitions, changing an individual's behaviour through information and incentives. Dolan argues there should be more focus on changing contexts, the environment or situation, and this allows the individual to change. This would aid individuals in changing their behaviour towards the types of behaviour desired by policy makers.

Thaler and Sunstein (2008) call a person with the ability to change a context a *'choice architect'*. Within transport planning this could include: making the priority parking spaces available for car-sharers or electric vehicle users. These are the type of options available to choice architect to encourage more people to change the way they travel. The change or changes made by the choice architect can often be low cost and provide a significant benefit to both the individual and society (*Ibid*, 2008). This can be as simple as rewording of a payment request letter, or sign to change behaviour (Chatterton and Wilson, 2013: Goldstein *et al*., 2010: Cialdini, 2001). Goldstein *et al*. (2010:12) cite the example of cards placed in hotels asking people to reuse their towels for the sake of the environment. Their test found that people were more likely to reuse their towel if they are told other customers had done this rather than if they are given information about the environmental benefits of reuse. This approach is called framing. When framing is applied to policy, Chatterton and Wilson (2013: 3-4) cite the example of the UK government using a letter which was reworded to say that most people pay their tax on time. This reportedly led to an additional £200 million being collected. However, what is unclear from this example is whether this change was temporary, or continued in subsequent years.

MINDSPACE (Dolan *et al*., 2010) was published in March 2010, two months before David Cameron was elected as Prime Minister and was published by the Institute for Government in conjunction with the Cabinet Office (Chatterton and Wilson, 2013). MINDSPACE is a mnemonic for policy-makers outlining the low-cost measures that they can use to encourage *'new good behaviours'* when designing a policy based on behavioural economics. Table 1-2 outlines the components of the MINDSPACE mnemonic, and a summary of what each option is designed to achieve. All of the terms are based on concepts from psychology that focus on how individuals can make changes to their own behaviour, with appropriate support. MINDSPACE is therefore a tool designed to help policy-makers understand what triggers may influence people to change their behaviour to the one desired. MINDSPACE retains the notion of choice for people, removing the need for the government to create new legislation.

One of MINDSPACE's elements is based on providing incentives to people to change their behaviour as well as providing information (combining with social marketing) as to how they can achieve this change. The MINDSPACE report admits that previous government initiatives have been successful at changing behaviour, such as: *"Drink driving campaigns, preventing AIDS transmission and increasing seatbelt usage. Nevertheless, some behaviours – have remained resistant to policy interventions"* (Dolan *et al*., 2010: 13). Both

the drink driving and, as will be discussed in Section 2.2.1, seatbelt use campaigns were eventually supported by stringent legislation. Despite the marketing and legislation people still chose to continue to drive whilst under the influence of alcohol or without using a seatbelt.

Table 1-2 MINDSPACE Mnemonic (Source: Dolan *et al*., 2010)

Element	Summary
Messenger	We are heavily influenced by who communicates information
Incentives	Our responses to incentives are shaped by predictable mental shortcuts such as strongly avoiding losses
Norms	We are strongly influenced by what others do
Defaults	We 'go with the flow' of pre-set options
Salience	Our attention is drawn to what is novel and seems relevant to us
Priming	Our acts are often influenced by sub-conscious cues
Affect	Our emotional associations can powerfully shape our actions
Commitments	We seek to be consistent with our public promise, and reciprocate acts
Ego	We act in ways that make us feel better about ourselves

MINDSPACE is therefore a prompt for policy-makers. It provides advice regarding the psychology-based options that can be used when formulating and implementing a policy. Policy-makers do not have to match all nine elements, but select the ones that are deemed relevant to their policy. The use of MINDSPACE, if used appropriately, can improve the performance of new policies in meeting their objectives, or improve the performance of existing policies that have not achieved their desired goals.

The UK along with US Governments have readily adopted behavioural economics concepts (Chatterton and Anderson, 2011: Metcalfe and Dolan, 2012), with the authors of Nudge and MINDSPACE working as advisors to each government respectively (McSmith, 2010). Behavioural economic based adjustments, if effective, allow the governments to attempt to resolve the imperfections in the free market promoted by neoliberal policies. The imperfections exist both through and as a result of human behaviour when interacting with the market and making choices that are not rational in economic terms. Governments are

primarily judged on the nation's fiscal performance, so any additional measures that can be acted upon to improve economic output that are relatively low cost are likely to be supported politically.

1.2. Aim of the Research

There is criticism within academic literature of behavioural economics as a means of creating long-term changes to behaviour. Behavioural economics is what Fine (2002) calls 'economic imperialism' where social sciences are taken over and adapted to support economic theories in an attempt to tackle what neo-classical economic theory sees as market imperfections (Fine, 2002). van der Linden (2013) criticises behavioural economics for its broad adoption of many differing aspects of psychological research and highlights that the determinants for different behaviours that may be grouped similarly, such as travelling, are likely to have differing psychological determinants that initiate the behaviour. Behavioural economics focuses on the point of decision rather than the underlying factors that also influence how people act and as such fails to adequately deal with the wider personal and societal influences that may influence why people behave in a certain way.

Behavioural economics approaches used to develop behaviour change policies and interventions provide a useful tool changing an individual's decision at the point they make it. Other factors within society tie people into certain habitual decisions that cannot easily be altered. Using the example of travelling again, many other factors influence the decision to choose a particular mode of travel before their final decision is made. Cairns *et al*. (2014:108) explain the difficulty of using models that are focused on the point of decision making in the transport context:

> *"Encouraging more sustainable travel will require changes to the context in which individual decisions are made* […] *which will inevitably be a complex and multi-stranded endeavour".*

Focusing solely on individual choice is unlikely to create long-term sustainable change to behaviour due to the complexity of the decisions people make. Transport and travel choices differ from other behavioural economics examples, such as reusing towels, due to transport infrastructure that is predominantly designed to accommodate travel by private motor vehicles and that which hence conditions peoples' choices towards using this mode. Behavioural economics has shown that psychological theories can influence behaviour, but that this approach needs to be applied continually to create change. Other approaches and

theories therefore need to be explored to see whether or not they will also help in creating the societal shift that is needed in terms of tackling GHG emissions.

The aim of the research is to generate new knowledge as to whether sociological models and systems-based models should play a greater role in behaviour change policies within the transport planning sector in the UK, as an alternative to behavioural economics. The funding of the LSTF by the national government provides academic researchers with an opportunity to identify the factors within the transport planning system that create the opportunity for change in the way people travel. This research will explore this system through the use of Shove *et al*.'s (2012) 3-Elements model that is discussed in more detail in Section 2.6. In addition the research explores the benefits of combining the 3-Elements model with a systems framework created by Fine and Leopold (1993, 2002) called the Systems of Provision (SOP) to help explain how change occurs within the transport system and to the way people travel.

To fulfil this research aim, the thesis seeks to answer three questions:

1. How useful is the 3-Elements model for:

a. *Understanding changes to practices within transport planning and the way people travel?*

b. *Designing transport initiatives?*

2. How does the TPSOP conceptual model developed through this research enhance understanding of the transport planning system and the practices of transport planning?

3. How can the findings of this research be utilised in the transport planning sector to reduce GHG emissions from transport sources?

Chapter 2 and Chapter 3 position the research questions by explaining why Shove *et al*.'s (2012) 3-Elements model and Fine and Leopold (1993, 2002) Systems of Provision approach have been selected as the most appropriate sociological conceptual strategies for dealing with transport and behaviour change in the longer-term. This longer-term time horizon has a greater potential impact in helping to reduce GHG emissions from transport sources.

The research is timely, as tackling GHG emissions forms a fundamental part of transport planning policy in the UK at present, due to the environmental and health impacts of emissions. This problem is being tackled using a variety of different methods at present. This research is designed to test whether sociological theory can play an important role in future behaviour change initiatives in this sector: either as an alternative; or addition to the existing behavioural economic approach.

1.3. Context

1.3.1. Transport Policy in England

Transport policies are developed with a conceptual lens through which politicians view a problem, and ministers bring their own beliefs and principles to the problem solving process (Dudley and Richardson, 2000). Through policies these beliefs and principles influence the type of infrastructure that is being delivered and how people travel. Highway construction based solutions to transport issues such as congestion have remained popular with politicians over the past 50 years (Parkhurst and Dudley, 2008). These solutions have been challenged firstly on environmental grounds in the 1970s (Richardson and Dudley, 2000) and because it is not possible to provide enough capacity to meet predicted levels of demand (Goodwin *et al*., 1991). Yet construction of new highway infrastructure remains high on the political agenda as it remains the favoured solution of '*middle-Englanders'*[2] or *'motorway men'* (Shaw and Docherty, 2014). This relatively small subset of people is a key demographic with politicians seeking to entice to vote for them. The apparent focus on meeting the needs of a relatively small (approximately 10% of the population (Easton, 2010)), if vocal, section of the population has led to policies that promote and enable private motor vehicle use, which is supported by political rhetoric. An example of this pro-private motor vehicle rhetoric is evident in a statement by the Secretary of State for Transport, Philip Hammond (2010-2011) when discussing changes to planning policy in January 2011:

[2] *"A Middle Englander is a characterisation of a predominantly middle-class, middle-income section of British society living mainly in suburban and rural England"* (http://www.thefreedictionary.com/Middle+Englander) Accessed 12/03/2014.

"This is a key step in ending the war on the motorist. For years politicians peddled the pessimistic, outdated attitude that they could only cut carbon emissions by forcing people out of their cars," (CLG, 2011a).

As shown in Figure 1-1, the repercussions of designing a transport network that emphasises travel by private motor vehicles is that cars and light vans (private motor vehicles) account for 67.4% of UK transport GHG emissions from road transport (DfT, 2014a: DfT, 2010b). GHG emissions from transport sources have remained relatively constant since 1990, despite the overall level of GHG emissions from other sources falling during this period (DfT 2012: 9). Therefore government policy needs to change if the UK is to meet its GHG emissions targets by 2050. These changes may need to include shifts in the way private motor vehicles are powered, so that fewer GHG emissions are released, changes to the way people travel, or a combination of the two.

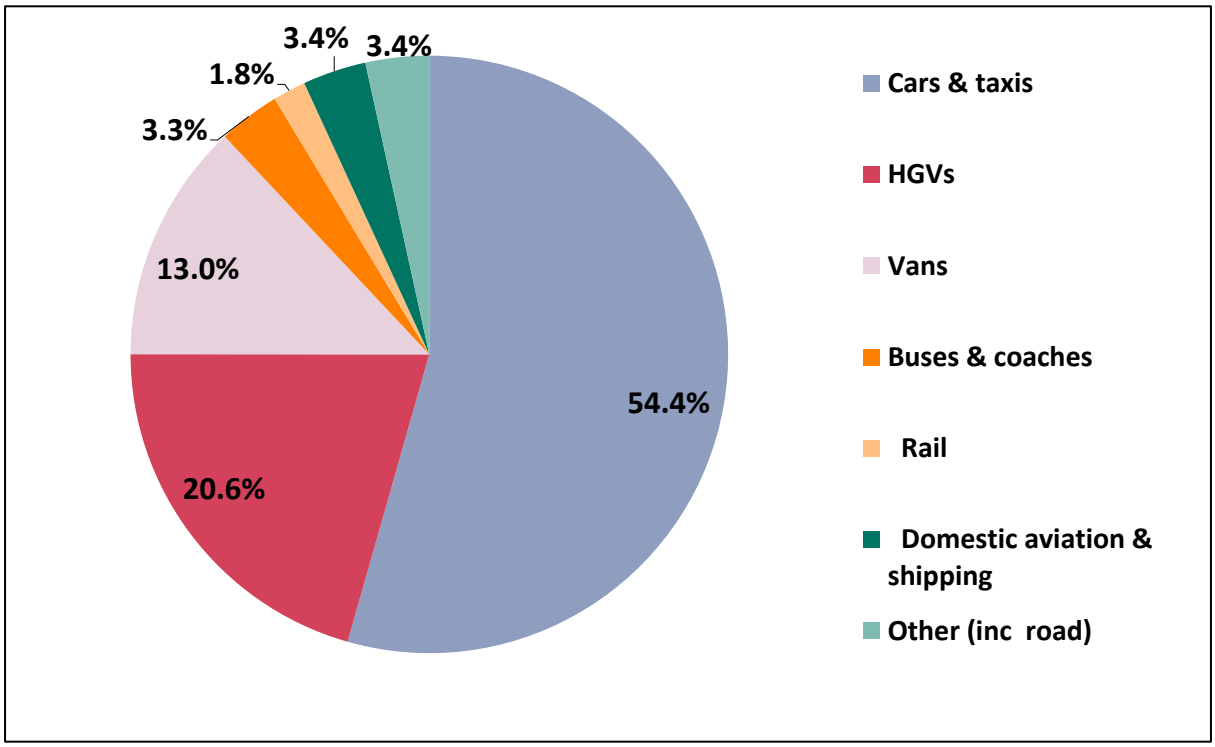

Figure 1-1 UK Domestic Transport GHG Emissions 2012 (DfT, 2014a) [Source: DECC/ National Atmospheric Emissions Inventory (NAEI)].

In the government's 2013 White Paper [2013 White Paper] *Action for Roads: A network for the 21st Century* (DfT, 2013a), it is stated that a reduction in GHG emissions will come from technological change to private motor vehicles as demonstrated by the following quote:

"Over the next decade, the biggest reductions in emissions from domestic transport are likely to come from efficiency improvements in conventional vehicles, driven primarily by EU targets for new vehicle CO_2 performance" (DfT, 2013a: 42).

Efficiency improvements to conventional vehicles means a reduction in the emissions from petrol and diesel vehicles and an increase in the number of electric and gas powered vehicles in England. These changes will play a part in reducing the impact of GHG emissions from transport, as suggested by the 2013 White Paper, but this is heavily reliant on technological advances, legislation and adoption of the technology (Schäfer *et al*., 2011), none of which can be planned for with any certainty. There may also be a need to change in the expectations of comfort available to drivers in private motor vehicles (Parkhurst and Parnaby, 2008). This includes many energy hungry devices such as: climate control, heated seats and the use of a stereo, as they reduce the range electric vehicles are able to travel using existing battery technology.

At present the widespread adoption of alternative fuel vehicles (gas and electric) has yet to occur in the UK. In 2012 there were 178,000 alternative fuel vehicles out of 34.5 million registered vehicles (DfT, 2013b). This represents 0.5% of the market. In 2012, 2.47 million new vehicles were registered in the UK, with only 23,000 of these having alternative fuel sources (*Ibid*, 2013b), representing just 0.9% of the overall car sales for the year, a tiny fraction of the market. Whilst new private motor vehicles fuelled by petrol and diesel face ever stricter controls on emissions, the level of emissions often higher when used in the real world than the manufacturer states. This is due to the testing procedures being inadequate to represent actual on-road usage of the vehicle (Dings, 2013). For example initial studies show Euro 6 standard diesel vehicles are failing to meet the Euro 3 standards from 2000 (Grant, 2014). Political interference can also alter the date of when manufacturers are required to meet lower emission targets[3].

With the uncertainty over the development, uptake and political support of technologies designed to reduce vehicular emissions, there is a need to understand alternative means of reducing GHG emissions from personal transport choices and examining how why travel

[3] In October 2013 German Chancellor Angela Merkel successfully lobbied to have the proposed EU cap on CO_2 emissions of 95g/km for all new cars from 2020 removed due to the impact this would have on the German car manufacturers and the wider economy (Lewis, 2013).

occurs. The other method available to the government is to change the behaviour of the people who are travelling. The government is employing this approach through the funding of the LSTF.

1.3.2. Behaviour Change

As a funding stream and vision for delivering transport initiatives, the LSTF is of particular interest due to the funding of initiatives designed to change behaviour, such as Personalised Travel Planning (PTP) and workplace travel plans. Whilst trial schemes such as the *Sustainable Travel Towns* (Sloman *et al*., 2010) have previously been delivered in England, the LSTF is the first time travel behaviour change initiatives have been delivered on this scale, with all LAs in England eligible to bid for funding.

The discussions in Section 1.1 showed that a psychology-based paradigm currently dominates the national government's approach to behaviour change and frames the issue as one of human behaviour (Shove, 2010; Shove, 2011). This is evident through the types of schemes recommended in the LSTF application guidance document (DfT, 2011a), as discussed in more detail in Section 3.5.6. Psychology-based approaches often ignore the multitude of other factors that influence how and why actions are performed. This thesis therefore critiques the existing literature regarding psychology-based approaches behaviour change. This critiquing process is undertaken to highlight the lack of knowledge regarding the best means of creating long-term behaviour change for the population. To this end the research assesses an alternative theoretical approach to behaviour: Social Practice Theory (SPT) using Shove *et al*.'s (2012) 3-Elements model to identify whether it provides a better understanding of travel that could be adopted by the national government to aid a reduction in GHG emissions.

1.3.3. Health Impacts of Private Motor Vehicle Use

In addition to global impacts of CO_2 from private motor vehicles, other pollutants are also emitted that have an impact on local air quality: particularly Nitrogen Dioxide (NO_2) and Particulate Matter (PM) emissions. NO_2 and PM have been identified as causes of respiratory and cardiovascular illnesses (Defra, 2010). It is estimated that air pollutants cost the UK economy £15 billion annually due to the health impacts they cause (*Ibid*, 2010).

The UK is experiencing a rise in obesity due to sedentary lifestyles from several factors including driving, land use and how often people walk (Frank *et al*., 2004). 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. The Department of Health (DH) stated in 2013 that 61% of adults and 30% of children between 2 and 15 are either overweight or obese (DH, 2013). The risk of excess weight includes: type-2 diabetes; heart disease; certain types of cancer; and mental health issues (*Ibid*, 2013). The DH states that obesity related illnesses cost the NHS £5bn every year (*Ibid*, 2013) and if unchallenged the levels of obesity may increase dramatically in the future. Government policies that continue to enable private motor vehicle travel without adequately restricting emissions may therefore be having a detrimental impact on both the global climate, and more directly on health and wellbeing. These issues highlight the need to understand the wider impacts of transport policies as they may lead to a long-term financial burden for the national economy, significant damage to the environment and a significant impact on peoples' health.

1.4. Rationale

The analysis of SPT within transport planning is timely as, at present, little research has been undertaken in this area. Cairns *et al*. (2014: 115) explain a possible reason for this:

> *"From the perspective of transport policymakers and researchers, sociological contributions can be less accessible than more 'mainstream' economic, psychological or geographical studies. Sociological writing is often conceptual in nature, sometimes supported by theory-building qualitative research, but less often tested using experimental or quantitative techniques"*.

The research uses Shove *et al*.'s (2012) 3-Elements model, an accessible representation of the complexities of SPT that allows the researcher to explore whether the *materials*, *meanings* and *competences* that interact dynamically to form the practices of travelling would be altered through changes to the transport system such as the LSTF. The research therefore provides a deeper frame for analysing the existing approaches to transport planning. SPT could provide a tool for interpreting whether the LSTF delivers a holistic approach to sustainable mobility planning.

The potential benefit of adopting a SPT approach is that it focuses on practices within society rather than the behaviours of individuals. This differentiates it from psychological behaviour change approaches and prevents blame for the environmental impact of driving being apportioned to the end users. The research therefore changes the focus away from

the individual users and considers the influences on the practices of travelling and the practices of transport planning. By examining at these practices it may be possible to identify structures and processes that exist within the transport planning sector that ultimately influence the way people travel. The practices of transport planning are undertaken by council officers (transport planning officers) within LAs. Transport planning officers are responsible for the design of infrastructure and training programmes (McKenzie-Mohr, 2000), so it is important that their influence is considered in this research.

Through the process of research analysis it became evident that several of the key influences on transport planning did not fit within the 3-Elements model. The research has therefore included the use of Fine and Leopold's (1993: 2002) System of Provision framework to develop a conceptual model: TPSOP. This model provides a more detailed explanation of the underlying system within transport planning and its influence on the practices of travelling. The development of the TPSOP model it has been possible to provide a more detailed account of the underlying system that creates change to practices of travelling than would have been achieved if the work had remained based on the 3-Elements model.

1.5. Definition of Key Terms

For means of classification, cars, vans (for private use) and motorcycles have been termed as *private motor vehicles*, throughout the thesis when they are used for personal use. The thesis excludes any focus on business use of vehicles such as vans and HGVs, as the Department for Transport (DfT) are delivering change to this sector through initiatives such as the Low Carbon Truck Trial (DfT, 2014b). In addition freight movements are not a major element of the LSTF schemes being delivered. Measures that enhance walking, cycling and the use of public transport are defined within the thesis as *sustainable transport initiatives*.

The national government of the United Kingdom is led by the Prime Minister who selects the remaining ministers to form a cabinet (UK Government 2014a). The ministers are given a portfolio, e.g. transport or health and are responsible for the corresponding department of the civil service. Civil servants act are impartial in relation to party politics and work for the incumbent minister (*Ibid*, 2014). For the purposes of this research the ministerial departments focused on are the Department for Transport (DfT), HM Treasury, and Department of the Department of Communities and Local Government (CLG). This level of government is referred to as *national government* within the thesis.

Throughout the thesis reference is made to *Local Authorities* abbreviated to LAs. LAs are also referred to as *local government*. In England, excluding London, there are four types of LA. County Councils and District Councils form a two tier partnership delivering different services, with County Councils delivering transport planning services. This means the bids for LSTF funding were made by County Councils rather than the Districts[4]. Unitary Authorities and Metropolitan Boroughs deliver all of the services that are separated in the County/District System. Most LAs have a cabinet which is comprised of elected council members who have control of the decision making processes. The services are delivered by council officers and external companies contracted to deliver specific elements of council services. The thesis therefore uses the term *transport planning officers* in reference to the individuals who deliver these transport services.

In terms of finance for delivering services at LA level the majority of funding comes from HM Treasury and is provided to the various departments within the LA by the relevant government ministries (or departments) through spending agreements. Within LAs this is broken down into two types: *capital* and *revenue*. Capital expenditure is the acquisition or creation of a tangible fixed asset or expenditure that adds to an asset. Revenue expenditure is the operating costs incurred providing services (Hampshire County Council, 2014). This is discussed in more detail in Section 3.5.3.

1.6. Thesis Outline

Chapter 2 provides a review of the existing literature on social theories of behaviour change, and introduces the concepts of SPT and SOP, outlining the potential benefits they may provide the government when trying to change behaviour.

Chapter 3 introduces a conceptual model of the transport planning system. This model will be tested through this research. Chapter 4 includes the epistemological background to the research approach chosen and an explanation of the methods undertaken to complete the research.

[4] The one exception to this was West Lancashire Borough Council (a District Council) submitted a joint bid with Sefton Metropolitan Borough Council with the approval of Lancashire County Council.

Chapter 5 provides a summary of the quantitative data gathered through this research, with Chapter 6 discussing the findings and introducing the qualitative data gathered through interviews with key actors within the system.

Finally, Chapter 7 provides the conclusions of the research in relation to the applicability of the 3-Elements model and the conceptual model created for this thesis. The chapter also states the contribution of the research and provides both theoretical and practitioner based recommendations for the use of the findings.

Chapter 2. Changing Behaviour/Altering Practices

"All the world's a stage, and all the men and women merely players". (Jacques, As You Like It[5])

2.1. Introduction

The purpose of this chapter is to critically assess the existing approaches to behaviour change policy in the UK, and to evaluate the alternative theories that could be utilised create the desired shift towards a greater uptake of pro-environmental behaviours that reduce GHG emissions. The chapter discusses the existing tools available to policy-makers, before analysing the psychology-based approaches that have become increasingly important in central government policy making. As discussed in Sections 1.1.1 to 1.1.4, psychology-based methodical approaches, whilst part of the solution, are insufficient to create the type and scale of change in travel behaviour that is necessary to tackle CO_2 emissions from transport whilst attempting to maintain the high standard and quality of life expected within society.

The chapter outlines Shove *et al*.'s (2012) 3-Elements model, an accessible representation of the complexities of Social Practice Theory (SPT), to explain whether it can fill the gap in existing research relating to the possible benefits of using sociological theory as a behaviour change tool. SPT has generated interest with policy-makers in recent years (Darnton *et al*., 2011; Chatterton and Anderson, 2011) and this research seeks to understand the practical application of this theory.

As the research progressed it became evident that an additional framework would be required to analyse the SPT within the context of the wider transport planning system. The chapter will therefore also introduce Fine and Leopold's (1993, 2002) Systems of Provision (SOP). The research will focus on the case study of behaviour change approaches in the transport planning sector in England. This chapter therefore sets the basis of the theoretical arguments of the research, setting the wider policy and theoretical context.

[5] Shakespeare, W. (1963) *As You Like It*, London: Signet Classics, Act 7, 140, pp77.

2.2. Government tools for creating behaviour change

Changing behaviour is often sought for a particular reason, often for environmental or health reasons by the government and its agencies (Bonsall *et al*., 2009). Governments therefore play a significant role in influencing how people behave. This can be achieved through both regulatory and non-regulatory measures (House of Lords, 2011). Figure 2-1, created by Nuffield Council on Bioethics in 2007, shows a ladder of interventions available to government or any other body or organisation wishing to change behaviour. Whilst other models of behaviour change have been developed, such as Michie *et al*.'s (2011) *capability*, *opportunity* and *motivation* model (COM-B), this research uses the *Ladder of Interventions*, as this was model included in the DfT's 2011 White Paper: *"Creating Growth, Cutting Carbon – Making Sustainable Local Transport Happen"* [2011 White Paper] (DfT, 2011b), which introduced the LSTF.

Regulatory policies include legislation and taxation that are designed to eliminate, restrict or disincentivise a choice. An example of this in the UK would be the implementation from 2007 of legislation and taxation of tobacco products that restricted their use in certain locations (work environments) (Bauld, 2011). Sims *et al*. (2013) found that there was a correlation between the introduction of smoke-free legislation in England and a reduction of emissions to hospital for asthma, by 4.9%, in the first three years after the ban was put in place. The creation of new legislation and its enforcement influenced social norms around smoking.

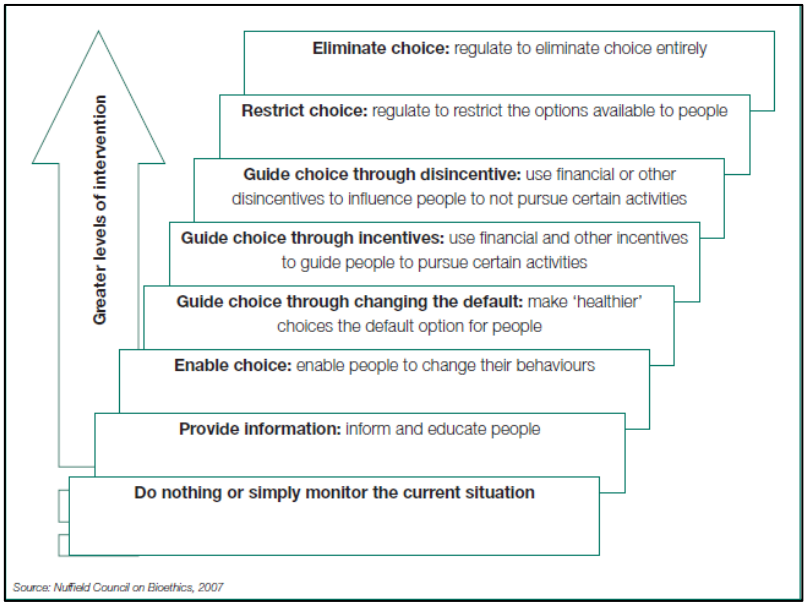

Figure 2-1 Ladder of Interventions (DfT, 2011b). Source: Nuffield Council on Bioethics, 2007. Contains public sector information licensed under the Open Government Licence v3.0.)

This change in where and when smoking occurred was due to a combination of a social marketing campaign in tandem with the implementation of the new law. Hastings and Domegan (2014: 8) explain that the campaign was designed to appeal to *"social status and sophistication"* that smoking was perceived to give a smoker. The message instead focused on the *"maturity and strong-mindedness"* of people who chose not to smoke, rather than the health impacts. This type of approach to behaviour change is a non-regulatory approach and sits on the first rung of the ladder of interventions in Figure 2-1. The following section will therefore critically examine the behaviour change options available to government, both regulatory and non-regulatory.

2.2.1. Legislation

The demand for travel is created by social norms and expectations that influence where people live, work, shop and partake of leisure activities (Triandis, 1977, Ajzen, 1991, Schatzki, 1996). How this demand is met and how travel is undertaken is influenced by the transport network available, understanding of how to use the network and expectations of what is the most appropriate mode for a particular journey. For many people this involves the use of a private motor vehicle to travel.

The use of private motor vehicles is controlled by strict legislation and taxation. Most motorised vehicles that use the highway network in the UK are required to pay Vehicle Excise Duty, a form of taxation (UK Government, 2013a). This can only be obtained by vehicle owners with insurance to drive the vehicle and an MOT certificate that proves the vehicle is roadworthy (*Ibid*, 2013). In the UK, wearing seatbelts is standard practice for drivers. However prior to 1983, before this was made compulsory by government legislation, just 40% of travellers chose to wear one compared to 93% after the legislation came into force (DfT, 2010c). The people who choose not to wear a seatbelt (unless exempt) risk a £500 fine if caught (UK Government, 2014b). This example demonstrates the power of legislation in altering behaviour away from actions that can damage health. Once the legislation came into force the majority of people switched their behaviour to comply with the new law. The introduction of this new law was supported by a social marketing campaign designed to make people aware of the dangers of not wearing a seatbelt sponsored by the Royal Society for the Prevention of Accidents that had been running since the 1960s (RoSPA, 2014).

It follows that a possible means of reducing GHG emissions and other pollutants from private motor vehicles could be to restrict or ban their use through the introduction of new

legislation. This would produce benefits to air quality at a local level as well as reducing CO_2 emissions. Unfortunately it is not as simple as this. Using the example of smoking again; although the statistical link between smoking and lung cancer was identified by Doll and Bradford Hill (2004) in 1954, it was another four decades before the link became generally accepted. The link between emission of pollutants from many sources, including private motor vehicles, and their influence on respiratory and cardiovascular illness (Defra, 2007) has not generated the same level of debate in society as the impacts of smoking at present, despite the impact on health. Exposure to air pollutants can reduce life expectancy to those exposed by an average of six months (Defra, 2010). The World Health Organisation estimated that 3.7m deaths worldwide in 2012 were attributable to air pollution (WHO, 2012), although not all sources are attributable to road traffic. Burning coal, oil and wood for cooking, emissions from industry and power generation in are also causes of air pollution (*Ibid*, 2012).

Although the EU set stringent emission reduction standards for new private motor vehicles (Dings, 2013), they still continue to produce pollutants. Action is only taken by government officials when there is a visible impact of air pollution such as smog. This was demonstrated in Paris in March 2014 when a traffic ban was put in place to prevent half of all vehicles entering the city. This ban was removed after one day once the pollution level had dropped significantly (Penketh, 2014) and the problem was perceived by the authorities to have gone away. In England in April 2014 the Department of Health's (DH) response to the severe air pollution incident in the south east of the country was to advise schools to keep children in doors during school hours (Campbell and Halliday, 2014) to reduce exposure to the smog. This brought the problem back into the media spotlight, if only in the short-term.

The issue of air quality is seen as a short-term problem often when there is visible evidence of poor air quality, due to certain weather conditions. This makes the introduction of legislation to restrict car use on air quality ground very difficult to implement. For the most part air pollutants from private motor vehicles are too small to be visible or emitted as a gas and this lack of visibility of the issue makes it difficult to convince people of the problem or see the link to the health impacts that were attributable for nearly 29,000 deaths in the UK in 2008 (COMEAP, 2009).

CO_2 emissions from private vehicles have generated more discussion politically than local air quality issues. In 2001 the UK Government adjusted Vehicle Excise Duty in relation to the vehicle's CO_2 emissions. This included changing the company car tax system in the UK so

that the level of CO_2 emissions emitted by the vehicle was incorporated into the amount of tax levied (Potter and Atchulo, 2013). This legislation has had a significant impact on the number of new cars with diesel engines being purchased, with the number of new diesel cars registered in 2012 in the UK exceeding 1 million for the first time: accounting for half of all cars registered (DfT, 2013b). Whilst legislation has helped to reduce the CO_2 emissions from private motor vehicles, with the average emissions (g/km) falling 25% since 2001 (*Ibid*, 2013b) nitrous oxides (NO_x) and nitrogen dioxide (NO_2) emissions stabilised between 2002-2008 rather than reduced, as had been expected by the government (Carslaw *et al*., 2013). There are now more diesel vehicles as a percentage of the UK vehicle fleet contributing to higher levels of NO_x and NO_2 emissions compared to petrol vehicles than in 2002 due to the tax breaks for owning a diesel car (Potter and Atchulo, 2013). This increase in diesel vehicles in the UK is unlikely to bring an improvement to air quality unless changes are made to how and when private motor vehicles are used. This example demonstrates the difficulties of legislating on environmental issues if certain types of pollution reduction are prioritised over others, as it leads to a continuing detrimental impact on the environment.

The 2011 UK Census found that 77% of households had one or more private motor vehicles (ONS, 2014). Whilst not all adults within the household will have access to a car all the time, the National Travel Survey estimated that 36 million people in the UK held a driving licence in 2012 (DfT, 2013c), which equates to roughly 70% of the adult population (ONS, 2013). The use of the private motor vehicle has become embedded in the activities that many people undertake on a daily basis, as it provides the most practical solution to solving the problem of the distance between where people live and the activities they wish to undertake. This distance creates the need for travelling. When discussing how buildings are now designed to accommodate air-conditioning and how this locks people into high levels of energy, Shove (2003) describes the effect as *'ratcheting'*. Similarly the spatial reorganisation of our towns and cities through the growth of suburbs has ratcheted the need for many people to travel by private vehicle. Changing or modifying the way that people use their cars is therefore a difficult challenge due to the embedded nature of the private motor vehicle in everyday society. This means that creating the change is not as simple as switching to one mode to another, as the chosen mode of travel is generally the one that makes the co-ordination of everyday life as easy as possible (Southerton, 2003).

It is likely that the introduction of restrictions on drivers, who are financially committed and can be emotionally bonded to their vehicles (Sheller, 2004) would be met with hostility by the general public and the media. Learning to drive is a rite of passage for many people

associated with freedom and rebellion (Goodwin *et al*., 1991) and it is this financial commitment and emotional bond along with the practical necessity of private vehicle ownership that needs to be tackled to create a change in behaviour. This highlights the difficulties faced by the government in introducing legislation that favours environmental (and health) protection over and above the notion of choice and peoples' right to drive.

2.2.2. Choice

Since the government of Margaret Thatcher (1979-1990) UK politics has been centred on neo-liberal policies of governance. Neo-liberalism is based on the assumption that private companies, individuals and market forces are the best means of providing economic growth and social welfare (Bockman, 2013). The neo-liberal UK Government policies since 1979 have focused on providing choice for individuals accessing public services (Jarvis and Alvanides, 2008), rather than placing restrictions on people through the use of regulatory interventions. An example of the government providing choice to people is the *Education Reform Act 1988,* which established UK league tables of how schools were performing and gave parents the theoretical 'choice' to send children to a school they preferred (Gillard, 2011). Choice does not always exist for popular schools due to the sheer number of applications (Jarvis and Alvanides, 2008).

Jarvis and Alvanides (2008) argue that the creation of an education market choice only exists for those who can afford to be *'system-savvy'*, and found that parents from lower income backgrounds in Newcastle tended to send their child to the school that is closest to where they live, even if this school is *'poor'* as determined by the market created by the education system. Removing barriers of inequality (in terms of which school your child can attend) does not equate to equity of choice, as some choices still fall outside an individual's control (Le Grand, 1991). Lack of access to a private motor vehicle may therefore be a contributory factor in limiting some peoples' ability to exert the choice given to them by the education market.

Whilst this increase in choice has allowed people to choose a *'better'* school for their children it can tie them into additional journeys in the morning rush-hour (between 08:00 and 09:00). With the additional distance and time required to complete the journey to a school that may be in another part of the town, many people will ultimately choose the easiest option under current conditions: which is often driving. This ties them to the use of a private motor vehicle. Thus the creation of *'the market of school choice'* has led to parents driving their children to the *'best'* school in the area (Jarvis and Alvanides, 2008), even when this can be in the

opposite direction to their ultimate destination during the rush-hour (Shaw and Docherty, 2014), which is usually their place of work. By providing choice the government has, for many families, added complexity to the morning commutes, locking them into unsustainable travel modes and, as an unintended consequence, increased congestion and pollution in the morning rush-hour. This environmentally unsustainable behaviour could be reduced through legislation such as re-introducing the default position that children attend the school closest to their home address (Black *et al*., 2001), giving families a greater choice in how they travel in the morning rush-hour. This would however require a change to legislation, which the incumbent government is unlikely to take as it does not fit with the neo-liberal ideology of *choice* and is unlikely to be popular with voters who now have an expectation that they should be able to choose their favoured school for their child.

The supposed benefits of the neo-liberal approach are identified by Disney *et al*. (2013: 84) who suggest that: *"Policies that give choice and support to individuals, rather than those that force them to change their behaviour, are more likely to promote autonomy and thus be successfully internalised"*. The reasoning is that outright restriction of behaviour can have the adverse effect, as people will attempt to circumvent the rules in their favour, whereas giving people a choice allows them power in the decision making process. Disney *et al*. (2013) believe that charging for some environmental *'bads'* can be a useful approach, as it gives people the choice to still partake in an activity, albeit at an increased cost. This approach to increasing costs but retaining choice has had beneficial impacts in other areas. For example Sivarajasingam *et al*. (2014) identified that the increase in the cost of a unit of alcohol has correlated with an overall reduction in the number of admissions to Accident and Emergency due to violence. Whilst *"correlation cannot be used to infer causation"* (Jones, 2010: 113), in Sivarajasingam *et al*.'s example it is possible that the higher pricing of alcohol has disincentivised harmful drinking, however, the choice of whether to drink still remains for people.

Allowing choice, whilst politically important, can prove difficult when attempting to address the challenges of GHG emissions due to the scale of the change required, a point admitted by Disney *et al*. (2013), as each individual's choices continue to have a detrimental impact on the environment. Levett *et al*. (2003) suggest that changing individual behaviour is one of the most difficult elements for the government to alter as it is often easier to deal with and regulate the supply side. In relation to GHG emissions, the UK Government, as part of the European Union, have decided to enforce emission standards on vehicle manufacturers through regulations such as EU Regulation 443/2009 (EU, 2009). Regulating the

manufacturers does not change individual behaviour through restricting use, but instead reduces emissions instead whilst people continue to do what they did before. EU Regulation 443/2009 stated that new cars sold by 2020 should achieve 95g/km of CO_2 emissions on average by 2020. Although this does not reflect real-world conditions, only test conditions (Dings, 2013). This in theory places the burden on the manufacturers to improve efficiency and reduce emissions rather than the end user reducing the need for them to alter their behaviour. A problem with tackling just one side of the problem, in this this case the supply side, is that consumption levels continue to grow to cancel out the savings created and this is known as the *'rebound effect'* (Berners-Lee and Clark, 2013). The design of more efficient engines and the lack of any curbs on users, means that, as the cost of travelling reduces, people can travel longer distances due to the cost per kilometre travelled reducing through the efficiency savings.

In practice, placing restrictions on individuals and how they travel in the UK can be met with fierce opposition. Shaw and Docherty (2014) argue that any national road-user charging scheme is seen as an *'extra tax'* for people who have already paid to use the road and the nuances of the arguments for it are not expressed in media discussions (Vigar, 2002). This makes politicians fearful of upsetting *'middle-England'* (see Section 1.3.1) with what are perceived to be anti-car policies by adding what would be perceived as further costs being added to travelling by private motor vehicle when the use of this vehicle and the fuel is already taxed heavily. The Government has therefore tended to seek alternative non-regulatory methods of behaviour change.

2.3. Social Marketing

Social marketing is the first rung on the Ladder of Interventions shown in Figure 2-1 (page 19) and is a non-regulatory approach to behaviour change. Kotler and Zaltman (1971: 5) defined social marketing as:

> *"Social marketing is the design, implementation, and control of programs calculated to influence the acceptability of social ideas and involving considerations of product planning, pricing, communication, distribution and marketing research."*

Social marketing is therefore designed to use the concepts of commercial marketing to deliver socially beneficial changes to the way people behave for both the individual's and society's benefit. Within the UK, this is predominantly through the use of marketing campaigns. In the context of health and nutrition, Dann (2009) explains that more recent

social marketing campaigns in the UK delivered by the health service are designed to improve positive behaviours to create positive outcomes for the individual, their group/family and society as a whole. An example of this would be the UK Government's *Change4Life* Campaign (NHS, 2014). This marketing campaign has been designed to encourage people to eat healthier and undertake more exercise to improve overall health.

Social marketing schemes has been criticised for being too narrow and failing to apply and grow through the application of other theoretical models (Spotswood *et al.*, 2011). Marketing is based on four variables known as the *4Ps*: *Product, Price, Promotion* and *Place* (Hastings and Domegan, 2014), and these form the basis of social marketing theory (Wood, 2008). Wood (2008) argues that the application of these concepts can be difficult to apply successfully in practice and cites experience of applying the themes within the health service. Both Wood (2008) and Spotswood *et al*., (2011) argue that social marketing would benefit from exploring the potential benefits that alternative theories of behaviour could provide to social marketers, with Spotswood and Tapp (2013) recommending the use of Social Practice Theory, the topic of in Section 2.5, as the field of social marketing is dominated by psychology-based approaches to behaviour. This narrow focus can limit the success of initiatives.

2.4. Creating Sustainable Behaviours

The House of Lords Science and Technology Select Committee's report (2011) on behaviour change [The House of Lords Report 2011] highlighted two key gaps in existing knowledge surrounding non-regulatory behaviour change approaches. Firstly, the report indicated that from the evidence gathered in compiling the report:

> *"We were given no examples of significant change in the behaviour of a population having been achieved by non-regulatory measures alone"* (House of Lords, 2011: 33).

The report highlighted that most of the existing behaviour change approaches adopted by government did not provide evidence of behaviour change initiatives designed to change the behaviour of the whole population. The second issue also identified in the quote above related to the success of non-regulatory approaches in changing behaviour. The report found that many of the non-regulatory measures were less effective if they were not supported by legislation. The report concluded that a range of policy tools, both regulatory and non-regulatory would provide the most effective means of creating sustained changes to behaviour.

The House of Lords report, in addition to discussing psychology-based approaches identified the imperative to change institutions and society (Cairns *et al*., 2014). The behavioural economics' domination of the areas of consumption and climate change in the UK frames the issue as one of human behaviour (Shove, 2010: Shove, 2011). This narrow framing of the problem, based on individual agency, ignores the multitude of other factors that influence how and why actions are performed. Shove (2010: 1281) 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"*. At present behavioural economics 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 (Kollmuss and Agyeman, 2002: Vigar, 2002: Blake, 1999), where an individual has pro-environmental values, but still continues to undertake environmentally damaging behaviours such as driving even when they are aware of the environmental impact. These actions can occur despite non-regulatory campaigns that are designed to steer people towards environmental behaviour and this shows the importance of other factors within the decision-making process of people when they travel.

To address this issue, some departments within government however are looking at alternative approaches to behaviour change with academic researchers from bodies such as the Sustainable Practices Research Group (SPRG, 2014). The Department for Environment, Food and Rural Affairs (Defra) commissioned a report from SPRG in 2011 to summarise academic research into habit in relation to creating and maintaining sustainable behaviours (Darnton *et al*., 2011). The report explained that psychological approaches identify habits as a factor that influences behaviours, whilst the sociological approach of practice theory sees habit as: *"routine practices, taken as a whole and arising from the ongoing interactions between individuals and social structures, institutions, or rules and resources"* (Darnton *et al*., 2011: 14). Rather than focus on the behaviour at the point of decision making, as behavioural economics does the report focuses on the means available to change habits from both a psychological approach and a sociological approach in order to draw out the findings from both perspectives. Both Darnton *et al*. and the House of Lords Report 2011 concluded that a number of behaviour change tools would be required if habits were to change due to policy interventions (Darnton *et al*., 2011: House of Lords, 2011).

2.4.1. Socio-Psychological Models of Behaviour

Darnton *et al*. (2011) identified two models that included habitual behaviour as part of the models: Triandis' Theory of Interpersonal Behaviour (Triandis, 1977) and Ajzen's Theory of Planned Behaviour (Ajzen, 1991). Both are social-psychological models (Darnton, 2010). In its simplest form Triandis' model states that behaviour is a mix of *intention*, *habits* and *facilitating conditions* (Chatterton and Anderson, 2011). Intention is made up of attitudes, social factors and emotions that all influence the decision made by an individual. The situational setting of where this behaviour change takes place is an important factor in how and why the behaviour occurs. This is because cultural references are important in determining how a behaviour is perceived (Triandis, 1977), as *"Culture is to society what memory is to the person"*, Triandis (1989: 511). Social and cultural factors influence the social norms relating to how and why people act. This implies that it may be difficult to develop a policy that will work in the same way nationally, as regional variations in society and culture may exist. This means that the policies may have unintended consequences, as discussed in Section 2.2.2, in relation to the Education Act 1988.

A second example is Ajzen's Theory of Planned Behaviour (1991). As shown in Figure 2-2, it places importance on an individual's intention to perform a certain type of behaviour, with the stronger the intention meaning the greater likelihood the behaviour will be performed (Ajzen, 1991). Bedford *et al*. (2010: 1-2) argue that everyone is different and that: *"For each individual, different motivations interact in a variety of different ways producing a unique pattern of behaviour"*. This suggests that it is impossible to predict accurately how each individual will react, although certain factors mean there is a greater chance of being able to provide an educated guess as to how they may behave. Ajzen (1991) argues that availability and opportunity and resources (time, money, skills and co-operation of others), each determine how much control an individual has over their behaviour.

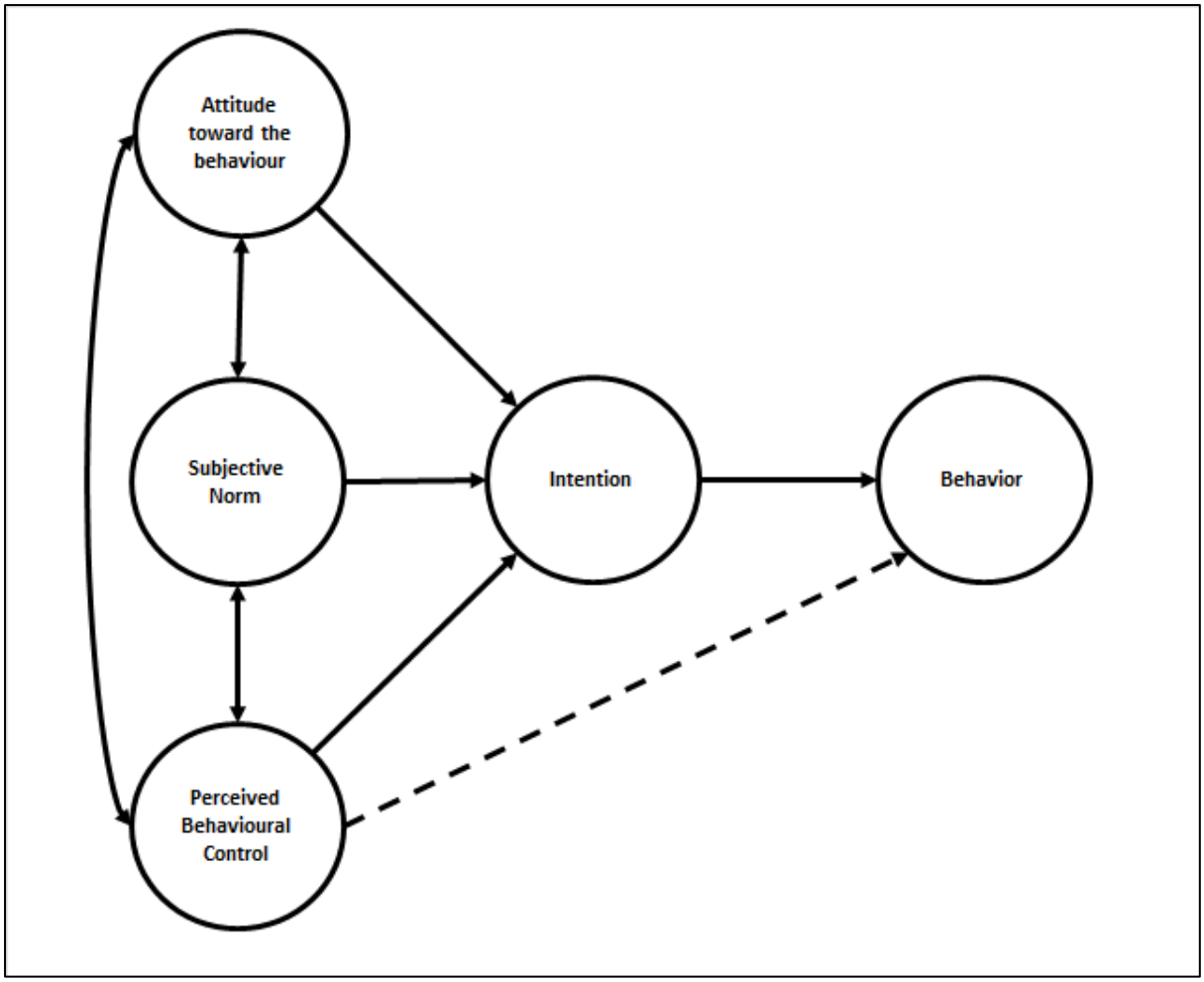

Figure 2-2 Ajzen's Theory of Planned Behaviour (Adapted from: Ajzen, 1991). Used with permission of Elsevier.

Bamberg *et al*. (2003) applied the Theory of Planned Behaviour through the introduction of a pre-paid bus ticket and how this increased bus use among college students. The authors found that by intervening through providing this change to the normal behaviour it was possible to influence the intentions and behaviour of the students. The University of the West of England (UWE) utilised this approach by combining a prepaid bus pas with the university owned accommodation fee to incentivise students to travel in by bus. In the first year this lead to a 25% increase in patronage on the university run bus services and from the campus (Ward, 2011).

The Theory of Planned Behaviour challenges the notion of traditional economic theory that an individual will always make a rational choice, as these factors can change rapidly for an individual. For example an individual's decision on how to travel to work may be influenced by commitments such as the school run, shopping, or the weather, all of which can change

on a daily basis. The less control an individual has over external factors the less likely they are going to be able to make a decision to change mode. The Theory of Planned Behaviour does suggest however that more control the individual has the more predictable the behaviour will be. Neither Triandis' nor Ajzen's theories are included as part of the behavioural economics models discussed in Sections 1.1.2 to 1.1.4, despite both identifying the importance of habit in behaviour. This is important, as it demonstrates that the approach to behaviour change currently being used by the UK Government ignores this important psychological element of how decisions are made. Many factors influence these choices and alternative frameworks have been developed to capture these differences in why people act or perform in a certain way that may provide an alternative means of reducing GHG emissions through changing behaviour.

2.4.2. Four Dimensions of Behaviour

Chatterton and Wilson (2013) have further clarified the need for this range of tools with the creation of the *'Four Dimensions of Behaviour'* (4DB) framework. As explained above, behaviour is complex, with many factors influencing how an individual will act, and Chatterton and Wilson argue that the prevalence towards behavioural economics by the government means that this creates a narrow set of tools, which may not be appropriate for all types of behaviour change. The authors argue that for example the changing of wording of a tax letter may be successful in changing behaviour, but this approach may not work when trying to achieve travel mode shift, as the behaviour is completely different and multi-faceted. Chatterton and Wilson (2013: 6) in defining of the multi-faceted requirements of behaviour change use Abraham Maslow's quote: *"It is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail"*. In the analogy, whilst the hammer is an extremely useful tool, there are other tools that can be more appropriate, such as screwdrivers when using screws. It is important therefore to understand what alternatives there are for policy-makers and which are appropriate for changing travel behaviour in each context.

The 4DB framework only uses the term *'behaviour'* in reference to observable actions to avoid the theoretical discussion between psychology and sociology (Chatterton and Wilson, 2013), as the terminology differs between the fields. This enables policy-makers to decide which approach is the most suitable in regard to the type of behaviour, or the observable action, they are trying to change. Chatterton and Wilson's framework, shown in Figure 2-3, allows a policy-maker to identify: the actor they wish or need to change; what influences the

behaviour; how the behaviour relates to time; and how the behaviour inter-relates with other behaviours. The categorisation of the behaviour type identified will allow the policy maker to consider appropriate theories and models of behaviour, and relevant examples of polices for similar behaviours and consequently develop a behaviour change approach that is likely to have greatest impact.

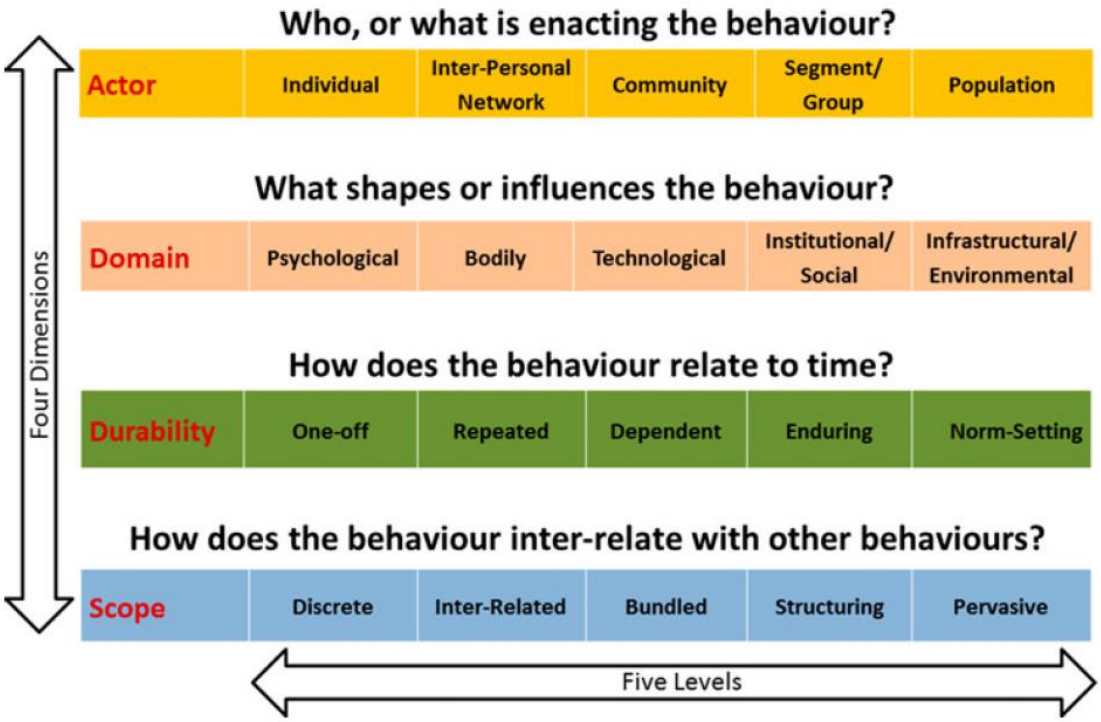

Figure 2-3 The 4DB Framework (Source: Chatterton and Wilson, 2013). Used with permission of Taylor & Francis Group.

The 4DB framework enables a policy maker with a new tool to identify the type of behaviour they are attempting to change in order to decide whether it is the most appropriate. This provides policy makers with a range of tools to ascertain which is the most relevant to their research. One of the potential set of theories that could be explored and utilised through this framework is the sociological theories of social practice.

2.5. Theories of Social Practice

Social Practices differ from psychology-based approaches, as they are based on culturist theories of actions, rather than individual action. The American Psychological Association (2002: 8) defined culture as:

"The belief system and value orientations that influence customs, norms, practices, and social institutions, including psychological processes (language, care taking practice, media and educational systems) and organisations (media, educational system)".

Social practice looks at a wider perspective to identify the factors within society that influence why actions are performed in a certain way.

Several reports have been commissioned examining the practicalities of implementing sociological theory into government policy including: Bedford *et al*.'s *Motivations for Pro-environmental Behaviour* in 2010 and Darnton *et al*.'s *Habits, Routines and Sustainable Lifestyles* in 2011 for Defra (discussed in Section 2.4) and Chatterton and Anderson's *An introduction to Thinking about 'Energy Behaviour': a Multi Model Approach* in 2011 for DECC. The reports explore the potential for theories of social practice to be delivered or for through behaviour change initiatives to take account of Social Practice Theory (SPT). At the time of writing the report there were no examples of the practical application of the theory.

Social practice research is different to psychology-based approaches as it looks at the *'practice'* that is being undertaken, rather than focusing on the individual undertaking the action. For the purposes of SPT the individual is no longer the unit of inquiry (Chatterton and Anderson, 2011). This can make it difficult to deliver policies based on SPT, as Shove *et al*. (2012:140) explain: *"social theories do not lead directly to prescriptions for action"*. This potentially makes a policy difficult to explain to politicians and civil servants who currently develop policies around climate change that are based on individual choice and responsibility. However, Schatzki (1996: 8) 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".

Behaviour change interventions are focused at the point where an individual is about to engage in an activity, for example, when they commute. Creating an intervention based on one point in an individual's life fails to look at the individual as a whole. This means many of the factors that influence why a practice has been performed in a particular way are excluded from the design of the intervention. Continuing with the example of a commuter,

this person 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 they are being viewed. This leads to complex behaviours such as trip-chaining (Shaw and Docherty, 2014), which are not adequately resolved by individual behaviour change approaches and the modelling techniques used within the transport planning sector. Each of these *'identities'* is created by the practice being performed. In addition, each factor (including parenting and working), along with a host of other factors influences how practices are created and performed. This complexity is missed in individualistic behavioural approaches such as *"nudge"* which look specifically at the point an action is undertaken. This issue highlights why other theories need to be explored, assessed and, if necessary, dismissed when considering the appropriate behaviour change tool that can be applied.

At present there is no single unified theory of practices. Many of the current interpretations which will be discussed in this section have evolved from Anthony Giddens' (1984) and to a lesser extent Pierre Bourdieu's work (1984). Giddens' *structuration theory* is focused on the structures in society rather than the function these structures perform (Giddens, 1984: 16). Giddens' (1984: 17) description of a structure is: "*the structuring of properties allowing the 'binding' of time-space in social systems"*. Within this concept Giddens is referring not just to the physical structures, such as buildings and highways, to the social structures such as government and businesses that give these material elements meaning. These social structures provide the rules that govern how practices are undertaken, and this why Giddens places such importance on them within structuration theory. This is also 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 agency, the activities of individuals and institutions, how they form and reproduce practices, and the rules and structures that govern them.

Creating the change that is required to reduce emissions from transport sources can be extremely difficult and complex and is not a quick-fix. Delivering a social practice approach may just require *"getting multiple stakeholders to continue to do what they are doing, just slightly differently"* (Wilson and Chatterton, 2011: 22). This is extremely challenging for any policy-maker, as many of these stakeholders may sit outside their sphere of influence of the transport planning officer within local government.

2.5.1. What is a Practice?

Giddens (1984) sees practices as based on practical consciousness and the repetition of actions that produce social structures (Gram-Hanssen, 2010a), whilst Bourdieu (1984) argues that these practices are subconsciously embedded in the things that people do and this maintains and reproduces routines and practices (Gram-Hanssen, 2010b). A practice is a *'system of conditions'* (Bourdieu, 1984: 172); and these conditions influence how the practice is performed. Schatzki (1996: 89) defines a practice as: *"a temporally unfolding and spatially dispersed nexus of doings and sayings*". The nexus is the structure and these doings and sayings remain linked and co-ordinated to form a practice (Warde, 2005), and both doings and sayings are of equal importance. A practice does not exist, but is a means of interpreting observable actions that are often repeated by practitioners. Practices are bound by a system of internal and external influences that influence how they are performed which adds a layer of complexity for anyone trying to interpret observable actions.

Shove *et al*. (2004) suggest that practices are carried by people, who are recruited to this activity. It is within these carriers that the practice survives. Shove and Pantzar (2005) use the example of Nordic walking, a form of speed walking with two sticks, to explain how practices evolve. Nordic walking, as form of exercise has developed from a practice undertaken by people daily, to a form of exercise through the development of skills and new equipment to partake in the activity in a certain way. Nordic walking then developed through repetition by existing carriers and recruitment of new carriers of the practice.

Within the practices of travelling there are several different repetitive and routinised actions that practitioners undertake regularly, and these maintain and reproduce the system through the things people do and say. If commuting is viewed through a social practice lens for example the interpretation differs considerably from an individualist perspective. The need to commute in England 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 by public transport until the 1950s when an increase in the standard of living, combined with the availability of affordable private motor vehicles 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 of the practice have changed. Private motor vehicles became available to a wider percentage of the population after 1946 (Dudley and Richardson, 2000), leading to a drop in utility trips by foot and bicycle (Watson, 2012). Other factors, include the removal of 8,000

miles of railway track between 1963 and 1973 (Loft, 2006), and the parallel development of the motorway system (Charlesworth, 1984) altered the materials available for travel. These changes to the materials used for travel altered the meanings associated with travel. Similarly media perceptions of public transport being overcrowded, delayed and costly (O'Dell, 2009) were in contrast to portrayals of the car as *"representing freedom"* (Jain and Guiver, 2001: 578) when in reality the road network suffers from similar congestion problems to public transport.

Whilst commuting only represents 15% of all trips and 20% of distance travelled (DfT, 2013c) it primarily involves travelling during peak periods of the day and remains core to how the transport network is designed. The majority of commuter trips occur within these peak periods between 07:00-09:00 and 16:30-18:30. Commuting is a routine practice undertaken on a regular basis by people travelling to work. Buchanan *et al*. (1963) [The Buchanan Report] identified the important link between home and work in their report *Traffic in Towns* and this has influenced the design of towns and cities in the UK since the mid-1960s and the peak periods of traffic have continued to influence the design of transport infrastructure since the publishing of this Report.

Reckwitz (2002: 249) provides one of the most definitive descriptions of social practices 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"*.

The routinised element of a practice can be challenged, as it does not account for novice practitioners (Flyvbjerg, 2001) who are undertaking the practice for the first time, or a practice that is rarely undertaken. Reckwitz (2002) neatly brings 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.

2.6. 3-Elements Model

Schatzki (1996) 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 brings both the conscious and unconscious elements of practice

theory together within the boundaries of structuration. Shove *et al*. (2012) call Schatzki's approach *social practices* and in the development of the framework of the 3-Elements model, shown in Figure 2-4, they break a social practice down into three core elements in a similar way to Schatzki:

- **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 adopts Giddens' structuration theory, as it incorporates the duality of human activities and the systems that shape it (Shove *et al*., 2012). It attempts to merge the physical elements or materials that enable the practice to exist with the social systems that exist through meanings such as rules, and the human elements of competences and perception (within meaning). This makes the model potentially very useful for understanding how and why people behave in particular ways and offers the opportunity to create a change to this. Shove *et al*. (2012) place importance on each of the three separate elements, but also highlight the importance of the links that form between them. 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, as this change happens to practices over time.

As with any model, it is possible to criticise the 3-Elements model for its simplicity and the reduction of complex theory into a very simple framework. Shove *et al*. (2012) admit this, yet it still remains a useful tool for this research as it provides a starting point for understanding how and why practices are performed in a certain way.

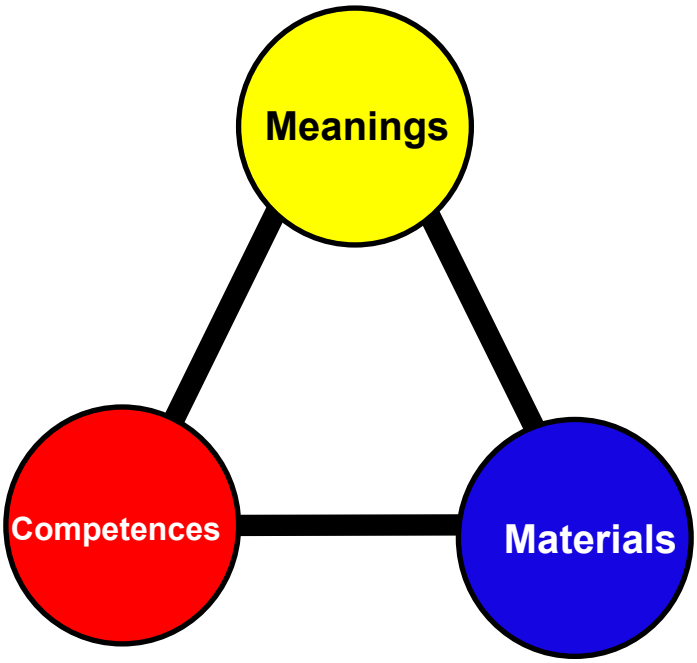

Figure 2-4 The 3-Elements Model (Adapted from: Shove *et al*., 2012). Used with permission of SAGE Publications Ltd.

Shove *et al*. (2012: 24) explain that *"Practices are defined by interdependent relations between materials, competences and meanings"*. When the links are broken, a practice changes or develops. For example the development of motorised transport changed the practices of travel, but also the meanings and competences associated with how and when people expect to travel. To change the way people travel towards more sustainable modes, it is important to understand how these breaks occur so that it is possible to maximise the benefits they provide. It is also important to understand if these breaks can be generated by policy-makers to create the opportunity change.

People often change their behaviour during an event that disrupts their everyday routines or practices. Disruptions occur regularly through natural and manmade events (Little, 2010). Some of these events can be predicted, such as road works or winter weather events (Williams *et al*., 2012) and some cannot, such as the Volcanic Ash Cloud which disrupted air traffic in northern Europe in April 2010 (Birtchnell and Büscher, 2011). Disruptions create a break in the links between social practice elements, often through the removal of materials such as roads being closed, competences, such as breaking a leg, or meanings, such as becoming a parent and in these circumstances a new or different practice emerges (Anable *et al*., unpublished). Anable *et al*. (unpublished: 5) explain that disruptions occur: *"to different actors in different contexts at different scales"*, and harnessing these breaks in the links to what policy-makers deem undesirable behaviour is essential for long-term change.

2.6.1. Materials

Materials are by definition the *'things'* that make a practice possible for the practice to be performed (Schatzki, 1996). Shove *et al*. (2012) include objects, infrastructures, tools, hardware and the body as material elements, whilst Giddens (1984: 93) calls materials *'resources'* and states that: *"resources are the medium through which social power is exercised"*. Governments are able to manage people through the availability of resources and this is in essence what transport planners do through the provision and maintenance of the transport network in a certain way that promotes private vehicle use. The inclusion of structural elements, such as materials, enable a practice to occur and this inclusion of this element in SPT differentiates it from psychological theories of behaviour.

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 physical in nature (Geels, 2004) and have significant levels of funding invested in them. This however is where transport planning officers have the greatest influence, as they control the provision of transport facilities. Technological changes may be slow for infrastructure, but they do occur. Carriageways that carry motor vehicles have changed significantly in the past 120 years as the design and technologies used to create carriageways have developed. This change to carriageways has been incremental, with times of innovation such as the construction of motorways between 1958 and the 1970s (Charlesworth, 1984). Parkin (2014) highlights the key impacts of the motorways on English society as:

- Adjusting the volume of activities (allowing firms to expand operations due to enhanced access);
- Changing the location of activities;
- Altering the timings of journeys;
- Creating mode change: to the car;
- Altering the co-ordination of activities;
- Changing route choice;
- Reducing journey time; but
- Increasing distance travelled.

Many of the materials travellers use and the infrastructure remains part of the background (Gram-Hanssen, 2010b), until it fails (Graham, 2010). Giddens (1984) states that material structures both constrain and enable practices. Shove (2003) and Wilhite (2009) both use the example of air conditioning systems in supporting the enabling of practices. The

materials required for comfort in hot countries, such as air conditioning units have influenced the design of other materials such as buildings (Shove, 2003) and private motor vehicles (Parkhurst and Parnaby, 2008), as well as the societal expectations of what is a *'comfortable'* temperature. The availability of materials such as air conditioning units have allowed economies to develop and flourish in regions that traditionally struggled due to harsh climatic conditions for human activity (Middleton, 1999).

In relation to the consumption of materials which generate GHG emissions, Shove (2003) argues that many studies focus on innovation and acquisition of materials, rather than how they are used. Shove argues that it is in the use of materials that consumption occurs. For example, the GHG emissions created by the consumption of fuel during the practices of travel by private motor vehicle are a material element of the practice, rather than the practice itself (Gram-Hanssen, 2010b). Bartiaux (2008) argues that GHG 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 involve the consumption of certain material elements, it is possible to identify where changes can and should take place in order to alter how people travel, and hence consequently reduce the emissions released into the atmosphere.

In relation to the importance of materials in transport, Shove *et al*. (2012: 46) argue that *"Canal systems and railway routes opened the way for more complex and more specialised systems of provision, innovation and distribution"*. 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 large quantities of goods quickly across land for the first time. The construction of the railway network in England in the 18th century (Loft, 2006) and the development of the motorway network in the UK between the 1960s and 1980s (Charlesworth, 1984) provided the materials to enable the mass movement people to travel significant distances in a relatively short period of time. The availability of these materials influences the meanings of how far people can and should be expected to travel. It is important for transport practitioners to understand the impact of the material changes they make have on society.

2.6.2. Competences

Whilst materials are an element of a practice, they are not used without the skills required to undertake the practice. For example having a ball does not make the game of football;

knowing what to do with it is also important (Shove *et al*., 2012). Reckwitz (2002) calls this *practical understanding*, which the practitioner requires to enable them to perform the practice. This can be learnt through 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: 20-21) proposes that there are five levels of competence: novice; advanced beginners; competent performers; proficient performers, and experts. 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). 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 in the existing practice 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 private motor vehicles, as they have spent money investing in the materials and developing the competences to drive.

Shatzki (1996: 89) states that: *"practising is learning how and improving one's ability to do something by repeatedly doing it and carrying it out"*. 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 competences of maintaining and running steam trains have been preserved by enthusiasts after the line closed in 1958 (Salmon, 2013). In this case the enthusiasts have retained the competences of maintaining and operating a steam engine (also retaining materials), when these competences have now fallen out of mainstream use.

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 a practice is performed. This is important to the current research project, as transport planning officers may be able to provide training in various different types of sustainable travel initiatives, which will influence the competence with which a practice is undertaken. By making this change they

may be breaking or disrupting the link between elements within a social practice, allowing a new practice to form.

According to Shove *et al*. (2012), when a competence moves through time and space it is 'abstracted' and transferred with the information codified so that it can be passed on to new practitioners. This abstraction of practices has occurred throughout history with the passing of knowledge and skills through trade corridors such as the 'Silk Road'. Middleton (2005: 59) cites the example from the Turpan region of China, where glacial melt-water is carried from the mountains through a series of man-made underground channels called *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 where a similar system known as *qanat* exists. The abstraction and the transfer of this technology has allowed the people of the Turpan region to become competent practitioners in water management and this has allowed them to develop other practices such as growing and harvesting fruits that would not be available to the region without the competence to develop and maintain the Karez system. This example demonstrates both the importance that travel has played in the development of societies across the World and the beneficial impact that new practices can have on the environment. This also shows how practices are interlinked as discussed in Section 2.6.4.

Many of the methods and tools used by transport practitioners in the UK come from the USA where modelling, economic and construction approaches to transport were developed in the 1930s in an attempt to manage traffic issues (Weiner, 1992). They were adopted in the UK, despite the Buchanan Report authors identifying that some critics in the US highlighted that freeways became congested as soon as they were built due to their construction opening the way for further development (Buchanan *et al*., 1963). The Buchanan Report concluded that these issues would be resolved by regulation of construction and development that were stricter in the UK (*Ibid*, 1963). Practices can develop separately from each other and can co-exist in space and time. However, with globalisation competences of performing a practice become standardised over time and space (Shove *et al*., 2012). This is where the third element of the model, meanings, which are important for understanding how and why practices exist, how they are performed, and why their performance can differ in time and space.

2.6.3. 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 in different cultures. For example, the drinking of tea is performed in very different ways 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 may mean *'thank you'* or the contrasting *'after you'* depending on context. This differs from the formal meaning of this action from the Highway Code[6] which states that the flashing of lights should be done only to warn other road users of your presence (UK Government, 2013a: Section 110).

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), although the competence and materials are still required. Taking the practices of driving, people in the UK are exposed to these practices almost daily through representation in the media (Geels, 2004), friends and family, and infrastructure that has been designed to enable travel by car. People do not necessarily think about the meanings of driving on a conscious level, yet the meanings are culturally embedded and they help to sustain the practice. This can make changing meanings very difficult for policy-makers and also highlights that the quick fixes suggested by the behavioural economic approach may be difficult to sustain within society if no cultural meaning is developed alongside the intervention being developed. This is because the meanings associated with private motor vehicle ownership and use of the vehicle are not challenged by most policies, making lasting change difficult to deliver. The embedded nature of the meanings that exist around private motorised travel also need to be challenged to create change to the practices of travelling.

Sociological approaches tend to focus on the symbolic meanings of the use of items (Warde, 2005), in a way that is not possible through (or at least only peripheral to) psychological behaviour change approaches. For example, Wilhite (2009) suggests that a fear of sweat and odour may have contributed to the reduction of cycling levels, and Watson (2012) suggests cycling became 'abnormal' as the meanings shifted from a form of travel to a form

[6] The Highway Code is a book published in the UK by the Driving Standards Agency outlining the rules of the Highway network in the UK.

of recreation. This change in meaning with regard to cycling did not occur in other European countries such as the Netherlands, Denmark and Germany. Meanings can come from many places including rules, laws and rights. However normative rules, such as values and norms also exist and influence practices (Geels, 2004). Rules can be private or shared within society and form part of the structure that constitutes a practice. This is important in understanding how practices are formed, sustained, how and why they disappear and how they might be influenced.

2.6.4. Bundles and Complexes of Practice

As mentioned in Section 2.6.2, 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 purchasing flowers, which involves several smaller practices that are linked to enable this practice to exist. Interestingly in his example of performing this task Schatzki mentions the *need* to drive to the florist to make the purchase. This shows how ingrained driving is within society when it is used by eminent sociologists to illustrate examples of everyday practices. This example also demonstrates how practices have changed as it is now possible to order flowers for online for deliver, negating the need to for the purchaser to travel to the florist.

Building on Schatski's conceptualisation, Shove *et al*. (2012: 81) 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"*. The complexity of practices means that there are different meanings, materials and competences from connecting practices all linked or bundled together. The bonds between links can be stronger or weaker depending on the connection between the elements. The practices of driving is formed of and linked to a series of discrete practices including things such vehicle maintenance, fuelling, journey planning and the act of operating the vehicle. These merge to constitute the practices of driving. Discrete practices are *'black-boxed'* into one practice (Shove *et al*., 2012).

The practices of driving also forms parts of other practices, such as commuting and shopping, or buying flowers. 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 practices 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 and the consequent increasing lock-in is referred to by Shove (2003), as a

‘*ratcheting’ effect*. Shove *et al*. (2012: 13) state that: *“The move from a niche to landscape is one in which linkages become denser and paths more dependent”*. Understanding how and where driving fits into other practices that form daily life is essential in the design of travel behaviour change initiatives.

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 use of 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). These materials are non-transport technological advances (Hubers and Lyons, 2012), yet they influence how people travel. This example of time management also demonstrates how ingrained private motor vehicle use is within society, as it enables people to perform a bundle of practices across a greater geographic area whilst still being able to create the desired *‘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.

None of this complexity is captured in behavioural economic theory. Triandis’ and Ajzen’s behavioural models simply refer to ‘social factors’ as a simplistic term for referring to this complexity. Yet this complexity impacts how people travel and the GHG emissions produced. By assessing the elements of a practice as well as the bundled and associated practices this research aims to enable transport planning practitioners to enhance and expand the behaviour change tools available to them and address the limitations of psychology and infrastructure-based solutions.

2.6.5. Emergence, stability and disappearance of practices

Practices exist through time and space and within a socio-technical regime. Geels (2002: 1257) uses the definition of this system as: *“A ‘seamless web’ in which physical artefacts, organisations, natural resources, scientific elements, legislative artefacts are combined in order to achieve functionalities”*. Shove *et al*. (2012: 54) write that *“defining and classifying an emergent practice is not something that any one actor can control”*. This makes it difficult for policy-makers to influence an individual practice. The original purpose of the 3-Elements model was not as a management tool, but as an alternative means of understanding society.

The model does appear however to provide an alternative means of understanding travel that can be utilised to understand how and why changes to the practices of travelling occur.

Elements can be relatively stable, e.g. carriageways, although their use can change over time. For the practice to exist the elements of materials, meanings and competences need to be in place (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 in a different form or lead to its disappearance. Shove *et al*. (2012) use the example of automobility in wealthy industrialised countries based around private motor vehicle ownership. Shove *et al*. cite the work of Sheller and Urry (2000: 737) who argue that automobility altered how people do things, producing: *"a distinct way of dwelling, travelling and socialising through an automobilised time-space"*. 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 embedded into the practices of everyday life due to incremental changes or sudden 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 or not a new technology is adopted is bound up not just 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 is a personal electric vehicle designed to enable short distance mobility around towns, potentially reducing the need for cars in cities. However, in 2006 the UK Government legislated against the Segway's use on the highway network, meaning that they could not be used for travelling around in the UK on any part of the highway network (DfT, 2006). This legislation prevented the Segway from becoming a normative means of travel in the UK. The practices of riding a Segway still exists, but it is associated with recreation rather than utility.

Watson (2012: 494) 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"*. This is important for LAs who are attempting to alter travel practices as this can change the focus of what needs to change. Instead of investigating how the individual chooses to travel SPT

looks at the ‘unsustainable’ practice performed. When you can identify the layer or layers at which this practice occurs, it may be possible 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 the heating and cooling of buildings to reduce CO_2 emissions. The Japanese Government amended existing regulations and through social marketing emphasised to property owners that no heating or cooling could occur in buildings between 20°C and 28°C. If people were hot or cold they were encouraged to remove or add clothing as appropriate. Added to this, the Japanese Government helped to alter the perception of the business suit and therefore the meaning of appropriate office attire. This was achieved through many prominent politicians dressing in a more casual manner. The clothing industry started designing new ranges of clothes to accommodate this development, providing the materials for people to dress more informally and therefore more comfortably for the temperature of the office. As a result of the Cool-Biz scheme Japan reduced emissions of CO2 by 1.7m tonnes in 2007 (*Ibid*, 2012). The competence of how to heat and cool a building was also changed by *Cool Biz* and this contributed to a significant drop in CO_2 emissions from building climate control (*Ibid*, 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. In the case of the *Segway* the UK Government’s decision regarding its use the highways did not allow this new material to break those links of the practices of travelling that are associated to the private motor vehicle.

Retrospectively schemes such as *Cool Biz* make changing practices successfully to reduce emissions look relatively easy, but the complexity of practices and their interconnected nature means that there may be many unintended consequences from any intervention. One example of an unintended consequence of a government policy comes from the state of Victoria in Australia, where legislation made it mandatory for cyclists to wear safety helmets to reduce the risk of serious injuries. This led to a reduction in the number of people cycling, which impacted on peoples’ fitness levels (Cameron *et al*., 1994): an unintended consequence caused by the policy-maker failing to understand the wider meanings associated with cycle use.

2.6.6. Applying Social Practice Theory to Policy

As Sections 2.5 and 2.6 demonstrate, social practice theories are complex and because of this their application is potentially difficult. This is because as Shove *et al*. (2012: 143) state:

> *"Choice assumptions in studies assume the choice of travel mode is made in abstract, without, social, cultural, geographical and historical settings influencing the decision."*

They should, however, be explored to see whether their application is useful to policy-makers, particularly as they are part of the system they are trying to change (Shove *et al*., 2012). It is possible that the 3-Elements model in particular may provide a useful tool for transport planning practitioners to deliver schemes in identifying interventions that help to reduce GHG emissions. This research will therefore use the methods discussed in Chapter 4 to critically assess the schemes being delivered through the LSTF using the 3-Elements model as a framework for understanding the likelihood they will create long-term change.

2.7. Research Question 1

Section 4 of the 2011 White Paper (DfT, 2011b) focuses on providing choice for travellers using the *'nudge'* concept to guide people towards *'good'* choices for the local economy and the environment, as discussed in Section 1.1.2. The House of Lords Report 2011 identified that the 2011 White Paper contained a broad range of non-regulatory approaches including the provision of information (House of Lords, 2011). The 2011 White Paper also included schemes to construct of new infrastructure for walking and cycling to *nudge* people towards these modes rather than create these modes as the 'default'.

The DfT provided a supporting guidance document at the same time as the release of the 2011 White Paper (DfT, 2011a). The guidance recommended that LAs apply for a package of measures to be delivered through the LSTF funding, providing examples of the types of schemes that could be included, as shown in Table 2-1. The DfT did not put any limit on the number and types of measures that could be applied for, but were explicit in stating that it could not be used for: *"major rail, passenger transport or road infrastructure enhancements"*, (*Ibid*, 2011a: 9-10).

Table 2-1 Example of a Package of Measures that could be delivered through LSTF Funding (DfT, 2011a)

Encouraging Modal Shift	**Managing Demands on the Network**
By considering holistically the end-to-end journey experience and initiatives to improve integration between travel modes, for example better travel information, smart and integrated ticketing or personalised travel planning, improving public transport and cycling and walking initiatives.	Including the provision of park and ride facilities, car clubs and car sharing schemes and the development of freight consolidation centres.
Better Traffic Management	**Improving Access and Mobility**
Incorporating more efficient signal times, junction improvements designating red routes, 20 mph zones, cycle lanes or quality bus corridors, pedestrian zones, and better management of street works and incidents.	Through work based and school travel plans, replacing short car journeys, cycling and walking, improvements in street design or the provision of facilities, community transport, demand responsive services and bringing services to communities.

The 2011 White Paper and LSTF guidance document do not recommend or refer to any other types of behaviour change approach other than their version of *nudge*. This suggests a possibility that the tools being recommended may not appropriate if the tools available are *'hammers'* but the solutions are *'screws'*. This thesis will therefore explore SPT to identify whether it can enhance the provision of behaviour change tools available to transport practitioners. Cairns *et al*. (2014) have identified that there is currently a gap in understanding as to whether sociological approaches can provide an alternative solution to enhance the behaviour change initiatives delivered at the LA level. Building on this call, the research will therefore assess whether Shove *et al*.'s (2012) '3-elements' representation of social practice theories has the potential to provide an alternative and more holistic approach to understanding how and why people travel. It is the position of this research that travel behaviour and its associated GHG emissions cannot be completely understood through the application of economic models, or psychology-based behaviour change theories alone (Schwanen *et al*., 2011). It is posited that understanding behaviour through the 3-Elements model will enhance the tools available for transport practitioners to deliver behaviour change schemes. This leads to the first research question for the research:

***Research Question 1**: To what extent is the 3-Elements model useful for: a) For understanding changes to practices within transport planning and the way people travel, and b) designing transport initiatives?*

Shove *et al*. (2012: 2) admit that: *"theories of practice have yet to make much impact on public policy"*, and this thesis will seek to address whether the 3-Elements model, a method of describing a social practice, can have a practical application within the transport planning sector. Cairns *et al*. (2014: 115) highlight further the lack of engagement with sociological theory by transport planners, perhaps due to the conceptual nature of the research. This research will therefore provide an analysis of the potential practical application of the 3-Elements model. Using a case study approach the research involves the collection of primary quantitative data through a survey of transport planning officers. Interviews with key people within the transport planning system provide qualitative data for the thesis. In addition a content analysis of the LSTF bid documents was undertaken and provides secondary data. A full explanation and justification of the methods used in this research is discussed in Chapter 4.

2.8. Systems of Provision (SOP)

Through the course of completing the research, as will be discussed in Chapter 5 and Chapter 6, it became evident that an additional framework would be required to analyse the transport planning system. As will become clear, the system could not be adequately analysed using the 3-Elements model or SPT. However the knowledge gathered through the use of the 3-Elements model has formed an important part of understanding alternative theories of behaviour. Thus a framework that complemented SPT was sought to capture the full complexity of transport planning within the case of the LSTF and this led to the inclusion of Fine and Leopold's (1993; 2002) Systems of Provision (SOP) framework in this thesis. The SOP framework and the benefits of its use within this research are outlined below.

2.8.1. Systems of Provision (SOP)

Fine (2002: 79) defines a SOP as: *"an inclusive chain of activity that attaches consumption to the production that makes it possible"*. The SOP was designed to explore the consumption of goods within the private sector, but it has also been applied to the public sector use of goods such as the supply of water (Bayliss *et al*., 2013). The SOP framework is a general framework that can be adapted to include any methodological and theoretical content that the user wishes to apply (Fine, 2002). The SOP approach is therefore able to address some

of the shortcomings of the 3-Elements model when explaining how change occurs within to the practice. The 3-Elements model describes the system that exists and what happens when a change occurs to this system through the making and breaking of links between elements. The 3-Elements model does not however provide an explanation of the *how* and *why* they exist and how the changes or breaks to links occur. The SOP approach is based on the stages of the system providing a pathway through the complexity of a bundle of practices to explain how change occurs.

The SOP is described by Fine and Leopold (1993) as a '*middle-range theory"*, in that it is neither a grand theory of behaviour, nor a small-scale context dependent approach. This is because, as a framework, it sets out a loose set of rules that can be applied to any system. However the findings of this application of the SOP framework are context dependent and cannot be applied to a different SOP, even if they are similar. For example, the SOP for the production of clothes is different for the production of food, even though they would both be classed as modes of production in neo-classical economic theory (Bayliss *et al*., 2013). Neo-classical economic theory places no consideration on the vast differences in production, distribution, finance and marketing that exist within each of them (Fine, 2002). The SOP stands alone from traditional theoretical positions as it is a theory of consumer behaviour that draws on the factors that influence chains of production from these fields by examining the social, political, economic, geographic and historic factors that have led to the system existing in the first place (Bayliss *et al*., 2013).

A SOP comprises of four components: *structures*; *processes*; *agents/agencies*; and *relations* (Bayliss *et al*., 2013) and therefore its approach is also similar to Giddens' (1984) structuration theory in that it is able to incorporate both the structure and agency within the framework. What it offers in addition to the 3-Elements model is an understanding of agents (individuals and institutions) that exist within the system that influence what is provided and how it is consumed. The SOP approach also allows the research to identify the relationships and processes that exist within the system that create the change to practices.

Paddock (2011) explains that practices of consumption, of which GHG emissions are a by-product, do not exist within a vacuum but exist as part of a wider chain of practices: production, transport, storage and trade and that this system is not random. Walker (2013) cites the example of the fridge-freezer. The design of this product is dependent on the system of food storage throughout the SOP, ensuring that food remains refrigerated from production, through delivery, to the point of sale in a shop where it is purchased, to when it is

taken home and stored until use. The fridge-freezer has now become an essential part of the function of households in the UK. The convenience provided by this technology locks in practices that are environmentally damaging in terms of high energy use (Shove, 2003). The fridge-freezer altered the practices of shopping for food.

Food shopping switched to being undertaken weekly at supermarkets or more recently via the internet rather than daily at local shops (Jones, 2012), although the number of people switching back to shopping daily increased in 2014 (Lawrence, 2014). This supports the argument that not all elements of the system and the practices undertaken within it are a matter of individual choice (Walker, 2013), but are influenced by parts of the system upstream of the individual.

2.8.2. Public Sector SOP

Bayliss *et al*. (2013) suggest that virtually all SOPs include some element of public sector involvement, from finance to regulation and the services they provide. This makes the approach of particular relevance to this research, where public sector financing plays a very significant part in the provision of transport infrastructure. The SOP approach is based on consumption (Fine, 2002) and the release of GHG emissions is a by-product of this consumption (Shove, 2003). Since the 1970s, consumption research has tended to focus on the identities of consumers rather than producers (Fine, 2002). Another area overlooked in consumption research is the state, which is responsible for the funding of almost all large-scale transport infrastructure projects. Fine (2002: 177) suggests that the state is responsible, either directly or indirectly for 50% of all consumption and that the neo-liberal ideology assumes incorrectly that: *"Public consumption is merely an alternative form of private consumption, and liable to be inferior in efficiency and quality of delivery"*. Economic theory is therefore underplaying how much influence national and local governments have on the consumption of goods and the associated GHG emissions. In many cases this is because the lines of consumption are blurred between public and private consumption. For example individuals use private motor vehicles on a public highway so both parties are responsible for the GHG emissions associated with travelling by this mode. This blurring of the distinction between 'who' is responsible for GHG emission demonstrates the importance of investigating the system, as well as the individuals who use it, to identify where changes are required that can help to reduce emissions.

2.8.3. Finance and Power within a Public Sector SOP

Bayliss *et al*. (2013) use the example of the Housing SOP within the UK to demonstrate the importance of finance and power relations within a system, neither of which is adequately explained by the 3-Elements model as will be discussed below. The authors identify that several agents exist within the system, each exerting differing financial power and influence. These include: developers; builders; financers; house buyers; house occupiers; landowners; estate agents; planners; housing managers; landlords; and the state. Each of these actors interacts at various levels within the system. Finance also functions at various levels from land acquisition, through construction, purchase and refurbishment. The availability of mortgages has driven the market allowing more people to own their own home. The SOP approach does not just focus on the simple economics of this model but seeks to understand the cultural implications of how and why people purchase property, such as lifestyle choice and identity. The SOP differs from the 3-Elements interpretation by establishing the components that create change to practices.

In Bayliss *et al*.'s (2013) example, the authors start at the beginning of the chain, with the agents that control the production of housing: house building firms. The firms speculate on the price of land to ensure its value goes up after purchase, as well as adding value by building on it. This approach does not require steady production rates and has led to a shortage in housing in England (CLA, 2013) and an increase in property prices in the UK. Applying a similar approach to Bayliss *et al*. for the transport planning system will allow for the analysis of the actors that influence the system and will assist with understanding where changes can be made to reduce emissions. The application of the SOP framework will therefore utilise the cultural as well as practical elements that exist within the sector to understand how, when combined, they lead to the provision of the transport system in its current form.

2.8.4. Cultural Elements of the TPSOP

SOPs have a cultural system that is attached to them (Fine, 2013: Fine, 2002) and in this research this is explained using social practices. The meanings within social practices shift over time (Fine, 2013), as the system develops. This is often an evolutionary process, and rarely a continuation of the status quo (Mitleton-Kelly, 2011). The cultural theory approach takes aspects from all of the social sciences which tend to compartmentalise their findings within their own field rather than looking at the wider picture (Fine and Leopold, 1993).

Johnson (1986) suggests that an interdisciplinary approach is required, as each approach provides a smaller aspect of a larger process. This can be seen as the metaphor of blind men feeling different parts of an elephant and concluding incorrectly the nature of what they are dealing with (Wilson and Chatterton, 2011). Including this cultural element allows the SOP process to use multiple social science perspectives within the same model to provide a better overall view of the issue. Johnson (1986: 283) concludes that *"all social practices can be looked at from a cultural point of view"*, and it is this understanding of culture and how it influences how and why people change that make the SOP framework a useful tool for academics.

Johnson (1986) suggests that there is in fact a *'circuit of culture'*, as represented in Figure 2-5. Each box within the circuit represents a moment and each moment is influenced by others within the circuit. These influences are what is seen when culture is analysed from a specific viewpoint. The conditions placed on these moments are altered by both private and public understanding of what is taking place. This understanding can be at a theoretical (abstract) or an applied (concrete) level.

Johnson (1986) uses the example of the Mini Metro car, where the production was initially private when being designed, but became public when the car was first manufactured and sold to the public. The texts (including audio and visual advertising) that exist come mainly from the marketing of the vehicle, which was seen as the saviour of British manufacturing. How this was interpreted related to how people read this text and how the car became part of their lives and part of everyday culture. Johnson argues the person who drives a Mini Metro is less concerned about it being the saviour of the British motor industry, but how it will enable them to manage their daily routine (a private representation). By looking at these different public and private representations of the same object it is possible to come up with two completely different analyses of how the Mini Metro was produced and consumed. Understanding the whole process, rather than focussing on one small element (its use) it is possible to identify how meanings and associations are formed within social practices that lead to certain types of behaviour.

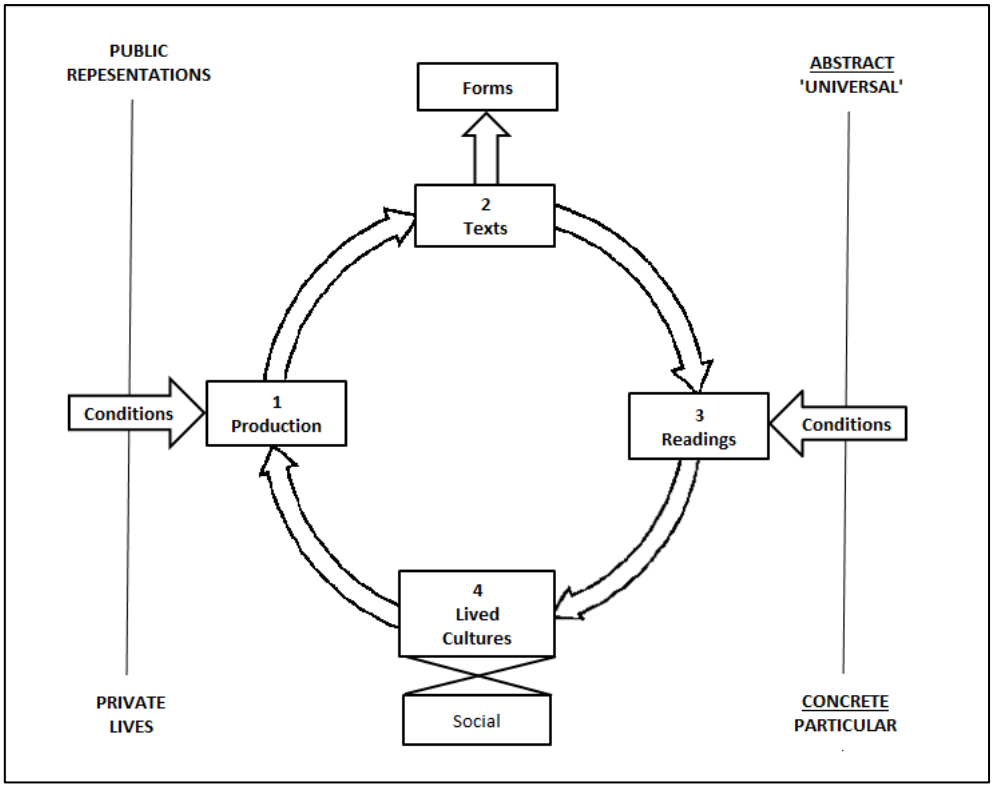

Figure 2-5 Circuit of Culture (Adapted from: Johnson, 1986). Used with permission of Pearson UK.

The circuit approach to cultural studies has been further refined by du Gay *et al*. (1997), as shown in Figure 2-6. They highlight five major cultural processes that form part of the circuit and the importance of meanings within social practices and how they are formed through the circuit: *"In order to conduct a social practice we need to give it a certain meaning, have a certain conception of it, be able to think meaningfully about it"* (du Gay *et al*., 1997: 2). In their study of the Sony Walkman they highlight the importance of the circuit and that you can start at any point but you need to understand each element to complete the study of the system you are examining. For example the production stage of the product and how it is regulated both influence the product. Using the example of the Segway from Section 2.6.5, the regulation of this item in the UK has seen it become associated with recreation. This has helped to create the meanings of what it represents and is just as important as how the item is consumed.

Fine (2002), when defining the SOP approach rejects this circuit approach and believes that culture is not the product of consumption, as is suggested by Johnson and du Gay *et al*., but rather it is distributed, transformed and reconstituted throughout the system. This indicates that the meanings associated with a SOP are produced at several different levels within the system, influencing the practices undertaken at each level. This argument would view a

commodity as it travels through the SOP, acquiring and transforming culture. This is an important definition and helps to explain why some products become culturally significant and others less so, as the meanings and cultural references at each level may change and adapt from the producer to the end user.

Fine (1995) argues that the SOP forms a vertical line through which products move through the system rather than the circuit-based systems proposed by Johnson (1986) and du Gay *et al*. (1997). Fine argues that commodities should be assessed by the chain of vertical factors:

- Production;
- Distribution;
- Retailing;
- Consumption; and
- Material culture.

Based on this vertical process the research will use a vertical chain to represent the SOP incorporating four levels: national government, the civil service, local authorities and the end user. The SOP Model has been selected for this process as this system approach identifies the stages that transport schemes go through from the creation of funding schemes, through design, implementation and use.

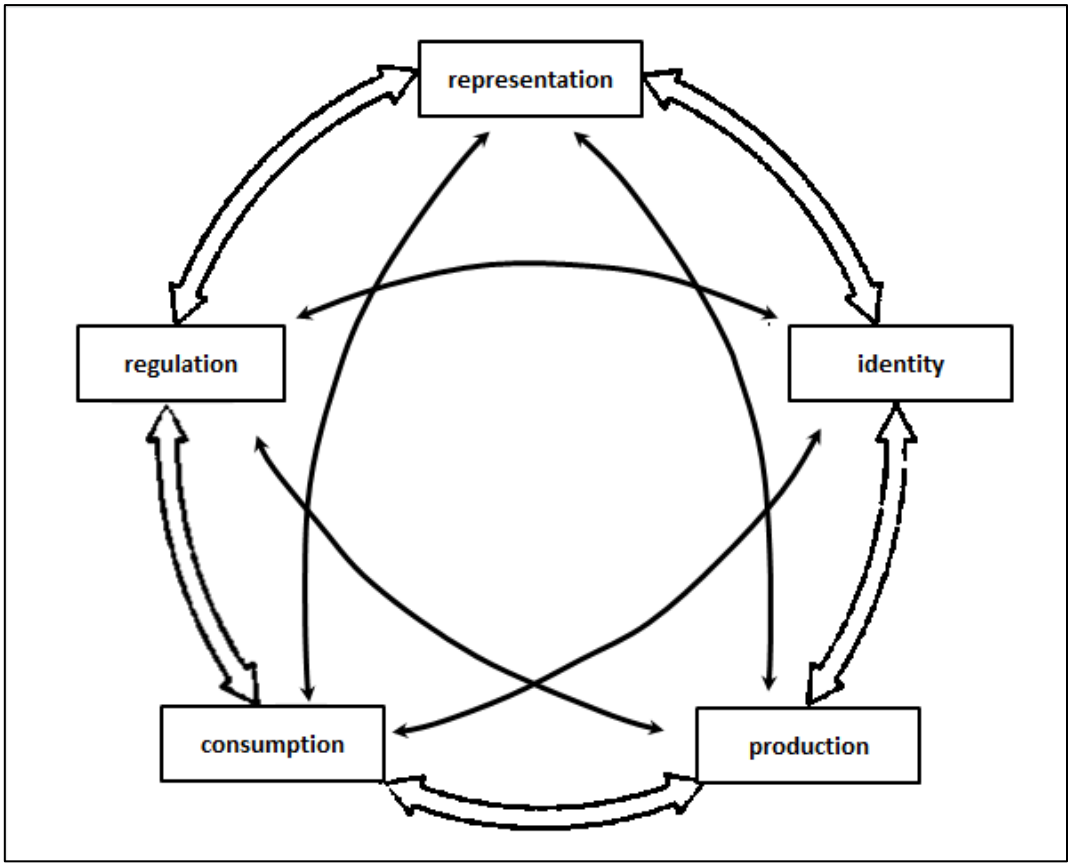

Figure 2-6 Circuit of Culture (Adapted from: du Gay *et al*., 1997). Used with permission of SAGE Publications Ltd.

2.8.5. Criticisms of SOP

The SOP approach as set out in Fine and Leopold (1993) has been criticised for failing to include the social relationships as part of the system and the tendency of the approach to simplify complex research areas that exist around the different levels of the system (Friedland, 2001). Jackson *et al*. (2004) and Guthman (2002) favoured the SOP approach bringing in the production and consumption elements of the system together in research, but Guthman (2002) criticised the approach because it fails to deal with individual agency as to why people choose one option above others. Individual choice is not an important part of this work as discussed in Section 2.4, the problem with getting individuals to reduce their own GHG emissions is that many factors: habit; intention; and wider social factors influence individual choice and are not adequately captured in the behavioural economic approach favoured by government. Understanding how the wider system operates and influences practices instead of individual behaviour provides an alternative means of understanding what influences all levels of the SOP.

Another criticism is that many SOPs are interrelated in that cultural elements can *'leak'* between them and this makes it difficult to identify particular SOPs (Fine, 2002). When discussing transport planning, this takes place at various levels, with different bodies responsible for delivering different elements of the system. For example, LAs have little influence over the rail network and the services provided, but can provide a subsidy for additional services to the rail company, as was the case with Bristol City Council for the Severn Beach Line from 2007 (Janisch, 2007). Although the local authority transport planning SOP and railway planning SOP will be defined as different within this research, it is obvious that there are 'leaks' between the two.

Finally, a limitation of the SOP approach is that the results of the research cannot be easily transferred to other LA or government departments, which means that they may not be so easy to communicate to policy-makers and politicians. Using this approach will take more time and effort and is likely to be more expensive to deliver, due to the additional time required as compared to a behavioural economic based approach. It is hoped however that this research will demonstrate how useful the SOP can be as a means enabling longer-term benefits in terms of reduced emissions and healthier lifestyles meaning that the cost-effectiveness will be better in the longer-term.

2.8.6. Linking the SOP to the 3-Elements Model

The SOP framework was selected for this research, as it provides a framework for explaining how consumption leads to GHG emissions and how this is influenced through different stages of the system from production through to consumption (Fine, 1995). A framework, as will be explained in Chapter 3, exists within the UK that delivers transport services and infrastructure that can be explored as a chain of various factors, from the national government, through government departments, local authorities to the eventual users of the system. At each of these levels various social practices, as defined by Shove *et al*. (2012), exist that influence the transport network provided, how it is maintained and ultimately how it is used. These social practices form the cultural elements of the system, as defined by Johnson (1986) and with each providing a different perspective on what should be provided for people travel, how this should be funded and how people should travel.

The SOP adds more detail to the 3-Elements model by providing an understanding of the structure that exists to create change, the processes and agents, and their relations that all influence how the practices are performed at each level of the system, from the national government creating a policy, through to how travel is influenced by that policy. Therefore

the merging of the two models provides an opportunity to create a pathway through the complexity that is a bundle or complex of social practices, creating a clear understanding as to how change occurs within the system, as will be discussed in more detail in Chapter 3.

2.9. Summary

Up to this point the thesis has explored the literature and provided examples of the current approaches undertaken in the attempt to change travel behaviour within the UK. This has included regulatory interventions such as: taxation and legislation. Non-regulatory tools including, social marketing, changes to transport infrastructure and more recently behavioural economic tools. The UK Government has since 2010 sought to provide policy-makers with behaviour change tools based on behavioural economics. Whilst effective in some circumstances are unlikely to create the significant change to travel behaviour as they tend to focus at the end point of the decision-making process. This is because they ignore the social and cultural factors that influence how that individual has come to be in the position to make that choice in the first place.

Chapter 2 has discussed the alternative approach of the 3-Elements model to highlight the potential benefits SPT can provide to policy-makers and transport scheme providers that are currently missing from the behavioural economic and existing transport planning approaches. This has led to the first research question: *How useful is the 3-Elements model for understanding changes to practices within transport planning and the way people travel*, *and b) For designing transport initiatives?* The research is designed to explore the benefits for policy-makers of including the 3-Elements model as part of a wider tool-kit of behaviour change methods. It is believed that applying the 3-Elements model will enhance their understanding of the practices they wish to change, where they are performed, how frequently they take place and how bundled practices of travelling can be with other social and cultural practices. There is a gap in the existing knowledge surrounding the application of social practice theories (Cairns *et al*., 2014) within policy-making and this has to be addressed if significant changes are to be made to reduce the emissions associated with travel. This thesis will make a contribution to knowledge in providing evidence of the practical application of social practice within a transport policy context.

In addition the chapter has introduced the SOP framework, which is provided to add greater understanding to the wider transport planning system and how the relationships, processes and agents within this structure influence how practices are performed and undertaken. The

SOP framework is complementary to the 3-Elements model as it provides a cultural explanation of how and why change occurs, as will be discussed in Chapter 3.

Therefore at the close of this chapter, it is recognised that there is a need to explore the alternative explanations of behaviour and in doing so, this thesis hopes to provide an analysis of the application of alternative behavioural approaches that could be applied within the LA transport planning sector, generating new knowledge as to the mechanisms behind transport provision is supplied at the local level. Chapter 3 provides more detail on the transport planning SOP before introducing the conceptual model that combines the theories.

Chapter 3. A Conceptual Model of the Transport Planning System

"Transport planning isn't rocket science: it's more complex than that." (Dr Ken Fox, transport modelling expert and former rocket scientist[7])

3.1. Introduction

Chapter 2 introduced Social Practice Theory (SPT) and how this research explores whether the theory is useful as an alternative approach to changing the way people travel. In addition, the chapter introduced the Systems of Provision (SOP) framework, as a means of understanding the system that influences consumption and how this consumption generates GHG emissions. Chapter 3 will explain how the two models have been combined to provide a greater understanding of the influences the system has on how travel is performed. It has been discussed that practices of travelling are influenced by other practices that exist around how people live and conduct their everyday lives. Many of the materials that enable people to travel, such as the highway network, are constructed, maintained and managed by Local Authorities (LAs). There is a distinct system that exists in England that is responsible for the planning, design, implementation and maintenance of the transport assets that people use on a daily basis to partake in the practices of travel. The initial work for this research found that Shove *et al*.'s (2012) 3-Elements model is very useful for explaining the constituent parts of practices and how they are linked and how practices are the formed by the dynamics between these elements. The model however fails to deal with the processes and agents that create change within the system.

The following chapter will outline the existing Transport Planning System of Provision (TPSOP), using the theory to provide an explanation of the structure, agents, processes and relations that exist and influence the practices of transport planning and ultimately the practices of travelling. The chapter will introduce the conceptual model that has been developed for this research and is designed to explain the role of the TPSOP in understanding practices. The conceptual model has been designed provide new insight into

[7] Fox, K. (2014) Email to David Williams [via Linkedin], 16 April.

practice theory and how it could be applied within the transport planning system as a way of analysing the context of the practices of travelling. The chapter introduces the second and third research questions.

3.1.1. Research Gap

Vigar (2002) admits that there are few studies that look at the politics of local transport planning. This is despite transport planning being a political process (Richardson and Haywood, 1996) and the impact it has on how people travel. Moss (2004: 101-102) highlights that: *"Organisations, regulations and cultural values have always played a key role in shaping the development of infrastructure systems"*. Moss (2004) identifies the fact that materials for travel do not just appear, but are designed, funded, implemented and managed in a way that influences how people travel. Viewing this through the lens of SPT would suggest that each of these stages has its own distinct set of practices attached to it. It is these distinct sets of practices that will be demonstrated through the model explained in this chapter.

Vigar (2002) highlights the importance of local government officers who *"play a vital link-making role between council members and central government fund holders"* (2002: 60) and are agents within the TPSOP. Transport planning officers come from diverse backgrounds, with civil engineering dominating the field initially, before an increase in economists (Dudley and Richardson, 2000), and latterly transport planning specialists in the 2000s (Clark and Lyons, 2012). This influences the type of information they provide when devising solutions to transport issues.

The research is designed to identify the extent to which the 3-Elements model and the TPSOP conceptual model can be used to understand the practices of transport planning to explain the role of these agents that influence how the transport network is designed. The TPSOP conceptual model has been included to explain the wider system and power relationships for creating change to practices. These questions have yet to be successfully addressed within the current academic transport literature as discussed in Section 1.2. The research will therefore offer new insight into the practices of transport planning, which is performed by transport planning officers within local government. The research will provide greater understanding of the applicability of Social Practice Theory (SPT) before identifying opportunities for change within the current transport system. Understanding the practices of transport planning is important as these practices and processes directly influence the

highway network that is created (the part of the network managed by LAs), which in turn influences the practices of travelling.

For the purposes of this research, the TPSOP will focus predominantly on the LA level, although also seek to understand how this is influenced by practices that are performed at other levels of the system. The TPSOP is narrowly defined as it focuses on the transport elements managed by LAs. The research will therefore not include the management of the strategic highway network in England, the management of the railway network, or the management of ports and airports as each of these has its own distinctive SOP that, whilst related, is managed by different agents and is operated through a different set of practices. The TPSOP is of specific interest, as the majority of journeys in England take place on the highway network, which is managed by LA transport planning officers. Understanding how this system is created, sustained and managed is essential if creating a change that results in a reduction of GHG emissions is to be achieved through changes to the practises of travelling towards methods that reduce emissions. The research uses the Local Sustainable Transport Fund (LSTF) as a means of interpreting the TPSOP at a point of change within the system.

3.2. Transport Planning System of Provision

This stage of the thesis will focus on The TPSOP as it existed in 2011, when LAs were bidding for LSTF funding. The TPSOP comprised four levels: *national government, the civil service, local government* and *local transport network*. This TPSOP is represented in Figure 3-1, a visual representation created for this research. This TPSOP differs from the example of a SOP described by Paddock (2011) which includes: *production, transportation, storage* and *trade* as part of the system, since the framework is being applied to demonstrate how LAs deliver transport infrastructure. In the TPSOP the system does not include any trade element, as the network is *'free'* at the point of use by all people who have the appropriate means to travel on it. However, as discussed in Section 2.2, if people wish to travel on the network by private motor vehicle, they have to hold a driving licence, be insured to drive the vehicle which has to have an MOT certificate which demonstrates that the vehicle is safe. In addition, most private motor vehicle owners have to pay Vehicle Excise Duty, so for people wishing to drive there are a number of upfront costs.

Figure 3-1 represents the four levels outlined above with the relationship and processes indicated through the arrows between each level. The relationship arrow shows that this relationship is top down, with power existing at the top of the system and filtering down

through the system, influencing the infrastructure that is ultimately provided. Processes within the system are represented as two-way, with processes such as finance flowing downwards, but advice or ideas moving in the opposite direction. This will be discussed in more detail below where the following section will work through a summary of the structures that exist within the SOP, the key agents responsible for creating change to the system, the relationships that exist within the SOP and the processes used to manage these relations. Section 3.2 therefore outlines the primary structures that exist within the SOP that influence how people travel.

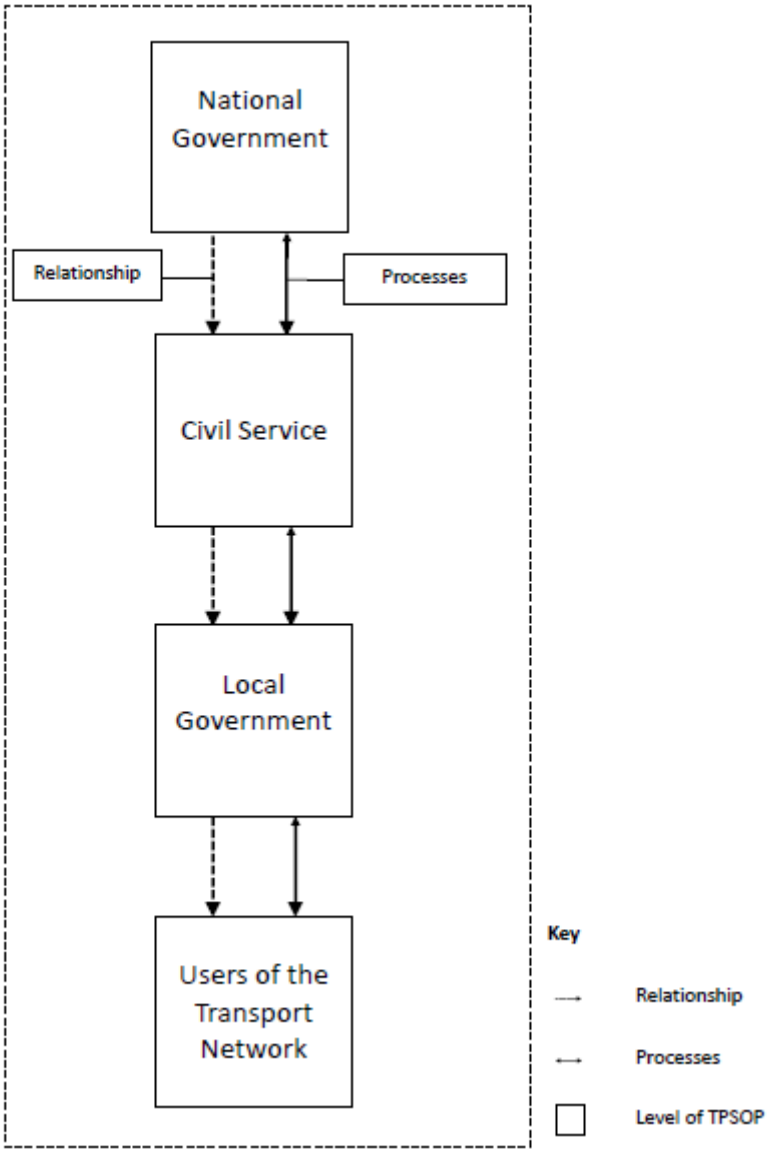

Figure 3-1 The Local Authority Transport Planning System of Provision (SOP) for England in 2011

3.2.1. National Government, Civil Service and Local Government

The national government and civil service levels of the TPSOP form the top of the structure. National government is formed of elected Members of Parliament (MPs) who are selected by the Prime Minister to form the cabinet (UK Government, 2014a). The MPs are also part of Parliament, which includes other MPs, and is the body that votes on legislation recommended by the Government. The government is accountable for its decisions to this parliament (*Ibid*, 2014a). The civil service support the government in the delivery of its policies and employ approximately 450,000 civil servants (Policy@Manchester, 2014), across 24 departments (Cabinet Office, 2009). Each department is responsible for a different part of government, from defence to justice, to health to transport. Each of these departments forms a separate structure within the national government level of the TPSOP, although not all of the departments directly influence how people travel. The Department for Transport is in charge of improving and maintaining the wider transport network, which includes the TPSOP.

Again as explained in Section 1.5, LAs in England can also have a cabinet of elected council members and council officers who undertake work on behalf of the council. Councils offer a variety of services to the public including: social services, education, waste and transport. In relation to the TPSOP, LAs are responsible for many services provided at the local level including the design, implementation and maintenance of the highway network. Schemes that are designed have to be approved by the council's cabinet before work can commence. This rigid structure ensures that all schemes pass through a process that means they are examined and challenged by elected members before implementation. This influences the types of schemes that are delivered, as the final decision to a deliver scheme is made by non-transport professionals.

3.2.2. Highway Infrastructure

The final structure within the TPSOP is perhaps the most important: the transport network, which in the case of the TPSOP is predominantly the local highway network as this is the part of the transport network that falls under the control of LAs. This is where the practices of travelling are performed and the 'higher' levels of the TPSOP model play an important role in influencing ultimate provision for travel. For example, private motor vehicles, predominantly the car, became the most popular mode of transport within England after the Second World War with the end of petrol rationing (Grant, 1977). To meet the growing demand for travel,

transport planning officers have been employed by LAs to design and manage a network large enough to meet demand. Ministers were in favour of growth in traffic as this supported development and improved access for *'ordinary people'*. The growth created a link between highway construction and popular consumerism, because owning a car became desirable and a reality for many people for the first time (Dudley and Richardson, 2000). In 1957 the then Minister of Transport and Civil Aviation Harold Watkinson neatly summarised the benefits for the government in the linking the concepts of highway construction and consumerism by explaining that: *"there are votes in roads"* (Watkinson, 1957: 217).

Political support for the construction of highway infrastructure to resolve problems created by private motor vehicle, such as congestion and environmental impacts, use of this solution has waxed and waned in the preceding fifty-seven years (DfT, 2013a; Vigar, 2002: Dudley and Richardson, 2000), but the concept of constructing highway infrastructure to resolve societal issues has never totally disappeared from the political agenda. This is despite several challenges. The concept was initially challenged in the 1970s by the environmental lobby including: anti-motorway campaigner John Tyme; and academic Dr John Adams, founded Friends of the Earth. The environmental lobby sought to protect local communities and the surrounding environment from highway construction (Dudley and Richardson, 2000).

The impact of road building was challenged again in the 1990s with the Standing Advisory Committee on Trunk Road Assessment's (SACTRA) (1994) report *'Trunk Road and the Generation of Traffic'*, which concluded that the construction of new highway infrastructure actually induces traffic to the network rather than solve the societal issue of congestion. Nonetheless, since 1994 no other alternative to mass transport has managed to replace the private motor vehicle as a credible option despite significant funding being made available for new rail infrastructure since 2010. The problem is that the rail network lacks the capacity to attract the required shift in people away from the private motor vehicles that would be required. Shaw and Walton (2001) described the government's approach to transport after the conclusions from the 1994 SACTRA report were accepted by the then government, as *'pragmatic multimodalism'*. The authors describe pragmatic multimodalism as a process where the government sought consensus to balance the needs of society and the environment, and this led to a period of relatively low spending on new highway infrastructure. Shaw and Walton (2001: 1054) went on to suggest in 2001 that:

> *"Road building could return to the agenda if credible alternatives to the car are not implemented with some urgency".*

The desire to construct new highway infrastructure has not yet been successfully replaced by any credible alternative mobility paradigm. This is evident from the DfT's 2013 White Paper [2013 White Paper] *Action for Roads: A network for the 21st Century*, which committed £15.1 billion to the creation of new roads and extra capacity on the highway network (DfT, 2013a).

3.3. Agents of the TPSOP

The transport network is influenced by various agents within the system, each pushing and pulling the design and funding of the transport network in differing directions. What is evident from the literature is the particular importance of two of these agents in the design and construction of the transport network: government ministers and transport planning officers as will be discussed below.

3.3.1. Government Ministers

The SOP process describes the importance of agents within the system, creating change in some or all of the structures and processes (Fine, 2002). A key agent within the system is the Minister for Transport, who can exert influence over the direction of transport policy in relation to certain modes of travel. One example of this influence, albeit within the rail SOP, was exhibited by the Minister of Transport Earnest Marples (1959-1964) who oversaw the delivery of Dr Beeching's infamous *"The Reshaping of British Railways"* [the Beeching Report] (Loft, 2006). The Beeching Report, set against a backdrop of a declining rail network use in terms of passenger and freight trips and increases in trips by road (*Ibid*, 2006). The Beeching Report framed the problem of the railways as a financial one and sought to make the rail network financially viable (Dudley and Richardson, 2000). The report concluded that rail had been replaced by cars and buses as the primary mode of travel that people wished to take and was accepted as government policy by the then Conservative government. The recommendations continued to be implemented by the following Labour Government after the election in 1964. By 1973 the network stood at just 9,000 miles with 2,355 stations, from a peak of 17,000 miles and 6,500 stations in 1948 (Loft, 2006). The plans set out in the Beeching Report failed to make the network cost effective and by the 1980s the railway SOP was still seen as a significant problem and a drain on Government resources compared to the highway network. However the Minister of Transport had been able to steer transport funding towards his favoured option, the development of the highway network. The Minister was therefore able to commission and receive reports that favoured his viewpoint on the

issues facing transport and travel in the UK in the 1960s, setting in motion policies and funding streams to deliver his vision for transport which have had a lasting effect on the transport system.

3.3.2. Transport Planning Officers

In the same year as the Beeching Report, Buchanan *et al*. (1963) released *"Traffic in Towns"* [the Buchanan Report]. Both the Buchanan Report and the Beeching Report were designed to provide *'solutions'* to the problems caused by a need for travel. Both provided answers favoured by the Minister for Transport. The Buchanan Report was relatively well received and was seen as the birth of transport studies in England (Dudley and Preston, 2013), although many of the measures recommended were already in use in the USA in 1963 (Munby, 1968). The changing demands placed on LAs led to an increase in the number of transport planning officers within the TPSOP and the adoption and development of new techniques and skills designed for managing transport within urban areas and for longer distance journeys. The report was interpreted by policy makers to promote the building of new roads in towns (Dudley and Preston, 2013), but the report was actually designed to find a solution to congestion, and investigated the impacts of road schemes in urban areas with Buchanan *et al*. (1963: 33) explaining their approach as:

> *"We concluded, since it is obviously the desire of society to use the motor vehicle to the full, that the only practical basis for a study was to accept this desire as a starting point and then to explore and demonstrate the consequences"*.

The outcome of this report was the promotion of planning and design solutions to solve congestion. The report was used as the basis for significant urban redevelopment in most towns and cities in the UK. Where cities had a historical core, such as Norwich, as discussed in the Buchanan Report, redevelopment opportunities were limited, so traffic restraint measures were implemented. This included the pedestrianisation of certain roads within town and city centres such as Broadmead in Bristol and Broadgate in Coventry, both the main shopping streets of the cities, with traffic located away from pedestrians.

Dudley and Richardson (2000) suggest that the reason for the popularity of highway construction as a *'solution'*, when this approach had initially failed in the 1930s was the growth in the number of civil engineers working within the transport planning sector. These experts were exceptionally influential in promoting the construction of highways as a solution to congestion. For example Lancashire's County Surveyor, Sir James Drake, was

instrumental in lobbying for funding and then delivering the eight mile Preston-by-pass, the UK's first motorway, in 1958 (Charlesworth, 1984). Drake and other LA transport practitioners played a significant role in the development of the motorway network so that the UK went from 95 miles of motorways in 1960 to 660 miles (567 in England) by 1970 (*Ibid*, 1984). This highlighted how the *'solution'* to congestion of new highways had been adopted within the TPSOP, as well as the strategic highway network SOP. This also indicates the meanings that existed within the practices of the transport planning system that influenced the materials delivered to travel.

3.4. Relations within the TPSOP

Within the TPSOP the relationship between each level is demonstrated by the arrows in Figure 3-2. This is essentially a top-down model with the flow of power being exerted from each level to the next. There is an element of influence between each level, for example a civil servants' role is to advise Ministers, but it is the national government cabinet that ultimately decide the policies within the TPSOP. Thus the civil servants and LAs deliver schemes to meet the requirements of government policy. This means that transport policies are influenced by government agendas that are wider than just transport issues.

3.4.1. Growing the Economy

Vigar (2002: 9) argues that: *"The economic recession that began in the late 1980s may have persuaded the public that the economy was of greater concern and that issues such as the environment were a luxury to be afforded in times of greater economic prosperity"*. This continues to be the case with the national government is committed to providing new transport infrastructure with its delivery identified as one of the primary ways of creating growth in the UK economy. The HM Treasury's 2013 paper *"Investing in Britain's Future"* (HM Treasury, 2013a) typifies this approach by stating:

> *"The Government has consistently prioritised capital investment over day-to-day spending"*, (HM Treasury, 2013a: 5).

This quote demonstrates the level of power that national government policy has on the operation of LAs at lower levels of the TPSOP, as they are able to dictate how money is spent even if the link between the transport infrastructure and economic growth is not always clear-cut (Banister and Berechman, 2001). With the present government, there is a commitment to long-term infrastructure investment, rather than short-term funding of

services supplied by LAs. The government therefore control the type of transport initiatives that are delivered.

3.4.2. Complexity within Local Government

LAs are complex systems (Mitleton-Kelly, 2003) that deliver many services in addition to transport planning including: *social care, waste management* and *planning*. LAs face pressure on all sides as shown in Figure 3-2. From below, the customer-facing side of the local authority deals with the public and their expectations of how an LA should operate and what services they should provide. Local and national politics also apply pressure through: party politics; legislation; and national government policy as discussed in Section 3.2.1 above. LAs also face pressure from the local media which often sensationalises the elements of a story that they perceive to be of interest in order to increase sales (Dickinson, 2006), increasing web traffic or editorial policy. These perspectives may present a warped view of the issue, rather than dealing with the facts.

All these pressures require transport planning officers to have a set of skills, or competences, to deal with this variety of influences. These include consulting with other LA officers from different departments, councillors and the public, as well as civil servants within government departments. The varied nature of an LA provides the opportunity to influence how people travel through: the materials and competences provided for travel, and the meanings this creates. To exert this influence requires cross-departmental working and effective and coherent management across the authority. This, where possible, requires the removal of the *'silo mentality'* that often exists within departments of LAs (Olowoporoku *et al*., 2011, Bundred, 2006, Rashman and Radnor, 2005) to allow transport issues to be dealt with the people responsible for planning, education and health. These relations can be essential to the delivery of joined up schemes that provide solutions that reduce GHG emissions within the TPSOP.

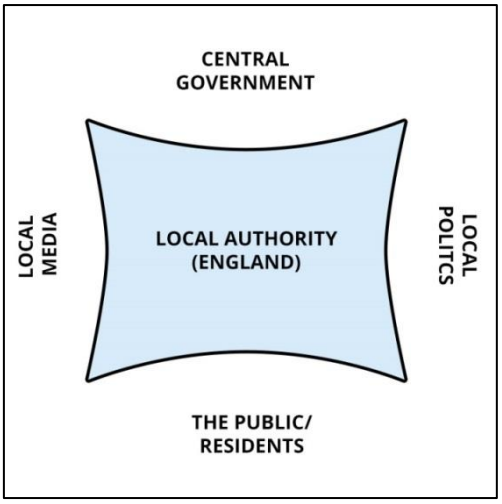

Figure 3-2 Relationships for LAs within the TPSOP

3.4.3. Cultural System of the TPSOP

Although the power relationships are predominantly top-down within the TPSOP with the national government influencing the levels below, how the relations or the meanings associated with transport policy change due to both the public or private representations of the policy. As discussed in Section 2.8.4 the public and private representations of the cultural elements of the TPSOP model (the practices) need to be understood if change is to be enabled. For example a transport scheme such as the LSTF is viewed at the national government level of the TPSOP by government ministers in terms of growing the local economy and reducing carbon emissions. People who benefit from a new piece of infrastructure to travel funded through the LSTF, such as a new cycle path, may interpret the new infrastructure as something to use during their recreational time, rather than as a means of utility travel. This would mean that whilst the new infrastructure is used for sustainable travel, the journeys may be recreational rather than utility trips that were intended. This is not what the aim of the policy created by government ministers, as the meanings of when people should cycle have not been altered by the scheme.

3.5. Processes within the TPSOP

Several processes exist within the TPSOP that allow power within the top-down relationship to be exerted. These include the funding process for new schemes and the bidding involved in securing money. In addition several other processes are influential in shaping the TPSOP and the type of schemes that are prioritised, such as the forecasting of future travel demand and the delivery of behaviour change initiatives. The network is managed by transport

planning officers as a means of mitigating the impacts of the problems associated with transport, such as congestion and pollution.

3.5.1. The Funding of Transport Initiatives

This belief that investment in transport infrastructure will help to grow the economy, as discussed in Section 3.4.1, has led to the Treasury committing over £70 billion for new transport infrastructure schemes by 2020/21 (HM *Treasury*, 2013a). Within the transport context, as shown in Table 3-1, the majority of funding for transport post 2014/15 is being placed in large scale infrastructure projects such as: *High Speed 2* (a new rail line between London and Birmingham); improvements to the strategic highway network through the Highways Agency[8]; and new infrastructure for the railway network, such as the electrification of the line between London and Bristol (HM Treasury, 2013b). In comparison relatively little funding is being provided to LAs to maintain the existing highway network. In addition comparatively little is being provided through the integrated transport block that is used by LAs to deliver small scale transport improvements.

Table 3-1 UK Government proposed spend on transport 2015/16 to 2020/21 (Source: Butler, 2013)

£ million	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**Total**
High Speed 2	832	1,729	1,693	3,300	4,000	4,498	**16,052**
Highways Agency	1,497	1,907	2,316	2,614	3,047	3,764	**15,145**
Network Rail	3,548	3,681	3,770	3,789	3,824	3,859	**22,471**
London Transport Investment	925	941	957	973	990	1,007	**5,793**
Local Authority Major Projects	819	819	819	819	819	819	**4,914**
Local Authority Maintenance	976	976	976	976	976	976	**5,856**
Integrated Transport Block	458	458	458	458	458	458	**2,748**
TOTAL	**9,055**	**10,511**	**10,989**	**12,929**	**14,114**	**15,381**	**72,979**

Prior to the government's commitment to significant investment in transport infrastructure in 2013, the government funded the Local Sustainable Transport Fund (LSTF) delivered by LAs between 2011 and 2015. This provided a significant level of revenue funding (defined in

[8] The UK strategic road network comprises of motorways and major trunk roads. The strategic network accounts for 13% of the total highway network in England (DfT, 2013g).

Section 3.5.3) compared to previous funding levels, for delivering transport initiatives designed to improve local economies, whilst reducing GHG emissions, as discussed below.

3.5.2. The Funding of Sustainable Transport Initiatives

The level of funding for sustainable transport initiatives increased significantly in the years following the announcement of a £10 million investment of the *Sustainable Travel Towns* in 2004 (Sloman *et al*., 2010). In 2005 the Government committed £7 million to fund seven *Cycling Demonstration Towns* (DfT, 2008). In January 2008 the Government announced a further £140 million to be provided for developing the *Cycling Demonstration Towns* project, with Bristol becoming the first *Cycling City* (*Ibid*, 2008). The funding was split between the initial seven towns, Bristol and 11 other towns across England (*Ibid*, 2008). All of these projects were delivered to a small number of areas of the UK.

In December 2010 Under-Secretary of State for Transport Norman Baker MP announced to parliament that £560 million had been made available to LAs for the delivery of sustainable transport initiatives through the LSTF (DfT, 2010d). This money was to be provided as part of a bidding process in addition to the existing funding for transport: the Integrated Transport Block and Highway Maintenance block (*Ibid*, 2010d). As part of the LSTF bidding process, 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. Applicants were notified of the funding decisions in two tranches: *Tranche 1* announced SP and KC bids in May 2011 (DfT, 2011c), and *Tranche 2* announced in May and June 2012 (DfT, 2012a). 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 had been awarded to LAs from the LSTF fund. This total was raised to £1.14bn through several sources including by *'local contributions'* from each LA's Integrated Transport Block funding, which is used to deliver Local Transport Plan 3 (LTP3) schemes that have been incorporated into the LSTF. Other local contributors include: property developers; public transport providers; non-governmental organisations; and local charities. In total 97 of the 145 bids were funded, with the sustainable transport initiatives being delivered across 112 out of 118 local authorities.

What is unique about the LSTF as a government funding stream is that it includes a significant level of revenue funding, whereas transport departments traditionally receive more capital funding. Capital funding is used by LAs to provide new infrastructure whilst 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. The present research therefore focuses on the LSTF as it is the first time that such behaviour change initiatives have been funded and delivered on a large scale in England creating a significant change to the type of funding available and the skills required to deliver the schemes.

3.5.3. Difference between Capital and Revenue Funding

Within economic theory, money does not come with labels, but instead they are placed on money by people and organisations (Thaler and Sunstein, 2008). Within England LA finance is centrally controlled and money is placed in separate budgets for various activities (or ring-fenced), meaning it cannot be transferred to *'pots'* for other uses (CLG, 2013). LAs receive money from several sources: a Local Services Support Grant from national government, council tax and other fees and charges for services (*Ibid*, 2013). They are also able to bid for additional money through individual funding streams, such as the LSTF, when they become available. The primary assets that LAs have are transport and flood prevention infrastructure (APPG on Highway Maintenance, 2013), buildings, land, vehicles and machinery (CLG, 2013) and these are long-term *'capital'* assets so are funded out of the capital budget. Revenue funding is for more short-term spending including maintaining assets (Accounting Simplified, 2010), or funding of elements of the LA that do not provide a physical asset, such as funding staff wages or subsidising bus services. Transport planning has traditionally been *capital* rich, as highway assets are a significant capital outlay for LAs, but *revenue* poor. Prior to the LSTF, transport planning practitioners had relatively little money for marketing and promotion of sustainable transport schemes or for subsidising public transport services, designed to support a shift towards sustainable travel. The majority of an LA's revenue funding has gone to the provision of social services, which are the most revenue intensive part of an LA due to the services provided (Butler, 2013). This means that when transport planners have attempted to bring about behaviour change the methods chosen have often been, by default, through changes to the transport infrastructure and processes such as network management as these can be delivered through capital funding.

3.5.4. Network Management Example – Nottingham Zones and Collars

Attempting to alter travel behaviour is not a new concept within transport planning and attempts to use traffic restraint methods have existed for many years. Thaler and Sunstein (2008) argue that transport planning officers are *'choice architects'*, so the system they

design will influence how people travel. One early example of transport planning officers attempting to change the system to influence travel behaviour was explored through the *Nottingham Zones and Collar Study* in 1975 (Vincent and Layfield, 1977). This project moved away from construction based solutions to resolve congestion. Many of the ideas trialled in the project are still used by LAs to manage demand today, including signal control and bus priority measures, although the technology used to achieve this control has improved significantly in the past 40 years. The scheme attempted to control access to the primary highway network from two areas of Nottingham, with buses able to avoid delays by having priority, with the aim of making the services quicker than private motor vehicle use. The scheme was designed to incentivise bus use (*Ibid*, 1977). The number of bus services was increased and on-street parking and spaces available in car parks were reduced. The scheme ran from August 1975 for one year, when it was prematurely discontinued for failing to meet its objectives (*Ibid*, 1977). Whilst the scheme created queuing traffic the delays were not substantial enough to disincentivise private motor vehicle use and shift people towards using buses.

In 1975 there was no precedent for this scheme so it was not known whether the behaviour of commuters would change and people would transfer to bus services. The scheme only provided small journey time savings and bus punctuality did not improve significantly because of the scheme. The engineers had difficulty building enough delay into the traffic signals for cars to make the scheme effective and more private motor vehicles crossed the stop line in green phases of the signals than under normal operation, a change in behaviour that was not anticipated. In addition the Nottinghamshire County Council introduced Park and Ride facilities, but only 50 drivers a day were using the services, as there was an *'interchange penalty'* for those who used the service in terms of the additional time it took to travel into Nottingham compared to driving into the centre. The study concluded that minor time savings had little impact on travel behaviour (*Ibid*, 1977).Vincent and Layfield (1977) concluded that the scheme was deemed not to be successful as the cost of implementing the study far outweighed the wider benefits. The Zones and Collar scheme was therefore not rolled out across the city.

Many of the issues that were identified as issues have since been addressed by developments in technology such as queue detecting traffic signals called Microprocessor Optimised Vehicle Actuation (MOVA) and the use of Closed Circuit Television (CCTV) to monitor and fine drivers who infringe bus lanes, or jump red lights. One specific issue addressed in Nottingham, although not the rest of England is the subject of free parking

supplied by employers. Nottinghamshire City Council has developed and implemented *Workplace Parking Levies* (WPL), where companies with 10 or more parking spaces are now charged £288 per space per year, and this has been in place since April 2012 (Barker, 2012).

Although not defined as such at the time of their implementation in 1975, many of the changes trialled in the *Nottingham Zones and Collar Study* could be classed by Thaler and Sunstein's (2008) term choice architecture, as the transport planning officers changed the *default* travel conditions with this scheme, albeit without success in creating long-term travel behaviour change. The study highlights one of the issues with forcing changes on people, as discussed in Section 2.2.2, that people will circumvent the rules, such as not travelling in bus lanes, if they do not agree with them.

3.5.5. Forecasting Growth in Private Motor Vehicle Use

The need to constrain traffic growth is desirable, due to the adverse impacts of congestion on the economy and emissions on people and the environment. One of the primary processes to exist within the TPSOP is the forecasting of future traffic growth. The forecasting of growth and attempting to meet demand through infrastructure provision has formed the basis of transport planning since the 1960s. The Buchanan report predicted high levels of traffic growth between 1963 and 2008 (Buchanan *et al*., 1963). Within the Buchanan Report summary the authors admitted that critics of the US freeways argued that infrastructure solutions: *"never solve the problem because they become congested as fast as they are built"*, yet the authors were convinced that if similar road systems were introduced to the UK, the regulatory system would prevent the sprawling developments that were seen as the cause of the problem of traffic growth.

The Buchanan Report estimated that between 1963 and 2008 there would be an increase of 20 million people in the UK. However, the 2011 Census showed that the population only grew by half the number predicted by the Buchanan Report. This calls into question the reliance on forecast models when planning for transport, as it is extremely difficult to predict future demand. The Buchanan Report also predicted that by 2008 there would be 40m vehicles in the UK, when the total number by 2011 was 34.2 million vehicles (DfT, 2012b). This highlights the difficulties in predicting future developments, as a multitude of factors will influence actual travel trends. Forecast models often predict continual growth and fail to include factors such as economic downturns or disruptive events such as the oil shock of the 1970s (Perron, 1998).

From the mid-1960s, levels of highway construction increased, with various LAs wanting to create new infrastructure to meet traffic demand (Grant, 1977). A process named as *'predict and provide'* (Vigar, 2002; Dudley and Richardson, 2000; Goodwin *et al*. 1991). Parkhurst and Dudley (2008: 51) explain:

> *"'Predict and provide' can be defined as calculating how much unconstrained demand for road travel exists and adopting policy measures and providing funding streams to deliver the required capacity".*

However, meeting predicted levels of demand was not possible, due to the fact that highway construction could not keep up with the projections, thus growth was constrained by the size of the network. To demonstrate this point, Figure 3-3 shows that the Department of Transport's predicted growth figures for transport were repeatedly higher than actual growth between 1989 and 2013 (Goodwin, 2013), as it was not possible to construct the network required to meet the level of demand predicted. This meant that people either travelled by alternative means or chose not to travel at all.

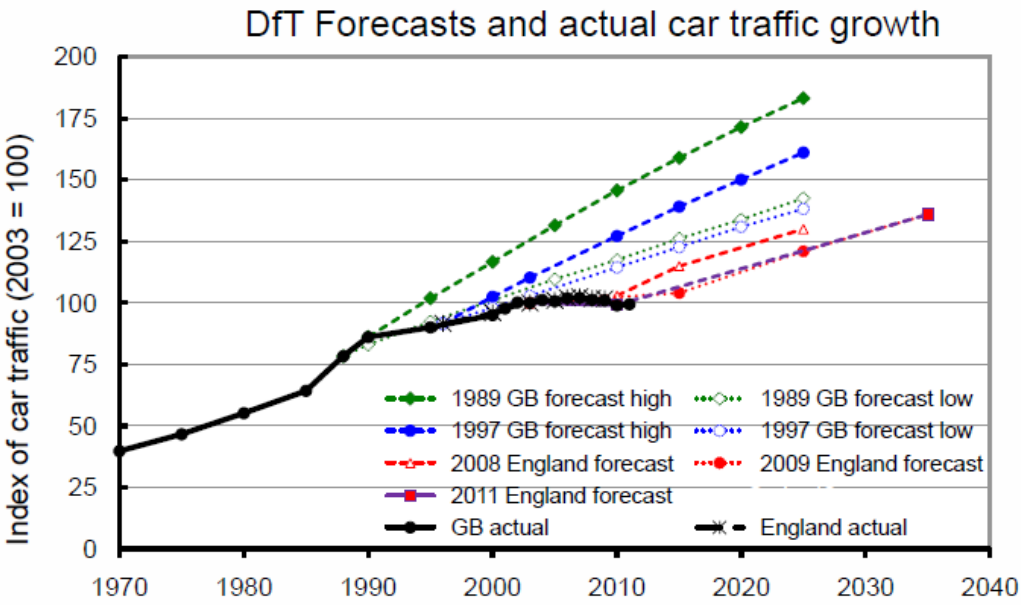

Figure 3-3 Previous Predicted levels of Traffic on English Roads 1989-2013 (Goodwin, 2013). Used with permission of Prof. Phil Goodwin.

In December 2013, the DfT released the *Draft National Policy Statement for National Networks* (NPSNN) (DfT, 2013d). The NPSNN outlined the Government's vision for the development of the rail and highway network in the UK. The document suggested that: "*The*

long term drivers of demand to travel – GDP and population growth – are forecast to increase substantially over the coming years." (DfT, 2013d:7). The NPSNN played down the factors such as economic recessions, and fuel shocks that may restrict this growth.

The NPSNN forecast is being used to promote a £70 billion investment in new highway infrastructure and maintenance to meet this predicted demand (HM Treasury, 2013b). The Draft NPSNN states that traffic declined 3.5% between 2007 and 2010, but the central estimate from the forecast model for traffic growth, on which the NPSNN is based, shows that: *"road traffic on English roads is forecast to increase by 42% between 2010 and 2040"* (DfT, 2013d: 9). Again this shows the importance placed on forecasting as a process in the design of the network in the TPSOP. The UK Government continue to base forecasts on historic estimates of growth, despite Figure 3-3 indicating that it was not possible to construct enough capacity to meet this demand. Government policy has essentially returned to the *'predict and provide'* model, which fits better with the neo-liberal model of choice (Goulden *et al*., 2014).

This forecast modelling used in the NPSNN also fails to account for the decline in trips by private motor vehicles in the 2000s and possibility of *'peak car'* (Goodwin, 2013). In many developed countries fewer young people are getting a driving licence. In the UK there has been a significant decline in people between 21-29 holding a licence between 1995-2008 (Delbosc and Currie, 2013). Goodwin (2013) argues that car use has 'peaked', as fewer people are choosing, or able to, travel by private motor vehicle. The DfT, however, dismiss this argument in the in 2013 White Paper, suggesting that the groups in the UK where decline is happening only make up 30% of the population (DfT, 2013c). This proportion of the population includes the future users of the transport network and if they are not able to access and use the new infrastructure due to the lack of access to the materials and competences of travelling by private motor vehicle. Coupled with changes to the meaning of owning a vehicle there is a possibility that the levels of growth predicted are unlikely to be reached. Goulden *et al*. (2014) suggest that the government's focus on investing in new highway infrastructure provides no clear strategy for delivering the UK's carbon reduction targets. The approach has also been criticised by the Institution of Civil Engineers (ICE), a body whose members would benefit most from the growth in construction schemes. The ICE identifies the over reliance on forecast modelling and the lack of emphasis on how the approach will deal with GHG emissions (ICE, 2014).

Transport forecasting is still based on a model of continual growth, when the evidence from the Buchanan report and the DfT's historic forecasts, shown in Figure 3-3, demonstrate that whilst there was still growth, this was lower than predicted. This is because some of the demand will be taken by alternative modes of travel or some trips will not be made. This change to travel requirements is not adequately captured by forecast modelling. The projections of growth also provide no insight into how the UK will be able to meet it's GHG emissions targets by 2050 and do not include the changes to behaviour that may occur through the delivery of initiatives such as the LSTF.

3.5.6. Behaviour Change Approach in TPSOP

The dominant behaviour change approach within the transport planning in the UK which is known as *Smarter Choices*. Smarter Choices or *Voluntary Travel Behaviour Change* (VTBC) can be traced back to 1991 with the publication of *The New Realism* (Goodwin *et al*., 1991). This report highlighted a major issue with the Government's 1989 White Paper *Roads to Prosperity*, which set out a plan for significant road building in the UK (*Ibid*, 1991). Goodwin *et al*., (1991) identified that there was a limit to the benefits new infrastructure could provide to the transport system and that alternative methods would be required to meet peoples' desire to travel (*Ibid*, 1991). *The New Realism* recommended several methods to improve the transport network:

- Improvements to land use planning;
- The introduction of traffic calming measures;
- Road pricing;
- Traffic management;
- Improvements to public transport services including: information, light rail, ticketing, bus priority and park and ride schemes;
- Improvements to walking infrastructure; and
- Improvements to cycling infrastructure.

Cairns *et al*. (2004) explored the various approaches to changing travel behaviour further by explaining the benefits of: travel plans, personalised travel planning, car clubs and car sharing, and teleconferencing, in relation to the benefits they provide to the operation of the transport system. In 2004 the DfT committed £10 million to the implementation of Smarter Choice programmes in three towns in England, Darlington, Peterborough and Worcester (Sloman *et al*., 2010). The funding was designed primarily to deliver the types of measures

identified by Cairns *et al*. (2004), plus information and marketing of public transport and walking and cycling options. The Sustainable Travel Towns scheme was saw a reduction in car journeys of 9% in the three towns, compared to a 1% fall in comparable towns (Sloman *et al*., 2010). Bus use, cycling and walking also saw increases in use during the period of the study (*Ibid*, 2010). Sloman *et al*. (2010) concluded that the Smarter Travel Towns programme had been successful in creating changes to travel behaviour, reducing private motor vehicle trips and miles travelled, whilst increasing the use of other modes of travel. The authors also concluded that the schemes represented good value for money in comparison to improving capacity for private motor vehicle use on the highway network.

In January 2011 the DfT released the White Paper: *"Creating Growth, Cutting Carbon – Making Sustainable Local Transport Happen"* [2011 White Paper] (DfT, 2011b). The document identified ways that the Government could grow local economies after the recession of 2008/09 whilst reducing carbon emissions (*Ibid*, 2011b). To help LAs deliver the growth through sustainable travel the LSTF was set up. The funding of the LSTF meant that the DfT was one of the first departments in the UK Government to invest significantly in delivering a psychology-based behaviour change programme, alongside infrastructure development, to be rolled out nationally. The LSTF followed the success of the Smarter Choices programme delivered in three towns in England between 2005 and 2008 (Sloman *et al*., 2010), by making funding available for similar initiatives across England (DfT, 2011b). In addition to the travel planning and information provision, the LSTF also included funding for new transport infrastructure. Applicants for LSTF funding were advised that bids should contain a number of small-scale initiatives (DfT, 2011a), in line with the Eddington Report's recommendations that this type of approach provided the best value for money (Eddington, 2006). The LSTF is therefore a hybrid of the *New Realism*, *Smarter Choices* and *Eddington Report's* recommendations for creating behaviour change through sustainable transport initiatives.

3.5.7. Criticism of VTBC

Psychology-based approaches to behaviour change or Voluntary Travel Behaviour Change (VTBC) schemes such as personalised travel planning have been developed in more recent years in England with such measures being delivered through the *Sustainable Travel Towns* programme (Sloman *et al*., 2010). VTBC schemes have been delivered in other countries since the 1990s and have been reported to have been successful in reducing the number of vehicle trips (Brög *et al*., 2009). However, many of the international schemes have failed to

gather sufficient data for the understanding of the long-term benefits of schemes and this has yet to be addressed (*Ibid*, 2009). It is therefore hoped that the evaluation of the LSTF will provide comprehensive data from a variety of sources to demonstrate the success of VTBC schemes.

The delivery of VTBC schemes can be expensive to set up initially (Cohen, 2009), although not in relation to investment in highway infrastructure. Internationally, bodies that have funded VTBC schemes have often have been unwilling to commit the appropriate finances to monitoring the benefits of the scheme making conclusions as to the success or otherwise of the scheme difficult (*Ibid*, 2009). Cohen suggests that more than 10% of the budget should be used to provide an evaluation of the scheme to demonstrate its success or otherwise. This can often be difficult for funding bodies to justify, so the evidence of the success of VTBC schemes remains uncertain (Bonsall, 2009).

With regards to the *Sustainable Travel Towns*, Melia (2013) found that the 2011 Census of the UK showed that the percentage of trips by private motor vehicle travel for travel to work in the three demonstration towns actually increased during the period between 2001 and 2011. This increase in travel to work trips occurred even with the £10 million investment across the three towns designed to promote travel by sustainable modes (Sloman *et al*., 2010). The results in the census relate to mode of travel to work and it is possible that trips non-work related purposes by private motor vehicle may have accounted for the reduction in trips and mileage identified in Sloman *et al*.'s findings. This may be because traveling to work is often time-bound, where as many trips undertaken for different purposes do not have this pressure. This has implications as to how effective psychological behaviour change approaches can be if the desired outcome is to reduce congestion during peak periods.

3.6. Conceptual Model

As the explanation of the structures, agents, relations and processes of the TPSOP above demonstrate, many factors within a system work together to influence the transport network and ultimately create the opportunity for people to change the way they travel. This research uses the LSTF funding stream, a process within the TPSOP, as a case study to help understand how the TPSOP functions. Despite attempts to understand how change occurs using the 3-Elements model this was not possible. The 3-Elements lack the capacity to explore power relations within a practice and how these are exerted. It is important that power is considered when understanding how and why change occurs and thus a new hybrid conceptual model has been developed.

The 3-Elements model does not adequately explain the role of funding to transport planning at the LA level. Funding is a process, but it is not a physical material, as the money transferred between central government and LAs is rarely physical currency. However, funding is very important to the practices of transport planning, as without it no schemes would be delivered. Finance and how to apply for and use funding is a *competence*, as practitioners need to ensure money is spent and the infrastructure and services are delivered to time and budget. Funding also has a meaning, as this influences what infrastructure and services are provided. This *meaning* is likely to be different at the different levels of the system and be influenced by non-technical agents within the system. Non-technical agents include ministers within government; to executive officers and elected council members within an LA. For example, a government minister may have political intentions for funding certain transport schemes to ensure re-election through improving the economy and this may also be the case for local authority councillors. This meaning is likely to be different for transport practitioners, as meanings may relate to professional pride at a job well done rather than any political purpose. Finally the public who use the infrastructure or service may have a different opinion on what they expect to be delivered to meet their need to travel. Each of these meanings is important as they impact on the system that is ultimately provided by transport practitioners.

The LSTF funding stream has created changes to the LA level and to the highway network level. Whilst the SOP approach is useful for understanding the existing transport system, it lacks the detail of what actually occurs at each level. The research generates a new means of interpreting the system by incorporating the 3-Elements model into the SOP framework.

As discussed in Section 2.6.4 and demonstrated in Figure 3-4, practices exist in bundles and complexes (Shove *et al*., 2012), meaning that different practices influence others. In relation to the practices of travelling it is difficult to know what needs to change to reduce the number of practitioners performing travel practices that release GHG emissions. The development of the conceptual model in this research provides the opportunity to identify the structures, agents, processes and relations that exist within a system that enables practices to occur in a particular way. The model will therefore provide a clear and defined pathway through the complexity of bundles of practices. This enables the identification of certain practices within the wider TPSOP that may play a part in preventing the practices of travelling from taking place by sustainable modes.

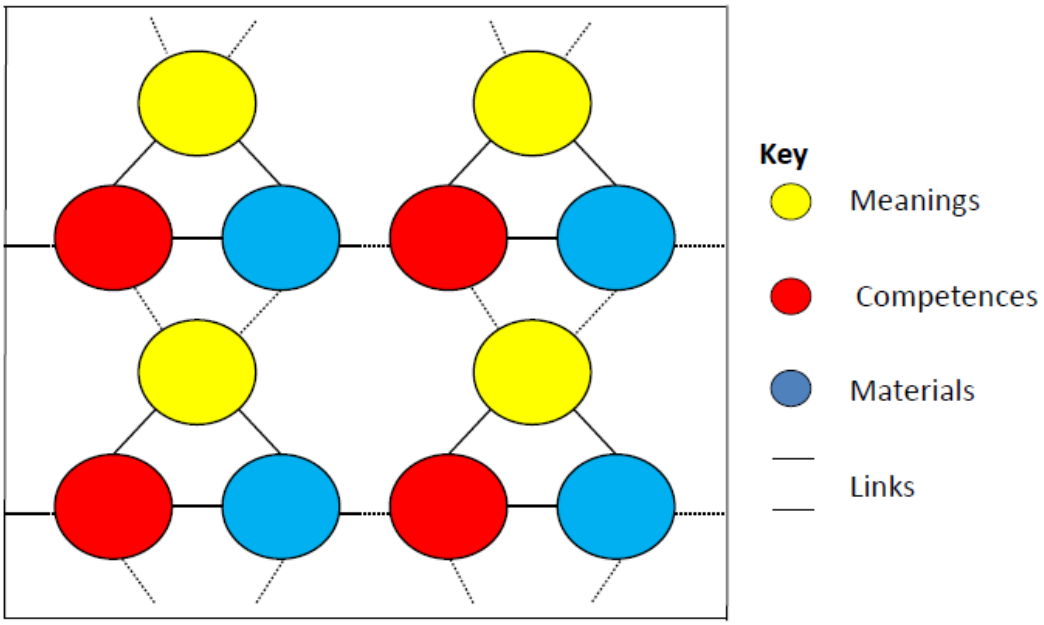

Figure 3-4 A Complex of Practices (Adapted from: Shove *et al*., 2012). Used with permission of SAGE Publications Ltd.

Figure 3-4 shows that practices are bundled together. Whilst this is just a two-dimensional representation, these practices sit on top of each other, around each other and influence other practices that we undertake. Understanding this complexity is where the 3-Elements model fails, identifying only that it exists. Yet as other practices change within the complex change, so to do travel practices. An example of this would be in Corby where a £30m school was built on the outskirts of the town, replacing the one in the centre of the town (Jones, 2012). This change to the materials of a corresponding practice of work and education changed how teaching staff and students travelled to school.

In relation to the practices of travelling, understanding the influence of agents and processes in the TPSOP is important, as these influence the practices of travelling. For example the importance of wider systems influencing practices is demonstrated by a speech by US President Barack Obama in 2012 known as *"You didn't build that"* (Cohen, 2012). In the speech, the US President explains that anybody who has made money in the USA through creating and running their own business, whilst working hard themselves, had help from the US Government or other industries who provided the infrastructure, power and water services that enabled businesses to survive and flourish. In relation to how people travel on the highway network in England, this would not be possible without the TPSOP, with national government and the civil service deciding on which schemes to fund and transport planning

officers, designing, constructing and maintaining the infrastructure to allow the practices of travel to occur. The decisions made at the various levels of the TPSOP influence the network available for people to travel.

Figure 3-5 provides a diagram to demonstrate the conceptual model developed for this research. The model incorporates the structure of the SOP identified and discussed in Section 3.2, highlighting the flow of relations and processes between levels. At each level a separate bundle of practices exist, shown in Figure 3-4. These bundles at each level influence the flow of processes and the relationship within the TPSOP. The model therefore allows someone viewing it to see the different levels that exist within the bundle and how the practices at each level directly influence the one below.

An example of this would be the practices of national government. The meanings, competences and materials of governing the country come from the practices that exist at this level, including voting, canvassing votes, lobbying, forming government and passing bills into law. All of these separate practices form a bundle that influences who is in power and how they choose to run the country. At the second level down in the model, a separate set of practices exist relating to advising ministers and supplying funding to LAs. The third level involves designing schemes, canvassing for votes at the local level to provide services to the public. The final level of the TPSOP is where the practices of travelling occur. From this model it is possible to break down the complexity of practices and identify how they influence how people travel.

Combining the 3-Elements model with the SOP framework enhances the understanding of how practices change, as the relationships and processes that exist between the various levels can be defined. Although ministers are influenced by the performers of the practices of travelling, this is through the separate practices of politics rather than the performance of travelling. The practice of lobbying ministers occurs at the national government level of the TPSOP model rather than the bottom and this is why relationships are shown as a downward arrow in Figure 3-5. The TPSOP model therefore adds new insight into understanding sustainable behaviours at a population level; a key gap identified by the House of Lords Science and Technology Select Committee.

Transport planning officers, who sit at the Local Authority level of the TPSOP, represent the public face of practices as defined by Johnson (1986) and as such provide an alternative viewpoint on travel. Transport planning officers as agents in the system, when funding is available, have the means to influence the materials, meanings and competences of the

practices of travel, as they are the people responsible for the design of the network. The conceptual model allows the research to identify what practices at the upper levels of the TPSOP that influence how people travel that are missed by studies that focus on individual behaviour. Changes at higher levels of the TPSOP structure may provide an opportunity for change to sustainable modes of travel to occur at the bottom level of the system where the practices of travelling occur.

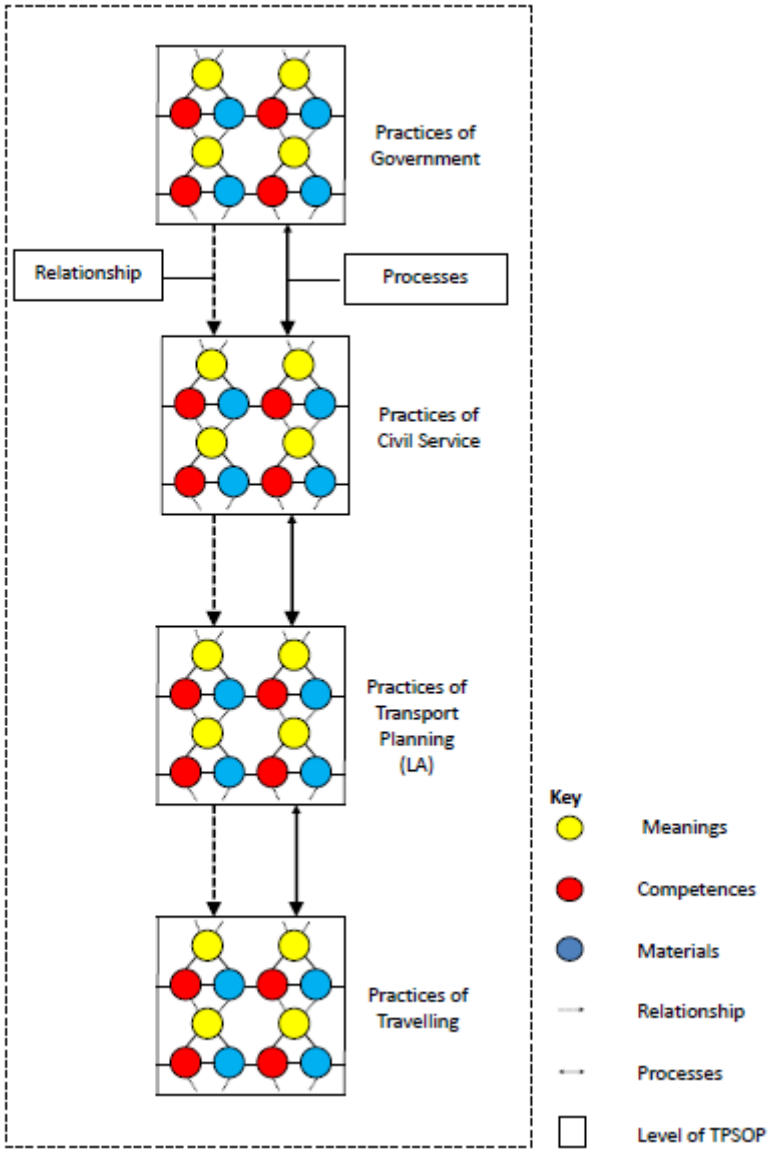

Figure 3-5 The TPSOP/3-Elements Conceptual Model

3.7. Research Question 2

As has been discussed, the benefit of combining the SOP framework with the 3-Elements model to create the TPSOP model is that it provides a new way of explaining the complexity of practices and how they change, by understanding the wider system and its influence on the materials, meanings and competences of travel. This leads to the second research question of the thesis:

Research Question 2: *How does the conceptual model developed through this research enhance understanding of the transport planning system and the practices of transport planning?*

3.8. TPSOP Post-2015

Things rarely stand still within the TPSOP as the system evolves due to changes in government policy on how transport is funded. With the funding for LSTF schemes being delivered to March 2015 coming to an end, the funding arrangements have been altered as discussed in this section. In 2010 the UK Government released a white paper *Local Growth: realising every place's potential* (UK Government 2010). It set out the UK Government's vision to replace the existing regional level of government with the formation of Local Enterprise Partnerships (LEPs), formed between LAs and business leaders in the community as shown in Figure 3-6.

In total 24 LEPs have been established in England (CLG, 2014), each having a role in the decision making processes around the development of infrastructure in the England. This includes new highway infrastructure to be managed by LAs. The LEPs were not in place at the time of the bidding process for the LSTF, but will be involved in the delivery of transport provision post-2014/15 through the delivery of the Single Local Growth Fund (SLGF). The DfT explained to LAs that this new means of funding capital transport schemes (the SLGF) would have: *"a strong focus on economic growth"* (DfT, 2013e: 1), suggesting that the meanings that relate to infrastructure development and the growth of the economy remain entrenched within the TPSOP at the national government level.

In addition to this capital funding LAs were able to bid for one years' revenue funding for 2015/16 from a pot of £78.5m (DfT, 2013f). The capital elements of the LSTF had to be included in the SLGF submission. The DfT explained that the authorities seeking revenue funding for this second tranche will need to demonstrate that their bid aligned with the capital

elements being bid for as part of the SLGF submission (*Ibid*, 2013f). The bids had to be submitted by the 31 March 2014 (*Ibid*, 2013f). In July 2014, £65.5m of revenue funding was announced by the DfT to be split across 44 successful bids as a continuation of the LSTF for 2015/16 (DfT, 2014c).

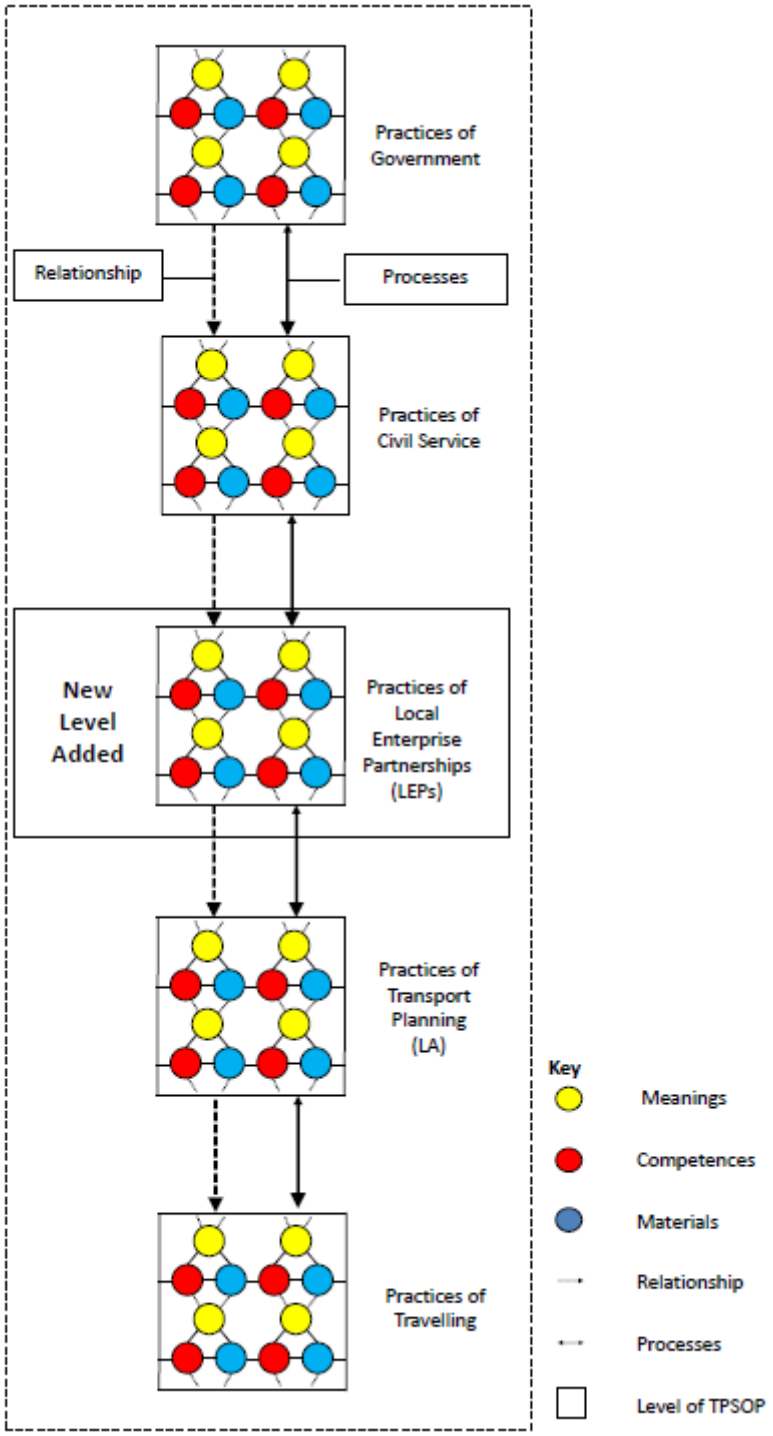

Figure 3-6 The TPSOP/3-Elements Conceptual Model Post 2014/15

3.8.1. Single Local Growth Fund (SLGF)

One of the initial tasks of the LEPs was to develop a Strategic Economic Plan (SEP) for the area. The SEP identifies the vision of the LEP for economic growth and development of the area from 2015 (West of England LEP, 2014). SEPs had to be submitted to the Department for Communities and Local Government by 31 March 2014. The documents are to be used as part of the process for bidding for financial assistance to deliver this vision through the SLGF. The SLGF for 2015/16 provides a pot of £2.019 billion (UK Government, 2013b), broken down in Table 3-2. The UK Government has indicated that the SLGF will be worth at least £2bn for each year of the next parliament 2016/17 to 2020/21 (*Ibid*, 2013b), funding mainly construction based solutions.

Table 3-2 Size and Source of the SLGF 2015/16 (Source: UK Government, 2013b)

Source	**£million 2015/16**
Local Authority Transport Major Schemes	819
Local Sustainable Transport Fund (Capital)	100
Integrated Transport Block	200
Further Education Capital	330
European Social Fund Match	170
New Homes Bonus	400
Total	2,019
Of which, capital	1,449

Table 3-2 shows that the SLGF includes three sources of highway funding: transport majors, LSTF and the integrated transport block. All of these sources are currently available to LAs under the existing funding arrangements. Under the new system LEPs will bid for on the LAs' within the LEP area behalf. The *Transport Major Schemes* is for the delivery of major capital schemes, the LSTF capital element discussed above and the integrated transport block is the funding LAs receive to deliver their everyday highway services, such as routine maintenance and new small-scale infrastructure schemes. What is of note in Table 3-2 is that the funding for transport solutions remains capital focused, highlighting the difficulty in

demonstrating the success of non-capital solutions to transport issues. This leads to the third research question in this thesis:

Research Question 3*: How can the findings of this research be utilised in the transport planning sector to reduce GHG emissions from transport sources?*

To answer this question the research will draw on the findings of research questions 1 and 2, as well as primary data from the face-to-face interviews which were conducted between December 2013 and March 2014, when LAs were preparing their SLGF and LSTF revenue bids.

3.9. Chapter Summary

Chapter 3 has discussed the development the TPSOP model. This adaptation allows for the SOP approach to provide an explanation of the importance of certain processes such as the funding of transport schemes that provide the opportunity for change to occur to the practices of travel. Sections 3.3 to 3.5 provided a breakdown of the structure of the TPSOP, with an explanation of each level. The key agents, government ministers and transport planning officers were also identified. Section 3.4 provided more detail of how the relationships and power within the system operates between the different levels, with government ministers having the greatest power to influence the types of schemes delivered. The importance of different processes, such as funding, bidding for funding, forecasting traffic flows and the introduction of behaviour change initiatives influence the types of schemes delivered.

The chapter has also introduced the conceptual model developed through this research. The model integrates Shove *et al*.'s (2012) 3-Elements model with Fine and Leopold's (1993, 2002) Systems of Provision to create the TPSOP model that provides a means of unpacking the complexity of practices by creating a pathway between government policy and practices. The chapter introduces the second research question: *How does the conceptual model developed through this research enhance understanding of the transport planning system and the practices of transport planning?* This question is designed to highlight whether the model can generate new insights into the practices of transport planning and help identify ultimately their influences over the practices of travel.

The chapter concludes by identifying the changes occurring to the TPSOP before introducing the third research question: *How can the findings of this research be utilised in*

the transport planning sector to reduce GHG emissions from transport sources? This question discusses the introduction of the LEPs as a level between national government and the LAs and the role they will play in bidding and managing funding for transport initiatives post-2015. The question is designed to ask where the research will fit within the model for transport delivery post-2015.

Chapter 4 will provide the methodology and research design that has been undertaken to answer the three research questions posed in Chapter 2 and Chapter 3.

Chapter 4. Research Strategy and Methodology

4.1. Introduction

The following chapter outlines the strategy and methodology for this research project. The chapter sets out the objectives of the research, before explaining how the conceptual model, introduced in Chapter 3, will be tested. The epistemology section describes why the research is approached from a *critical realist* perspective and discusses why this is a more appropriate approach than either *interpretivism* or *positivism*. The chapter will then set out the methods that have been used for collecting (shown in Figure 4-1) and analysing the data, before summarising the ethical considerations and limitations of the research.

4.2. Objectives of Research

The aim of the research is to assess whether Social Practice Theory (SPT) offers new insights into travel behaviour, and whether these findings may be used in the future to create a shift in behaviour towards walking, cycling and public transport (sustainable modes). SPT focuses on practices within society rather than the behaviours of individuals, which differentiates it from psychological behaviour change approaches discussed in Chapter 2.

The objective of the research is to assess whether the 3-Elements model is an appropriate behaviour change tool that can be used to design and implement transport initiatives that are not dependent on users travelling by private motor vehicle. The three research questions identified are included in Table 4.1 for reference.

Table 4-1 Research Questions

Research Questions	
1	How useful is the 3-Elements model:
	a. For understanding changes to practices within transport planning and the way people travel?
	b. For designing transport initiatives?
2	How does the TPSOP conceptual model developed through this research enhance understanding of the transport planning system and the practices of transport planning?
3	How can the findings of this research be utilised in the transport planning sector to reduce GHG emissions from transport sources?

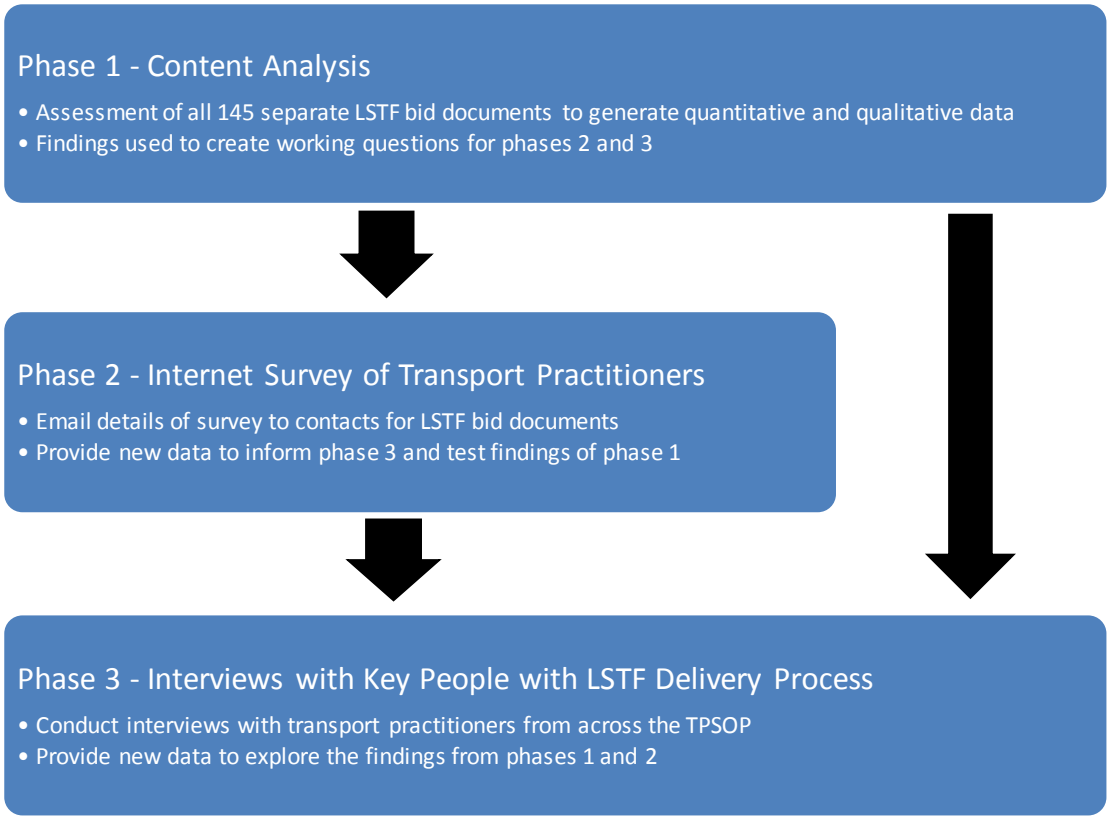

Figure 4-1: Data Collection Process

The second objective is to test the conceptual model designed through this research to identify whether this provides a means of enhancing our understanding of the local authority TPSOP and how the various levels of the system influence the practices of travelling. The third objective is to identify where the findings of this research could be implemented within the transport planning system to reduce GHG emissions from travel on the LA managed highway network.

4.3. Role of Theory/Conceptual Framework

The research is designed to test the applicability of SPT in the context of transport planning and in addition test TPSOP model. The use of the TPSOP model was identified as being necessary for the research in Chapter 2 and Chapter 3 due to the issues encountered trying to fit the underlying processes that influence the practices of transport planning. This led to the creation of the conceptual model, discussed in Chapter 3, a model that combines both approaches to potentially resolve this issue.

The review of literature in Chapter 2 highlighted the issues surrounding current behaviour change approaches in the UK which tend to focus on individual choice, ignoring the other factors that influence how people travel. This research is designed to view the issue of GHG emissions associated with transport through a different theoretical lens (SPT) and uses both quantitative and qualitative methods of data collection, shown in Figure 4-1 to gather this data. The qualitative interviews within this research provide a means of discussing the social organisation of the transport planning sector as well as gathering insight into the performance of the practice (Martens, 2012). The assessment of the content of the LSTF bid documents provides evidence of how the transport planning officers are attempting to create changes to the performances of the practices of travelling. The 2011 White Paper advised transport planning officers that these changes should be created through the delivery of new initiatives designed to improve the infrastructure and to help people develop the skills necessary to travel sustainably (DfT, 2011b). To meet the objectives of this research a mixed methods strategy has been developed to gather data.

4.3.1. Mixed Methods Strategy

Yin (2012: 178) states that: *"The dichotomy between qualitative and quantitative research has become a caricature in the social sciences"*. Yin argues that qualitative research is seen as 'soft' and quantitative data as 'hard-nosed' when they are just attributes of two different types of data that a researcher can collect. As such both types of data can be incorporated into a single study. Sammons *et al*. (2005) conclude their study investigating the importance of pre-school education provision on educational attainment by explaining how the use of a mixed methods approach can help provide complementary strengths, whilst reducing the weaknesses that exist within an individual approach. Sammons *et al*. (2007) argue that this provides a wider evidence base for policy-makers and practitioners, reducing the reliance on one approach. This is particularly appropriate for this thesis, as it is the overall aim that the research has some on transport planning. The findings must be understood in the context to have. As Dudley and Preston (2013) highlight there can be a lead time of up to 20 years between issues being debated within transport academia and the concepts filtering into the transport planning profession.

The use of a multi-strategy approach also provides a researcher with the opportunity to ask and answer different research questions (Bryman, 2008) as they are not tied rigidly to a particular method. The use of mixed methods has therefore been applied to form a more coherent argument than would be provided by a study using only quantitative or qualitative

research methods (Wilson, 2006). This method is often called ‘triangulation’, yet this term has been described as difficult to understand (Bogdan and Biklen, 2000, Willis, 2007) and is just a metaphor.

The mixed-methods approach improves the understanding of the phenomena being studied in this research; the practices of transport planning and the delivery of the LSTF. The transport planning profession has been chosen as the topic of this research, as the profession 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 provides the background for the research by explaining what is being delivered through the content analysis and a survey. Although content analysis is traditionally a qualitative technique, it has been used to identify the specific schemes being delivered in the LSTF, so it has been used to quantify the types of scheme are being delivered. The survey further helps to understand why this was delivered and the qualitative interviews provide subjective explanations for the decisions within the process. This creates a rounded understanding of transport planning as a professional practice, to assess the use of the 3-Elements model as a delivery tool for transport planners and to assist with an understanding on the future of transport planning.

4.4. Epistemology

The research has been developed from a *critical realist* perspective, and, as such, constructs a narrative to explain the mechanisms in the transport system which are conceptualised using the TPSOP conceptual model. The purpose here is not to seek absolute truth (Cruickshank, 2003), but it is to identify a plausible explanation for observed phenomena. However, as was discussed in Section 2.8, the System of Provision (SOP) being assessed is constantly evolving and changing (Danermark *et al*., 2002), so it would not be possible to base analysis on a stable, observed truth of what the transport planning system is, as would be required from a positivist method of research. Critical realism allows for a messy social reality which is not observed in a stable way.

Critical realism also differs from interpretivism, the opposing perspective to positivism, as explained by the following quote:

"Interpretive researchers assume that access to reality (given or socially constructed) is only through social constructions such as language, consciousness, shared meanings, and instruments" (Myers, 2009, p.38).

Interpretivist researchers focus on developing research that is specific and unique to the subject, rather than trying to seek an absolute truth (*Ibid*, 2009). Critical realism sits between these two more extreme approaches, both accepting that it is possible to provide evidence of objectively existing phenomena, but at the same time appreciating that this interpretation of knowledge is a social construct. From a critical realism perspective it is considered that it is therefore not possible to find an absolute truth, but instead generate knowledge that helps improve our understanding of both the social and physical world that exists around us (Cruickshank, 2003).

Bhaskar (1975: 56) argued that underlying structures and mechanisms exist that are different from: "*The patterns and events that they generate*", and thus this research is attempting to provide a framework for understanding the underlying structures and mechanisms. What both TPSOP model is designed to show is the underlying structures and mechanisms that influence how travel occurs and how this ultimately produces GHG emissions.

One of the key benefits for the research adopting a critical realist approach to interpreting the findings compared to a positivist approach is that critical realists accept that causal relationships will not always be observed when studying a subject (Wainwright and Forbes, 2000), but this does not mean that they are not present. The SOP approach incorporated into the conceptual model acknowledges the existence of processes and relationships between the levels of the system, which may not always be observable from the findings, but this does not mean that they do not exist just that they have not been observed through the research undertaken at the time the research was completed.

Critical realists therefore look for tendencies through their research, rather than definitive laws relating to the subject studied and accept that their research is merely an attempt to create a reasonable representation of reality (Popay *et al*., 2003) rather than a definitive description. The findings of this research will therefore provide a narrative discussing the tendencies that exist that form the practices of travelling and within the transport system rather than an absolute answer to the research questions posed. In this way the research will add to our knowledge of both the applicability of the 3-Elements model for interpreting travel behaviour and how the system that provides the highway network influences this.

4.5. Methods

Using a mixed methods approach to this research project has provided the opportunity to apply several different methods. Three methods of data collection have been selected to assist with answering the research questions:

- Content analysis approach in assessing LSTF bid documents [secondary data];
- A survey of transport practitioners involved in the LSTF bidding process [primary data]; and
- Face-to-face interviews with key actors within the sustainable transport community [primary data].

The Content analysis has been chosen as it will help to identify whether the types of schemes being delivered adhere to guidance from the DfT. The analysis provides the background information on what was proposed and what is being delivered as part of the LSTF. This has been assessed in the context of the 3-Elements model.

Section 1 of the online survey has been designed to provide greater understanding of structure of transport planning within the LA level of the TPSOP and the connections and influences of other departments. Section 1 also provides additional information on the other parties involved in the design of the LSTF schemes. This will provide a greater understanding the agents was involved in the process, and how their practices may influence the schemes delivered. Section 2 of the survey provides a background understanding to practitioners' views on transport planning. The results will be assessed to identify which of the 3-Elements model influences the responses given. The survey was designed to elicit views on the future challenges facing transport planning due to changes in funding and climate change. The results from the content analysis and online survey helped to formulate topics for the interviews.

The interviews provide a more in-depth understanding of the 3-Elements of transport, the power structures within transport planning and other influential factors. The interviews were used to assess whether the working practices for delivering transport schemes have altered because of the LSTF and austerity budgeting. They also asked for opinions on the future of the transport planning sector and what is required to deliver sustainable transport.

With each section building on the findings from the preceding stage of research this has helped to provide an explanation of how practices of travelling are changed by the bundled practices within the TPSOP model.

4.5.1. Capturing a Social Practice

One of the challenges of analysing SPT is that a social practice is a theoretical construct, so it is impossible to 'see'. In this way it is an underlying system that influences actions (Bhaskar, 1975). Halkier and Jensen (2011) explain that practices and the impacts of these practices, such as GHG emissions, are webs of social change and reproduction of everyday life. In this way the primary data within this research allows us to identify the activity or activities involved in delivering sustainable transport initiatives, whilst the secondary research data helps to identify the structure within which the practice is performed. As will be explained below, the three methods of data collection will therefore combine to provide evidence for the practices involved in funding, bidding for, designing and implementing transport initiatives.

4.6. Phase 1 – Content Analysis Data Collection

Content analysis is a means of quantifying content of a document or documents into pre-determined categories in a systematic manner (Bryman, 2008). It is then possible to categorise these by coding them. Coding allows the researcher to narrow their focus of attention within the text (David and Sutton, 2004) and categorise the results within the themes identified (Bryman, 2008). The coding allows the author to easily pick out and highlight the similarities and differences within the text or texts. For this research this has been very useful to provide evidence of how each LA has interpreted the DfT's advice (DfT, 2011a) regarding the type of schemes that would be funded and how they proposed to deliver LSTF schemes. This provides evidence of the similarities and differences in interpretation of the DfT's guidance.

Content analysis allows the researcher to quantify a qualitative dataset (David and Sutton, 2004). The approach can be replicated in follow up studies and is unobtrusive in the way the data is collected (Olowoporoku, 2009). The decision was taken to use this approach to enable the researcher to identify any differences between those bids that were funded and those that were not as this information was already available. The findings could then be used to identify the power of national government within the TPSOP.

4.6.1. Introduction and Rationale

The overarching aim of this thesis is to identify ways and means of reducing GHG emissions from private motor vehicles and thereby to explore whether the 3-Elements model and TPSOP conceptual model might provide a means of enabling this. At present, local sustainable transport (*walking, cycling, demand management and public transport schemes*) form a sub-section of the wider transport planning provision that include large and small-scale highway enhancements, significant rail schemes such as Crossrail and HS2, along with changes to airports and ports. To understand the meanings within the system it is important to identify what transport planning officers view to be sustainable transport initiatives through the schemes they build and deliver as this provides a clear definition of what type of scheme is deemed a '*sustainable transport'* scheme. SPT has been applied to the practices of travelling, but to date has not been applied to policy making. The practices of policy making have a direct influence on how people travel and this is where the research will be contributing to knowledge on the subject of sustainable travel.

The LSTF provides a very good case study as it is the first time such a large fund has been ring-fenced specifically for the design and implementation of so many revenue based schemes alongside enhancements to capital infrastructure. This means that the research examine the TPSOP at a point of change to show how this change is exerted.

The LSTF was available to all authorities within England (excluding London), so an assessment of all of the bid documents has provided an opportunity to understand how the LSTF advice and 2011 White Paper were interpreted by LA officers and to show the types of schemes that were funded by the DfT. The content analysis process assisted in enhancing understanding of regional variations and any possible biases in terms of the types of schemes funded from the DfT and ministers.

4.6.2. Sampling

In total there were 145 bid documents submitted to the DfT in 2011 and it was decided to review all of these documents rather than a sample. The analysis provides a greater understanding of the reasons why some schemes were successful and other failed to be awarded money. The approach 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.

LAs submitting bids to the LSTF were given a pro-forma file to complete by the DfT and restricted to 20 pages, although many went over this limit. The pro-forma was used in all bar one (unsuccessful) submission[9]. An example bid document pro-forma is available in Appendix A. The bid document was broken down into five sections A-E shown in Table 4-2. An initial pilot of four bid documents selected at random identified that for the purposes of the content analysis the key data about each scheme was included in Section B: objectives, and Section C: the package description, so for the wider assessment only these sections were reviewed. This is because these sections provided the information on the objectives of the schemes and a description of what was being delivered. Section's D value for money and E deliverability were not included in the content analysis, as the intention was to focus on the schemes being delivered.

Table 4-2 Sections of LSTF Bid Submissions

Section	Overview
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.

[9] Walsall Borough Council submitted a bid called A-Stars Active Sustainable Travel and Road Safety Scheme that contained a project delivery plan instead of the proforma.

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 analysed between August 2012 and December 2012.

4.6.3. Coding Process

A four-stage thematic coding process was undertaken as part of this research using NVIVO software. The first stage involved a quantitative analysis where each specific scheme mentioned within the bid was coded. The scheme types were taken from an initial analysis undertaken by the DfT of the Tranche 1 schemes in 2012. The DfT's summary broke the schemes into four categories: *Public Transport*; *Active Travel*; *Traffic Management and Private Vehicles*; and *Marketing and Engagement* (DfT, 2013h). A decision was made to use these categories for this research and add to them, if necessary, when a new or differing scheme was recorded. This stage of the content analysis therefore explored the frequency with which each type of scheme was mentioned, such as a proposal to construct a new cycle path (active travel), or provide personalised travel planning (marketing and engagement). A list of the LSTF bids is available in Appendix B.

The second stage of coding was designed to identify where the bids met the DfT's objectives set out in the Government's 2011 White Paper *'Cutting Carbon, Creating Growth'*:

- *Supporting the local economy;*
- *Reducing carbon emissions;*
- *Delivering wider social and economic benefits;*
- *Improving safety;*
- *Improving air quality*; and
- *Promoting healthy living*.

A top down coding approach was used to analyse the texts to identify whether there was a correlation between the inclusion of these objectives and the success of bids. If there appeared to be no significance this would demonstrate a degree of competence by bid writers in ensuring their documents meet the required objectives set by the DfT.

The third set of codes was created to understand how the schemes fit with the 3-Elements of the practices associated with travel (materials, meanings and competences). Again this was a top down coding process, requiring the researcher's interpretation of whether each scheme is designed to alter to one or more of the three elements. This is a novel use of the

3-Elements model, intended to generate new knowledge about the applicability of the model to the transport planning sector. The coding was undertaken to assess whether the schemes provided: the *materials; the competences;* or attempted to alter the *meanings* of sustainable travel within society. With the split in funding, discussed in Section 3.5.3, it would be expected that there would be a greater number of schemes designed to alter competences of travel by providing people with the skills and information to travel by these modes as this is what revenue funding enables LAs to provide.

The final set of codes was designed to understand whether the schemes restricted the use of a private motor vehicle. This set of codes was designed to identify whether schemes that restricted or prevented private motor vehicle use were included in scheme design, as Cairns *et al.*'s (2002) suggested that relocating road space rarely caused significant traffic problems. The 2011 White Paper focused on increasing rather than restricting choice and this coding was designed to show whether the schemes delivered through the LSTF included elements that would make it more difficult for people to travel by private motor vehicle. The coding also captured schemes that enabled travel by private motor vehicle or reduced the need to travel. Table 4-3 provides a summary of the codes used within this research project.

The development of four codes was designed to allow the data to be interrogated from different perspectives. Potter and Wetherell (1994) explain that the description of practices and institutions can be better understood through the application of a set of different discourses. These discourses provide a differing understanding of the same material, due to the viewpoint chosen. For this research two separate discourses were identified: a political discourse (codes 1, 2 and 4) and a social practices discourse (code 3).

The first code provides a set of quantified data about the schemes developed through the LSTF. The second and fourth codes identify political discourses providing an interpretation of the objective of each scheme in terms of societal benefits and how this would be achieved. This political discourse assists the research in identifying where power is being exerted within the transport system and how this is interpreted at the various levels of the TPSOP. The 3-Elements codes provide a sociological discourse to draw out what types of scheme are being delivered in terms of physical developments, training or altering how transport is perceived. This is important, as transport planning and the delivery of transport services has yet to be researched using the lens of social practice theory or the 3-Elements model.

Table 4-3 Coding Categories

Code 1 – Scheme Type					
Public Transport	Active Travel	Traffic Management and Private Vehicles	Marketing and Engagement		
Code 2 – DfT Requirements					
Support the Local Economy	Reduce Carbon Emissions	Deliver Wider Social and Economic Benefits	Improve Safety	Improve Air Quality	Promote Healthy Living
Code 3 – 3-Elements					
Materials	Competences	Meanings			
Code 4 – Restricting Private Vehicle Use					
Enabling Travel (all modes excluding private motor vehicle)	Enabling Journeys by Private Motor Vehicle	Incentivising (Financial)	Incentivising (Non-Financial)	Restricting Car Use	Reducing the Need to Travel

4.6.4. Assessment of Funding Awarded

The bid documents and DfT funding announcements (DfT 2011c; DfT 2012a) contained high level information regarding the funding bid for and funding received. Within the thesis this information has been explored to understand the type of schemes that the DfT wish to fund and how the LAs have interpreted the advice in the Guidance on bidding (DfT, 2011a) when bidding. This analysis was undertaken to understand the role funding plays within the TPSOP.

4.7. Phase 2 – Online Survey

Following the completion of the content analysis the second phase of research was designed to gather primary empirical data for the project relating to: transport planning officers' views on transport planning; and to provide an explanation of the other bodies involved within the design of the LSTF bid documents. The survey was designed to build on the findings from the content analysis to provide an understanding of how each of the LSTF

schemes was designed, who had input into this process and where the ideas for the schemes came from, as this information could not be gathered through the content analysis process.

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, 2008). Self-completion surveys can have lower response rates and missing data from respondents not understanding the questions (Bryman, 2008). However, it was therefore decided that the most efficient approach to gathering data would be an online survey. This method was selected principally for ease of delivery to contacts at local authorities. 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.

4.7.1. Generation of Survey Themes

This stage of the research continued to explore the political discourse that exists within transport planning. For example, whether the bids were designed within transport planning *'silos'* within the LAs, or whether there was greater involvement from across the Council and with other key stakeholders in the local area. The first section of the survey asked questions that were designed to identify the level of input by non-transport practitioners in the design of the LSTF bids. These questions where intended to highlight the political discourse and the flow of power through the TPSOP, as the DfT's application guidance (DfT, 2011b) suggested that bids that involved partnership working would be considered favourably.

The second section explored the other factors that influenced scheme selection and design, such as existing schemes the LAs had identified as part of the Local Transport Plan (LTP) process. These questions also explored the political discourse relating to the delivery of schemes at the local authority level and the changes occurring within the system through the development of Local Enterprise Partnerships.

The third section of the questionnaire explored the respondent's views on more general issues facing transport planning departments in local authorities. The themes in this section included: congestion, enabling travel and travel choices, traffic inducement; factors influencing transport modes and climate change. The themes are based on the political discourse of transport planning and were identified through the objectives highlighted through the 2011 White Paper as being the key issues within transport that the LSTF was

designed to address. The survey was therefore structured around these key themes with specific questions relating to each theme included. The final section asked for details of role and level of experience to allow for cross-referencing of the results.

4.7.2. Sampling

Each LSTF bid document front cover contained details of the project's Senior Responsible Owner (SRO) and the bid manager. On the 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 because 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.

4.7.3. Design, Pilot and Administration

The survey was designed and set up using internet survey *SurveyMonkey*. A copy of the survey can be found in Appendix C. 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. The initial contact email address (found in Appendix D) included the details of the wider *Disruption* project through which this research was funded. Disruption is a 3-year project examining mobility, and the opportunities for change created by disruptions and disruptive events (Disruption Project, 2014). It is possible that this could have influenced the response rate and the way the questions were answered, but after some consideration it was decided that including the name of the project and the funders would add weight to the importance of the survey.

Several of the questions within the survey mirrored the British Social Attitudes Survey to allow for comparison with the general public's views on transport issues to test whether transport planning officers' views differed from wider public opinion on issues such as traffic congestion and climate change. This would assist with enhancing knowledge about the meanings placed on transport at the local government level of the TPSOP.

The survey was piloted with eight practitioners who were involved in the LSTF process but were not bid managers. This process helped 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, 19 responded or provided a new contact and this person was duly sent a link to the survey. Reminder emails were sent two weeks before the closing date, an example of which is available in Appendix D. The survey was open for six weeks between 17 May 2013 and 30 June 2013.

4.7.4. Further Promotion of the Survey

A presentation was given at the LSTF Practitioners Workshop in Birmingham in May 2013 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 E). The promotion of the survey through both these media was designed to recruit further respondents involved within the LSTF process to complete the survey.

4.7.5. Analysis Plan

The outputs from the content analysis and responses to the practitioner survey both generated categorical data. This data cannot be ranked or ordered (Jones, 2010), so a chi-square test was chosen as the preferred method of analysis. This is because both the content analysis and the survey were designed to create unique responses that could not be grouped together. For example the data generated from the content analysis identified schemes that provided: a new material, a new set of competences or were designed to alter the meanings of travel. Each of these categories stands alone and by definition individual measures included in the schemes did not fall into more than one category.

The chi-square test is used to identify the number of incidences that an observation would be expected to be seen by chance alone (*Ibid*, 2010). This makes the test useful for identifying how the national government's 2011 White Paper influenced the types of schemes that were delivered through the LSTF. The test is therefore useful to see if there is any statistical significance in the types of schemes included in the bids that were either invited to resubmit, or refused funding.

The main limitations with using the chi-square analysis are that it only provides evidence of a possible relationship, but not the strength of this relationship (BUMC, 2015). To counter this drawback, where the chi-square test showed a possible relationship the topic was discussed

within the face to face interviews. This helped to identify any possible reasons for the relationship. Chi-square tests can be sensitive to sample size (McHugh, 2013). Small samples (under 50) can produce inconclusive results. The samples used in this study vary in size, but it was decided that chi-square was still the best tool to identify whether any significant relationships existed within the categorical dataset.

The data from the survey was transferred into Excel for initial analysis. The data was checked for errors and a coding scheme was created to allow the appropriate data to be input in to statistical analysis software package SPSS. The remaining data was retained in Excel, where it were summarised in table and graphical format for inclusion within the study. The data is assessed in Chapter 5. The chi-square test was run to identify any significance in responses in relation to the respondent's seniority, time within the industry, or time with the LA.

4.8. Phase 3 – Face to Face Interviews

4.8.1. Introduction and Rationale

The qualitative analysis was designed to help answer the questions raised by the findings of the first two phases of research and fill the gaps that still existed within the understanding of the transport planning practice, building on the information gathered through the assessment of the LSTF bids and responses to the surveys. In total 20 interviews were undertaken with various professionals across the transport planning sector. Three of these interviews involved interviewing two people at the same time. This means that in total there were 23 interviewees. Of the interviews, 16 were held face-to-face, with four completed by telephone due to the respondent's availability. Face-to-face interviews were the preferred method of conducting the interviews as the researcher was able to interpret both the language used and the non-verbal language when discussing a subject (Denzin, 2009). The interviews took place in meeting rooms, which generally removed distractions. The telephone interviews, although not ideal because it meant that there was a possibility the interviewee may have been distracted by colleagues and things such as emails on their computer as was the case in Interview 20. However, it was decided that in terms of the importance of respondents interviewed by telephone to this research it was worth making this trade-off.

Face-to-face interviews provide a more inductive approach to research which is used for answering 'how and why' questions (Blaikie, 2000). Semi-structured interviews were chosen as they allow interviewees to provide '*a more natural expression of life*' (Willis, 2007: 147),

whilst allowing the interviewer to control the topics discussed. 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 observable through the content analysis and questionnaire. Structured interviews were not chosen, as they set 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. Semi-structured interviews allow the researcher to design 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. A copy of an interview guide generated for this research can be found in Appendix F.

Semi-structured interviews provide flexibility to the interviewer (Bryman, 2008). The interview guide is created in preparation for the interview. 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 allow the interviewer to identify attitudes, behaviours and inside information on how transport schemes are designed and managed (Olowoporoku, 2009), adding to the understanding of the mechanisms behind the funding of LSTF schemes.

4.8.2. Interview Recruitment Process

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, with 16 agreeing to be interviewed. The respondents were asked to give details of their role, their length of service in the authority and their length of time within the transport planning industry. From their email addresses it was possible to ascertain whether they work for a County Council (CC), Unitary Authority (UA), Metropolitan Borough (MB) or Transport Authority (TA).

4.8.3. Supplementary Interviewees

In addition to practitioners involved in bidding for and delivering the LSTF, interviews were conducted with Norman Baker MP and Stephen Joseph of CfBT; with two civil servants who had worked for the DfT; and three people involved with Local Enterprise Partnerships (LEPs) and Local Transport Bodies (LTBs). These were contacts gathered through previous work experience. The supplementary interviewees were selected to provide a range of responses

related to the higher levels of the TPSOP that were not captured in the first two stages of the data collection process.

Each respondent was given unique reference to make it possible to differentiate them within the text. Appendix G provides a summary of each respondent code, their LA type (where applicable) and whether the LA was successful in being awarded funding.

4.8.4. Interview Questions

The first two stages of data gathering provided the results discussed in Chapter 5. After analysis of this data several areas were identified that needed further evaluation and detail, particularly in relation to the first two levels of the TPSOP: the practices of government; and the practices of the civil service. The questions used for the interviews were included in an interview guide which was broken down into six sections. The first section of the guide asked for each interviewee's background and experience within the transport sector to identify whether they were the correct person within their organisation to discuss the LSTF.

The second section of the guide drew on the findings from the first two stages of research using on the experience of the LSTF and the impact this funding stream had on the transport planning industry. The responses were then reviewed in what Mason (2002) describes as an *interpretive manner*, where the researcher has 'read' the interviews to interpret what they mean within the context of the TPSOP model. The first two stages of data collection (content analysis and survey) provided examples of government influence on the type of transport schemes proposed in the LSTF bids. Therefore the questions included within the third section of the interview guide were designed to provide clear examples of the government steer and where power was exerted within the TPSOP.

The fourth and fifth sections of the interview guide were designed to build on the knowledge of the LSTF schemes and provide details of the respondents' knowledge of behaviour change theory. The questions also sought to develop the findings from the practitioner survey where, as discussed in Section 5.5, many factors that sit outside the control of transport practitioners influence the way people travel. This section was designed to develop the sociological discourse in relation to how practices are formed and where the language and the meanings used within the TPSOP by practitioners are derived.

The final section asked respondents what they believed would be the perfect transport planning policy and/or funding stream to create change to travel practices. This provided

several examples relating to the political discourse, outlining improvements that could be made to the system in general and how schemes are financed. Finally, the respondents were given the opportunity to ask questions about the wider research project (*Disruption*), as this generated more useful information about their work in the context of this research. Copies of each of the interview guide used for the research are available in Appendix F.

4.8.5. Coding Process

The interviews were recorded and the transcripts written up and coded using NVIVO software. Whilst the interview guide had six general themes discussed in Section 4.8.4, the semi-structured nature of the survey meant that several of the answers could overlap themes. The coding process was therefore completed using different headings that fitted with the research as part of a thematic process. Where an interviewee discussed a certain topic inductive coding was used to develop the new headings, shown in Table 4-4, as new themes emerged from the text. In total this created eight primary codes relating to the topics demonstrated the benefits or otherwise of the 3-Elements and TPSOP models.

The first primary code related to the changes to the department that had occurred since 2010. These questions were designed to understand the impact the LSTF funding (or lack of) had on staff retention and recruitment. This code also provided an opportunity to gain information on cross-working within LAs that were unsuccessful in being awarded funding and built on the findings from the practitioner survey, which also contained questions on this topic.

Other primary codes were created to highlight where respondents had made reference to specific topics such as finance, behaviour change or where the comments related to where power and influence existed within the system. In addition to this, information was gathered on how sustainable transport infrastructure was maintained and the future of the schemes post-2015. Finally, in relation to the schemes themselves, data was collected exploring the LSTF, the evaluation process and whether schemes were designed to ‘disrupt’ or break the links between practices. Below each of these themes a set of secondary coding was created, exploring themes that were identified prior to the interviews such as *revenue* and *capital* funding (Section 3.5.3) and others that were identified within the interviews such as *whole life costs* for projects. This fluid approach to coding allowed the research to develop by including codes that were pre-defined and codes that developed through the interview process.

Table 4-4 NVIVO Codes for Interview Responses

Primary Code	Secondary Code
Changes to Department	*Staff Changes*
	Cross-Working
	Working with Stakeholders
Maintenance	*General Maintenance*
Finance	*Revenue*
	Capital
	Whole Life Costs
	Consistency of Funding
	Post 2015 - Finance
Behaviour Change	*Nudge*
	Individual Behaviour
	Society Influences
	Meanings
	Changing Meanings
Power and Influence	*Central Government*
	LEP Level
	Local Authority Level
	External Influences
LSTF	-
Evaluation	*Measuring Transport Benefits*
	Forecasting
Disruption	*Prohibiting Private Vehicle Use*
	Disincentivising Private Vehicle Use
	Maintenance
	Demand Management

By basing the coding on an interpretive reading of the interviews, this has enabled the meanings within the interviews to be inferred. This allowed a general picture of the TPSOP to be developed. Neither the 3-Elements model, nor the TPSOP model was discussed within the interviews, but the questions were used to identify key themes. The coding process helped to provide new data that provides an enhanced explanation of each level of the TPSOP, the links through processes and relations between them and most importantly how change occurs within this system.

As discussed in Section 4.8.1, it was possible use the non-verbal information gathered in the face-to-face interviews to code text that may have been ambiguous without this knowledge. This helped classify certain parts of the transcripts into the correct code and assisted with the assessment and interpretation of the responses in Chapter 6, as it was possible to interpret the point the respondent was trying to make within the context of the TPSOP.

4.9. Ethical Considerations

The ethical implications of conducting both an online survey, and interviews with practitioners were considered carefully for this research project. To ensure respondents of the online survey understood the nature of the study and how the data would be used for academic research, the first page of the survey included an explanation of this. Figure 4-2 shows a screen print of the front page. The research plan was approved by the Faculty of Environment and Technology's Ethics Committee at UWE in May 2013. Copies of the checklist and approval email are available in Appendix H.

For the 20 interviews undertaken it was important that participants understood the nature of the study prior to agreeing to take part. To ensure that informed consent was granted before the interview began, the researcher introduced himself, outlined the nature of the research topic, what the interview entailed and how the information would be used. The interviewee was provided with a consent sheet which they were asked to sign before the interview proceeded. This process was undertaken for all 18 anonymous interviews. With two of the interviewees it was not possible to provide anonymity to two of the respondents due to the limited pool of potential respondents that could have provided the information. This was explained to both parties prior to the interview and they consented. A consent form was supplied to the respondents of the anonymised interviews prior to the interview and signed copies have been retained in a secure location by the researcher. These will be destroyed within three years of the thesis being completed. An example of the consent forms used for this research is available in Appendix I. Ethical approval for interviews included in this research was approved by the Faculty of Environment and Technology's Ethics Committee at UWE in December 2013.

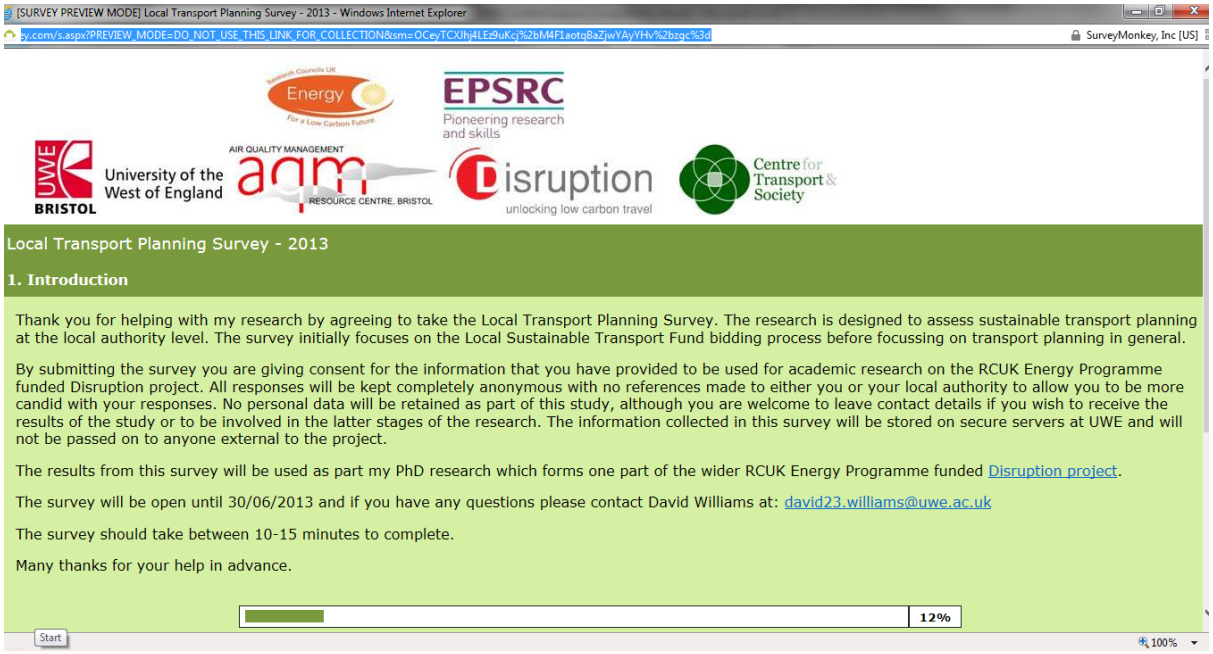

Figure 4-2: Local Transport Planning Survey 2013 - Front Cover

The primary ethical considerations of the methods of data collection with online surveys including: "*consent, risk, privacy, anonymity, confidentiality and autonomy*" (Buchanan and Hvizdak, 2009:37). Anonymity for respondents is important for this research, as it allowed the respondents to express views that may have been less forthcoming if it had been possible to identify who within the organisation had made the comments. To protect the anonymity of the remaining respondents the transcripts were anonymised so that any references to locations or specific incidents were removed. This was completed with agreement from the respondents and to ensure that the each of the respondents remained anonymous. By providing anonymity and ensuring that the data was stored on secure servers and password protected hard-drives it was possible to minimise the risk of the data becoming publically available. A data management plan was completed and maintained for the research project which outlines, data collected, how it is stored and how it was to be archived at the end of the research project.

It was not possible to provide anonymity for both Norman Baker MP and Stephen Joseph from the Campaign for Better Transport given the important role both have played in shaping the research topic. Both were happy with this. They and all of the interviewees were provided a copy of the interview transcript. Respondents were able to request that part or the entire interview was not used for the research project.

4.9.1. Data Management

The data used in this research will be retained by the UK Data Archive in line with the project's Data Management Plan (Appendix J). This means that it would be possible to replicate this research using the data within this project. The qualitative data has been coded to identify keywords and themes that run through the different sections of text (David and Sutton, 2004) as well as to provide an understanding of the schemes being delivered. This means that it would be possible to identify this interpretation of the information sources and replicate the research to give a representation of the transport planning sector at the time the research was completed.

4.10. Limitations of the Research

As with all research there are limitations to the study. The provision of transportation infrastructure and services is undertaken by many different bodies both in the public and private sectors and it has not been possible to account for any alternative Systems of Provision, which as discussed in Section 2.8.5 *'leak'* into and interlink with the TPSOP. This might include the systems that provide bus services, train services and the strategic road network. It is possible that this could be rectified by any person wishing to apply the TPSOP model developed for this research to another system of provision.

4.11. Summary

Chapter 4 outlined the reasoning for developing a mixed-methods strategy and explains how the data for the thesis was collected to answer the research questions set out in Chapter 2 and Chapter 3. The chapter justifies the methods selected before explaining how they were used to collect the data. Methods include: a content analysis of LSTF bid documents, an internet search of highway construction schemes, a survey of practitioners involved in the bidding process for the LSTF and interviews with practitioners within the transport planning sector. Table 4-5 provides a summary of the key steps involved in the methodology for this research project.

Table 4-5 Methods Timeline

Time	Method/Activity	What steps were involved?
August 2012 – December 2012	Coding of LSTF bid documents in NVIVO	Development of assessment criteria Random sampling of four bids Assessing bids against criteria Completing statistical analysis of results
August 2012 – October 2014	Internet search	Gathering information from CfBT Sifting results to align with LSTF timeframes Internet search of key information on highway schemes Coding and summarising finances for highway schemes
April 2013 – July 2013	Setting Up and delivering practitioner survey	Designing research questions Piloting survey with eight practitioners Redesign and finalising survey Emailing link to survey and promoting it Closing survey and assessing feedback
December 2013 – March 2014	Face to face and telephone interviews	Designing research questions Piloting survey with three practitioners (interviews 1 and 2) Redesign and finalising interview questions Undertaking interviews Assessing results

Chapter 5. Results

5.1. Introduction

Chapter 5 presents the findings from the first two phases of data collection as outlined in the methodology. Sections 5.2 to 5.5 of this chapter will outline the findings and how they relate to Research Question 1:

How useful is the 3-Elements model: a. For understanding changes to practices within transport planning and the way people travel? and b. For designing transport initiatives?

Section 5.2 will set out the results from the secondary data analysis undertaken by a content analysis of the bid documents. The content analysis provides a detailed account of the type of 'sustainable' transport schemes programmed for delivery in England between 2011 and 2015 by Local Authorities (LAs) as funded through the Local Sustainable Transport Fund (LSTF). The results are analysed to identify what elements of a practice each scheme is attempting to alter or address. This is of interest because it creates an understanding about the nature of the opportunity for a change to the practices of travelling.

Section 5.3 discusses the role of funding within the process of delivering sustainable transport infrastructure and the challenges of applying the 3-Elements model alone. Section 5.4 provides a summary of the results from the online survey of transport officers that was undertaken to provide greater insight into the process of compiling the bid documents prior to their submission to the DfT. The assessment of the results will provide more depth to the analysis of where the meanings and influences come from in the design process of sustainable transport schemes.

The factors that influence the transport planning system and the practices of travelling are discussed in Section 5.5. The chapter concludes in Section 5.6 by highlighting the key findings from the first two stages of the data collection process. Chapter 5 will be followed by the discussion Chapter 6 that will consider the findings from the results chapter and seek to demonstrate how the underlying system of transport planning influences the practices of travelling.

5.2. Using the 3-Elements Model to Explore LSTF Bid Submissions

The following section presents the data related to Research Question 1. The combined results will help understand whether the Local Sustainable Transport Fund (LSTF) schemes are creating mechanisms targeting the three elements of the practice as defined by Shove *et al*. (2012).

5.2.1. Content Analysis

As explained in the methodology (Section 4.6), the research assessed all 145 submissions for funding in 2011 and 2012 by LAs in England. Figure 5-1 outlines the outcome of bids. In total, 96 bids were funded (including Stoke-on-Trent and North Staffordshire's Tranche 2 bids which were combined). Tranche 2 consisted of 15 LAs who were invited to resubmit in addition to 37 new bids. This included Derby City Council which the DfT invited to resubmit for Tranche 2 having previously submitted unsuccessful bids for Tranche 1 and Large Project funding. In total 32 bids did not receive funding.

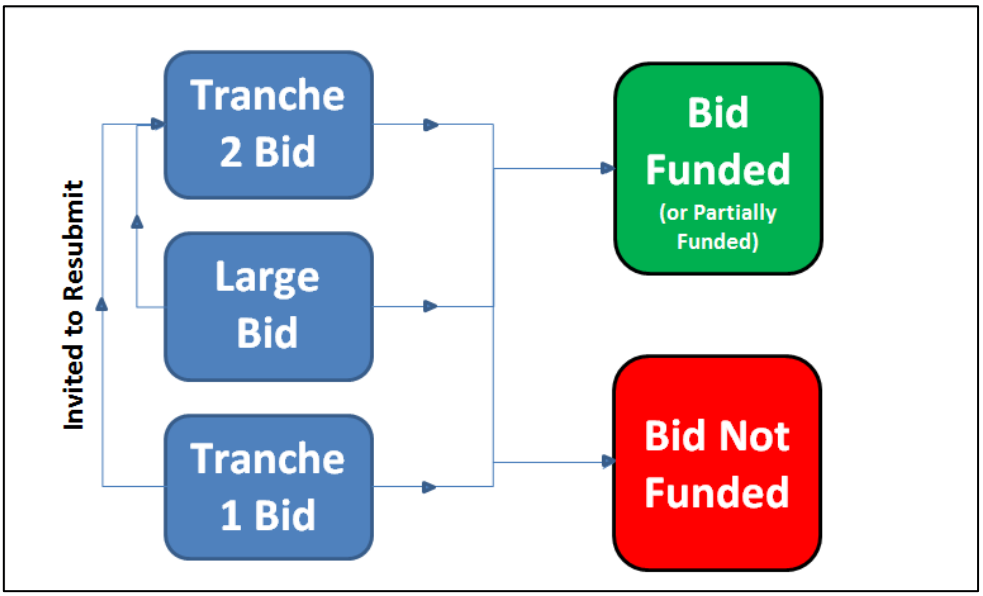

Figure 5-1: Outcomes for the LSTF Funding Bids

As discussed in Section 4.6, content analysis is a means of quantifying content in a document. A process of coding the LSTF bid documents was undertaken to identify whether they were designed to provide materials, develop competences of people undertaking the practices of travelling or alter the meanings associated with travel in line with the 3-Elements model, shown for ease of reference in Figure 2-4. If change is to occur to the practices of travelling the 3-Elements model suggests that some or all three of these elements need to

adapt or change. This occurs through breaks being created to the links between elements that continue to support private motor-vehicle use as the preferred means of travelling for many people. In Figure 5-2, the links are represented by the black lines, with the elements represented as the circles.

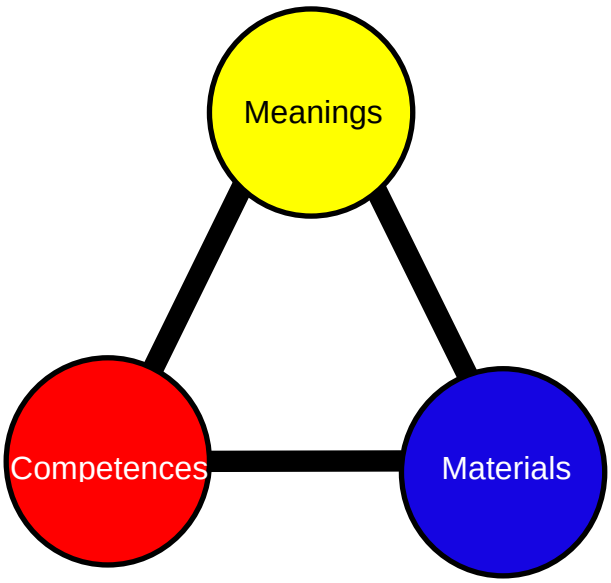

Figure 5-2 The 3-Elements Model (Adapted from: Shove *et al*., 2012). Used with permission of SAGE Publications Ltd.

5.2.2. Coding – DfT Objectives

In Section B of the LSTF bid documents LAs were required to include an explanation of the particular objectives that the package of schemes was designed to meet. This explanation is important as it provides information about the meanings incorporated in the bids. The scheme objectives were coded using NVIVO software and Table 5-1 shows the number of bids that include direct references to the DfT's objectives in the DfT's 2011 White Paper (DfT, 2011b) and the LSTF guidance manual (DfT, 2011a). The 2011 White Paper identified *supporting the local economy* and *reducing carbon emissions* as the two primary objectives for bids; required if they were to receive funding and these two objectives are shown in bold italics within Table 5-1. Table 5-1 also shows that all bar seven bids (5%) included a direct reference to: *Supporting the Local Economy* and 13 bids (9%) failed to mention *Reducing Carbon Emissions*.

A chi-square test of independence was performed to examine the relationship between successful bids and unsuccessful bids and the DfT's objectives in Table 5-1. The test was carried out to see whether the proportion of successful bids differed depending on whether

particular DfT objectives were cited in the bid document. The test found that there was no significant relationship ($p<0.05$) between any of the objectives and success in achieving funding. The full workings are available in Appendix K. The result of the chi-square test shows that the majority of transport planning officers who bid for funding followed the guidance from the DfT particularly in relation to the inclusion of the two main objectives.

Table 5-1 Success of Bid, whether it contained DfT Objectives and Chi-square Significance

LSTF NVIVO Analysis	Successful Bids Inc. Objective	Resubmit Bids Inc. Objective	Refused Bids Inc. Objective	Chi-square Significance	Level of Significance
Total Number of Bid Type	**96**	**16**	**32**		
Supporting the Local Economy	91	16	30	*p*=0.591	-
Reduce Carbon Emissions	87	14	30	*p*=0.733	-
Reducing Congestion	76	11	24	*p*=0.684	-
Improving Journey Time Reliability	50	9	11	*p*=0.192	-
Improving Journey Time Predictability	27	6	8	*p*=0.654	-
Enhancing Access to Employment	72	14	21	*p*=0.263	-
Active Travel Walking	85	15	26	*p*=0.449	-
Active Travel Cycling	93	16	29	*p*=0.308	-
Deliver wider social and economic benefits	70	15	22	*p*=0.146	-
Accessibility	86	13	24	*p*=0.160	-
Improving Safety	80	16	27	*p*=0.194	-
Improving Air Quality	53	7	13	*p*=0.332	-
Promoting Healthy Living	84	13	26	*p*=0.700	-
Key ***Bold Italics*** Key objectives identified by DfT (DfT 2011a, 2011b)					

The DfT guidance documents also identified secondary objectives that the LSTF bids should meet where appropriate. These include: delivering wider social and economic benefits; improving accessibility; improving safety; improving air quality and promoting healthy living. Table 5-1 provides a breakdown of the secondary objectives included in the LSTF bids (non-italics). In general these align with the DfT guidance. However with the exception with the inclusion of Active Travel - Cycling, all of the secondary measures are included less than the primary objectives. The results show that the primary meanings expressed in the LSTF bid documents align with the DfT's objectives of improving local economies whilst reducing

carbon emissions. This is represented in Figure 5.3, where the circle represents the meanings that exist within the practice of bidding for LSTF funding schemes.

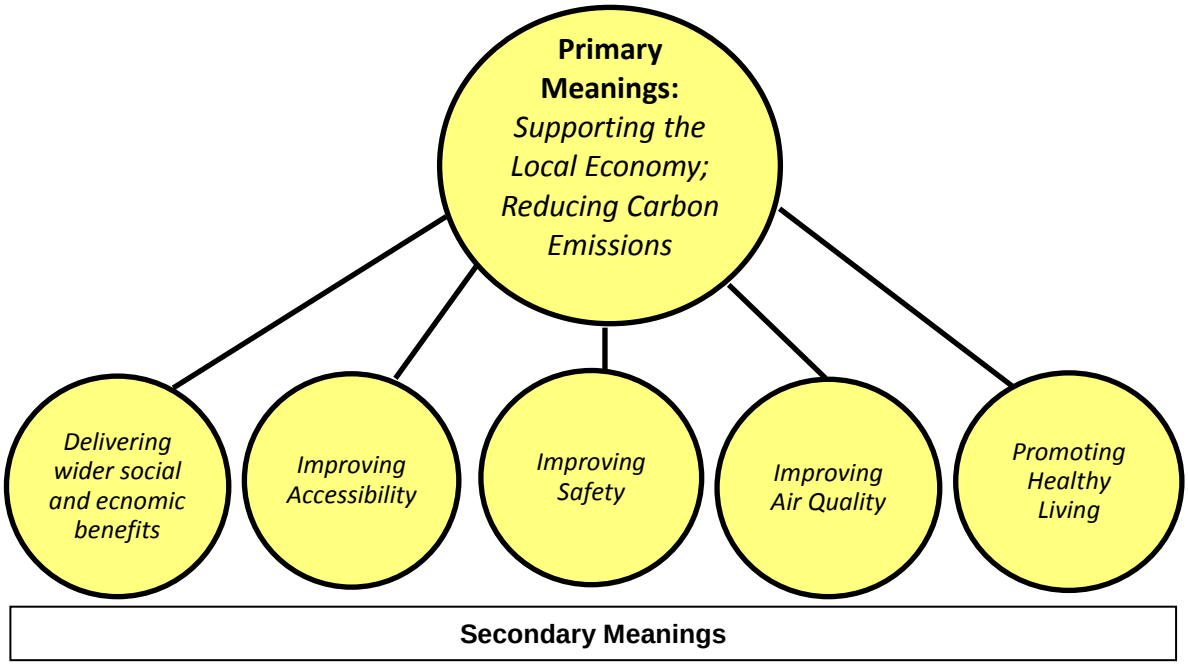

Figure 5-3 Meanings of the LSTF schemes

In reference to the TPSOP model this would represent a clear example of where one level directly influences the next. The meanings formed by the national government, were recorded in the 2011 White paper by the civil service. The 2011 White Paper directly set out the objectives of what sustainable transport schemes within the LSTF should be designed to achieve. This influence is represented by the relationship arrow in Figure 5-4.

This result helps to demonstrate the power the national government and have to influence what is defined as a sustainable transport scheme in England. The inclusion of the 2011 White Paper objectives within the bids shows how meanings filter between the levels of the TPSOP through the processes such as funding. Bid writers at the LA level follow these funding guidelines in attempt to win funding for their authority even if there may be other meanings associated with sustainable transport within their own LA. The variety of alternative meanings at the local authority level of the TPSOP is demonstrated in the mixture of secondary objectives identified within bid documents. The lack of statistical significance of any secondary objective in the Chi-square test, shown in Table 5.1, of indicates that a variety of meanings exist at the local authority level of the TPSOP.

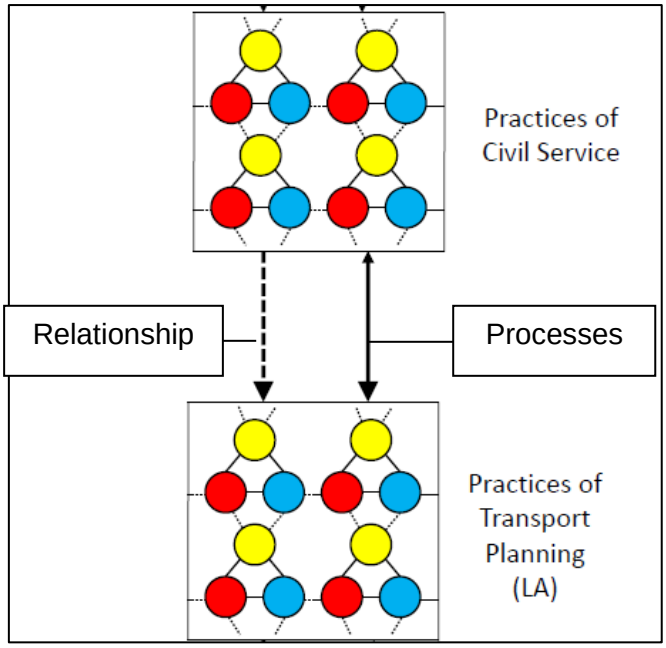

Figure 5-4 Relationship and Processes influencing meanings in the LSTF bid Process

5.2.3. Coding – 3-Elements: Materials

The coding of the objectives provides background insight into the over-arching aims of the LSTF from the DfT's perspective. The second stage of coding was designed to analyse how the transport officers influenced the practices of travelling through the initiatives that were delivered. Coding for the 3-Elements (*materials, competences* and *meanings*) required some subjectivity, particularly when deciding whether a scheme was designed to influence the meanings of how people travel. With *materials* this was relatively easy, as this included the provision of new infrastructure, new bus services or providing people with access to a bicycle for example. It is clear from this that both capital funding and revenue funding can be used to provide materials for travel. Similarly, initiatives that provided new *competences*, for example through travel planning or cycle training, were relatively easy to identify and code. For *meanings* however, this required a more subjective approach in order to understand what the scheme was trying to achieve and whether this was in effect trying to influence the meanings of how people travel.

Analysis shows that the majority of items coded were for the provision of materials to enable people to travel sustainably. In total there were 3,349 separate initiatives proposed in the LSTF. Many of the initiatives have been grouped together as part of the coding process e.g. several cycle infrastructure schemes would be mentioned in the same text. As shown in Table 5-2, transport officers have a tendency to want to provide physical solutions, despite

the emphasis of the LSTF towards schemes using revenue funding to improve the competences required for travelling sustainably. The LSTF also included many schemes designed to provide competences to allow people to travel in a more sustainable manner. This is through giving people new skills or knowledge that enables them to make this change. By comparison, relatively few schemes made specific reference to making a change around the meanings of how and why people should travel.

Table 5-2 References to the Provision of the 3-Elements in LSTF Bids

Bid Type	No. Bids	References to Materials	References to Competences	References to Meanings
Small Projects (Tranche 1) and Key Component	73	470	195	78
Large Projects	16	208	86	27
Small Projects (Tranche 2)	56	360	222	91
TOTAL	**145**	**1038**	**503**	**196**

A chi-square test of independence was performed to examine the relation between each of the 3-Elements in relation to the success of bids being awarded funding. The relationship between these variables was found to be significant (p=0.046) for the inclusion of schemes that altered the meanings associated with travel. This is shown in Table 5-3, with the full workings included in Appendix K. The inclusion of initiatives that have been coded to demonstrate they include schemes that change the meanings of travel was shown to be statistically significant, with fewer unsuccessful schemes (as a percentage of the total) including such initiatives. This may suggest that the DfT preferred schemes that were designed to alter some meanings associated with how people travel, even if this was not mentioned overtly in the 2011 White Paper and guidance. Table 5-3 also shows that all bar one of the successful bids included schemes that involved providing materials for travel, with 90 of the successful schemes including initiatives designed to improve competences.

Table 5-3 Success of Bid, whether it altered the 3-Elements and Chi-square Significance

LSTF NVIVO Analysis	Successful Bids Inc. Code	Resubmit Bids Inc. Code	Refused Bids Inc. Code	Chi-square Significance	Level of Significance
Social Practice Codes	96	16	32		
Materials	95	16	30	0.353	-
Competences	90	12	26	0.207	-
Meanings	68	11	17	**0.046**	95%
Key **Bold –** Statistically significant result					

The inclusion of schemes that predominantly alter materials, rather than competences or meanings indicates that there may be other factors that influence the practice of bid writing at the local authority level of the TPSOP. Other meanings and factors are likely to include the timescale of writing the bid which meant that many of the schemes would have to be 'shovel ready', as discussed in more detail in Section 5.4.2. Transport practitioners bidding for schemes knew they would be able to deliver in the LSTF timeframe and this would favour schemes that were already planned for delivery. Schemes that required provision of new competences and altering meanings associated with transport may have sat outside the existing skillset and less likely to be 'shovel ready' within the transport planning department at the time of writing the bid.

Bids that included schemes that attempted to alter meanings were more successful at being awarded funding by the DfT. This may have been due to the make-up of the panel that provided advice to ministers regarding which schemes to fund. The panel sustainable transport experts: such as Stephen Joseph from the *Campaign for Better Transport* and Lynn Sloman of *Transport for Quality of Life* (DfT, 2013i). Both these panellists are advocates of sustainable travel and are likely to have favoured schemes that altered the meanings associated with why we travel due to the benefits these would provide in reducing emissions associated with transport.

Breaking the results down further, Table 5-4 provides a summary of the type of initiatives that have been coded as materials. The emphasis of many of these schemes is to provide new facilities to enable people to move and travel. Little has been done in the management of freight movements within towns and cities, with just six successful bids including freight management measures. This reflects the overall focus of the LSTF on the movement of people rather than goods. Travel by private motor vehicle made up 58% of all GHG

emissions from transport sources in 2009 compared with heavy goods vehicles making up just 17% (DfT, 2010b); so it is understandable that the majority of LAs have decided to focus on the movement of people in a bid to reduce emissions.

Table 5-4 Examples of Infrastructure Schemes in the LSTF Bids

Scheme Type	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 that includes RTI boards at stops.
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 at junctions.
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).

There is also an emphasis on linking sustainable modes by improving access to rail stations and connecting bus services to walking and cycling routes. LAs are also involved in providing materials such as bicycles, or taster tickets for public transport to enable people to try alternative travel modes. Schemes such as *Wheels to Work*[10] and travel passes for people seeking employment provide the means to travel in order to gain employment, when prior to the scheme they would not have been able to do so. Such initiatives also provide people with the competences to travel sustainably once they have gained employment, by giving them the skills to travel sustainably whilst involved in the scheme. The initiative is therefore achieving the dual objectives of improving the local economy by enabling people to work and to travel by public transport rather than private motor vehicle.

[10] 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/

5.2.4. Coding – 3-Elements: Competences

In total, 51 of the 96 successful bids offered adult cycle training schemes to allow people to build on childhood experiences of cycling, or to develop new sets of skills. Such schemes are also designed to build the confidence of new, lapsed or infrequent cyclists and help develop competences of how to cycle. For example, Birmingham's City Council's *Bike North Birmingham* bid included a scheme to encourage adults to ride to school with their children, whilst Shropshire Council's *Shropshire Sustainable Transport Package* bid, like several other bids, was designed to both encourage and enable more people to cycle to work.

As discussed above, schemes such as *Wheels to Work* not only provided people with the materials to travel but also with the competences to travel sustainably. In the attempt to improve peoples' competences for travelling sustainably, many LAs have developed initiatives to provide Personalised Travel Planning (PTP). 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 provides people with the competences to travel in a sustainable manner, and offers new meanings of appropriate modes of travel in certain contexts, such as local journeys. 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 Borough Council's *Warrington Sustainable Travel Triangle* bid and Leicestershire County Council's *Smarter Travel for Business* bid. The West of England's *Sustainable Travel (WEST)* bid focussed on delivering PTP to employees of large businesses on key corridors into and out of Bristol and Bath.

5.2.5. Coding – 3-Elements: Meanings

What is uncertain from the delivery of projects such as PTP is how much they will alter the meanings that exist within the practices of travelling. As the findings in Table 5-3 show changing meanings of transport appears to be important to the assessors of the bids. The meanings of travel are perhaps the most complex and difficult of the three elements to change. As Table 5-2 shows the initiatives proposed through the LSTF bids contain fewer references that overtly or implicitly discuss changing the *meanings* associated with travel compared to *materials* and *competences*. However, several LAs do openly 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 without specifying clearly how this will happen. Birmingham City Council's bid takes an alternative approach, by recruiting *'champions'* who will have the job of promoting sustainable travel. Roles such as *Bike It* officers were deigned to stand alone from the LAs and provide information to schools and businesses on how to travel.

Dorset County Council's bid contains a travel awareness campaign called: *Child Miles*. The Council commissioned research from the University of the West of England (UWE) into the reasons for school choice within the county. The initiative was designed to promote the significant benefits of children travelling to their nearest school. The council found that only half of the children in the county's main towns of Weymouth and Dorchester attended their nearest school and trips made to take children to other schools accounted for up to 20% of road congestion in the mornings. The *Child Miles* campaign was designed to help schools promote themselves to prospective parents living nearby with the hope of reducing traffic associated with the school run. The *Child Miles* campaign is discussed in more detail in Section 6.3.1.

5.2.6. Coding – Restricting Private Motor Vehicle Use

The data analysed in sections 5.2.2 to 5.2.5 build a picture of how the 3-Elements of the practices of travelling are likely to be influenced by the objectives and schemes delivered through the LSTF programme. The last meaning to be assessed through the coding process related to the importance of choice in how people travel. The initiatives within the bid documents were therefore coded to highlight where LAs had implemented schemes that either restricted or dis-incentivised trips by private motor vehicle. Six codes were created to show how well the bids adhered to the DfT's objectives of enabling travel, or whether there were schemes designed to reduce the need to travel. Codes were set up to identify whether the bid enabled travel or reduced the need to travel, whether it enabled travel by private motor vehicle (e.g. park and ride site for part of the journey), whether the scheme provided a financial or non-financial incentive to change modes or whether the schemes disrupted private motor vehicle use.

The discussed in Section 3.5.6, the 2011 White Paper included the *Ladder of Interventions*. For ease of reference this is included again in Figure 5-5. The 2011 White Paper recommends that the majority of LSTF schemes should be designed to enable choice and provide information, which are the first two steps on this ladder. The ladder of interventions

also identifies other behaviour change methods including: changing the default, providing (financial) incentives, dis-incentivising, restricting choice or eliminating choice. The aim of the coding process was to see if any LAs included schemes within their bid documents that utilised these other methods of intervention in addition to enabling choice and providing information.

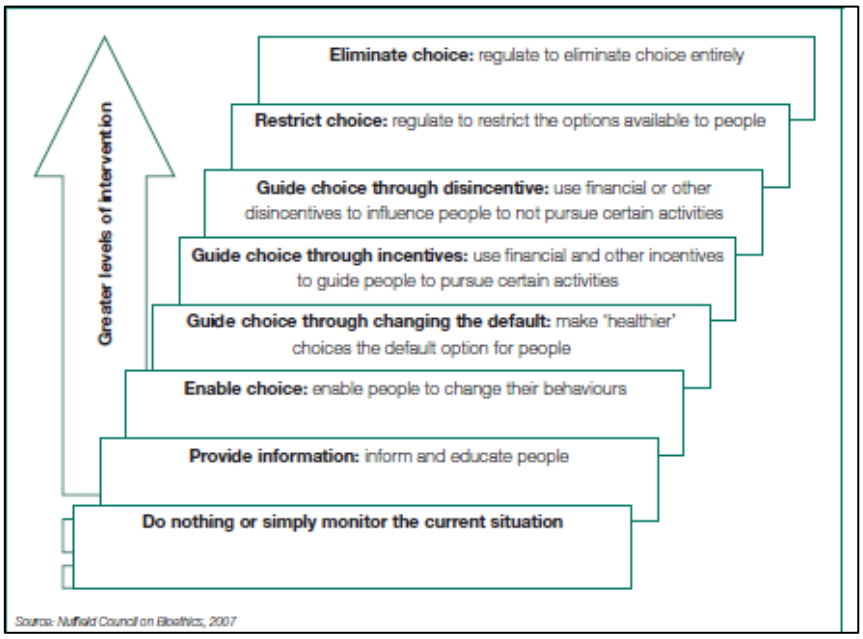

Figure 5-5 Ladder of Interventions (DfT, 2011a. Source: Nuffield Council on Bioethics, 2007)

A chi-square test of independence was performed to examine the relationship between whether the schemes were designed to enable, incentivise, restrict or disrupt travel and if the bid was awarded funding The relation between these variables was significant for both enabling travel (p=0.034) and Incentivising (Non-Financial) initiatives (p= 0.019). The results are summarised in Table 5-5, with the full workings included in Appendix K. The results show that all bar three bids contained direct references to initiatives that enabled, rather than reduced the need to travel. The three bids that did not include this type of enabling bid were all unsuccessful in being awarded funding. For example Surrey County Council's bid was focused on reducing the need to travel rather than enabling travel.

The significant relationship between funding success and enabling travel identifies the importance of the language used within the LSTF bid documents. All three bids that did not make specific reference to enabling sustainable travel were ultimately rejected as part of the funding process between the local authority and civil service levels of the TPSOP. This also

provides a further demonstration of the competences transport practitioners have in following the guidance and identifying the key words and themes within the guidance.

Table 5-5 Success of Bid, in relation to Disruption Codes and Chi-square Significance

LSTF NVIVO Analysis	Successful Bids Inc. Code	Resubmit Bids Inc. Code	Refused Bids Inc. Code	Chi-square Significance	Level of Significance
Disruption Codes	96	16	32		
Enabling	96	16	29	**0.034**	**96%**
Enabling journeys by car	60	9	18	0.810	-
Incentivising Financial	49	11	14	0.259	-
Incentivising Non-Financial	92	14	25	**0.019**	**98%**
Disruption to Cars	32	9	7	0.058	-
Reduce need to travel	15	3	4	0.842	-
Key **Bold –** Statistically significant result					

The second statistically significant variable related to *Incentivising (Non-Financial) initiatives* (*p*=0.019) This demonstrates the DfT support for schemes that could be sustained after the period of initial LSTF funding as explained in the 2011 submission guidance:

> *"Proposals will need to explain how the measures will be viable and benefits maintained and sustained beyond the period of the Fund without further long term DfT financial support",* DfT, 2011a).

Schemes that incentivised sustainable transport, but did not provide a financial incentive would not require ongoing funding were therefore likely to have received greater support from the DfT when selecting the schemes to fund. An example of this would be where Southend Borough Council worked with the voluntary sector to identify ways in which schemes such as the development of the cycle hub to continue once the funding ended in 2015 (Mathieson, 2013). Other successful bids included incentives for both individuals and employers who wished to travel by sustainable means. These included: discounts in bike shops and on travel tickets, match funding for employers to install sustainable transport infrastructure, reward card schemes relating to non-transport purchases; and introductory incentives for people using public transport services.

The coding process identified that most bid documents did not include initiatives designed to dis-incentivise or prevent people from travelling by private motor vehicle. LAs in general

adhered to the recommendations from the 2011 White Paper that recommended schemes should provide information and enable choice rather than impose restrictions. Successful bids were designed to enable people to travel, rather than reduce the need to travel, through initiatives such as improvements to broadband services. It is worth noting that 60 of the successful bids included initiatives to enable journeys by a more sustainable use of the private motor vehicle. These include schemes such as the installation of electric vehicle charging points, or eco-driver training for people driving petrol or diesel vehicles. As discussed in Section 1.3.1, at present low emission vehicles make up 0.5 percent of private motor vehicles in the UK and, without a significant change to the vehicle fleet, a move away from private vehicle use is likely to have a greater impact on GHG emissions than non-private motor vehicle initiatives.

Other initiatives include construction of Park and Ride (P&R) facilities. P&R sites have been included in both Reading Borough Council's bid and Cheshire West's bid. This type of initiative retains the private motor-vehicle as a key part of the travel mode and re-enforces the meanings associated with private motor-vehicle use as being a sustainable choice. Such schemes change the way the practices of driving is undertaken and the materials used, but only change the meanings of where this practice is undertaken, rather than whether it should be undertaken at all. Mingardo (2013) found that P&R sites can often induce demand for travel and the retention of private motor vehicle use as part of the practices of travelling. This means that such initiatives are not 'win-win' in terms of managing either global or local pollution (Tiwary *et al*., 2013).

Across the 145 individual bids, just 14 out of 3,329 initiatives could be seen to restrict private motor vehicle use. These are included in Table 5-6. Only nine successful bids included any restrictions on private motor vehicle movements or the removal of road space for private motor-vehicles (out of 2,352 initiatives). The vast majority of these restrictions occur within central areas of towns or cities, or around schools. Within the LSTF process the removal of road space or access restrictions have not been widely used as a means of influencing the practices of travel.

Table 5-6 Restrictive Initiatives within the LSTF Bids

Local Authority (Bid Type)	Initiative
Successful Bids	
Hertfordshire County Council (KP and LP)	Removal of cars from main route through St Albans between 7am and 7pm.
Oxfordshire County Council (SP Tranche 1)	Removal of road space to accommodate an outbound bus lane in Oxford to be used by the Park and Ride buses.
Transport for Greater Manchester (SP Tranche 1)	Providing grants to businesses for cycle storage facilities for companies who remove parking spaces.
Worcestershire County Council (SP Tranche 1)	Development of a bus gate on Evesham Road to stop rat-running and improve bus journey times.
Centro (LP)	Traffic calming and demand management (parking). Implementation of car free zones around schools.
Coventry City Council (SP Tranche 2)	Pedestrianisation of city's central square, reductions in vehicle speeds.
Gloucestershire County Council (SP Tranche 1)	Traffic calming and removal of motorised traffic from inner ring road (Gloucester). Provide pedestrian priority at key access points to the town centre (Cheltenham).
Royal Borough of Windsor and Maidenhead (SP Tranche 2)	Pedestrianisation of Maidenhead town centre.
Slough Borough Council (SP Tranche 1)	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	
Gloucestershire County Council (SP Tranche 1)	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.
Norfolk County Council (SP Tranche 1)	Relocate road space from general traffic to buses and pedestrians. Remove parking. Provide bus only link to Hospital in Kings Lynn, whilst removing available parking spaces.
Unsuccessful	
Medway Council (SP Tranche 1)	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.
West Yorkshire (LP)	Re-prioritise roads space from the car towards pedestrians and cyclists within town centres. Use of traffic management to prioritise pedestrian and cyclist movements.
Norfolk County Council (SP Tranche 2)	New two way bus and freight route into the city centre. Reallocation of road space for pedestrians. Restrictions to general traffic.

In total, 14 successful bids included measures that could be defined as dis-incentivising private motor vehicles. These schemes are listed in Table 5-7. These are primarily based

around changing areas to 20 mph zones (a measure that is also designed to incentivise walking and cycling) and 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 NO_x emissions. It is suggested that providing choice rather than restriction between travel options provides an important meaning in the types of transport measures that were bid for in the LSTF programme.

Table 5-7 'Disincentive' Initiatives within the LSTF Bids

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

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

5.2.7. Findings not explained by the 3-Elements model

As highlighted from Section 5.2.2, the meanings of what constitutes as a 'sustainable transport scheme' come from national government through both the 2011 White Paper and guidance document for bidding from the DfT. These meanings have a direct influence on the type of schemes that were put forward by LAs and were eventually funded. Social Practice Theory, as represented by the 3-Elements model, states that practices emerge or alter due to the "*arrival of new elements"* that create a break in existing links (Shove *et al*., 2012: 58) through businesses and innovations. However, the findings outlined above also show that politics plays a significant role in creating or altering practices of travel. Section 0 outlines the findings from the document analysis process that do not fit comfortably within the 3-Elements approach but still appear to play a significant role in how the practices of travelling is performed.

An analysis of the bid documents from LAs that were invited to resubmit provided an opportunity to explore further the influence national government can have on the materials and competences available for performing the practices of travelling. In total 15 LAs received

feedback from the DfT in relation to their Tranche 1 bids. When submitting their Tranche 2 bids they made alterations in line with the advice given by the DfT and a full list of the changes is available in Appendix L. The 3-Elements model provides no means of exploring political and civil servants' influence on creating the opportunity to change practices. Of the 15 LAs that were invited to resubmit in Tranche 2, 13 were successful in winning funding and two did not receive funding despite making changes to their bids in line with the DfT's advice.

With regard to the public transport initiatives, the key changes to note are that there was an increase in the number of bids including *real time information,* from inclusion in four original bids that were invited to resubmit, to inclusion in seven bids out of 15 resubmitted bids, whilst the two unsuccessful bids did not include this initiative. Similarly there was an increase (from four bids to seven funded bids) for *improvements to bus services* and an increase (from three bids to five bids) to include *cycle parking at stations*. The funded bids also saw a reduction in public transport interchanges (from eight to five bids), a reduction in *bus service promotions and mobile apps* in the schemes that were funded. Also of note was the reduction of bids that included *community transport initiatives* (from five bids to one funded bid). This suggests that the DfT's advice is influencing the materials available for travel and this influence to change the practice is not adequately demonstrated in the 3-Elements model. This is because the 3-Elements model does not provide a means of understanding how and why the change is occurring, just that it occurred.

With regard to the active travel options in the bids the initiatives which saw the highest increases between the original bids and the funded schemes were the increase in submissions were *promotions and events* (from four bids to ten bids), *cycle signage improvements* (four to eight bids) and *adult cycle training* (six to nine bids). The adult cycle training is designed to provide new competences, or allows old competences to re-emerge. Improved signage enables cyclists to navigate competently around a town or city, often using routes away from the main roads. For improving the level of active travel, as with the public transport infrastructure, there is a mix of initiatives that provided materials and competences for travel.

However, the resubmitted bids had fewer schemes that provided *access to parks/ recreation areas and national parks*. There were also reductions in *off road cycleways* (from nine to six bids) and *town centre/city centre accessibility* schemes for pedestrians and cyclists (nine to four bids). Also of note was the reduction of schemes providing *cycle training for children*

which decreased from nine bids to five bids. This shows an emphasis on providing people of working age with the skills to travel sustainably, rather than children, and this fits with the objective emphasised in the 2011 White Paper of improving the economy through low carbon travel.

Other initiatives to see a reduction were the production of *maps and planning support* (from seven to four bids) and a big reduction in proposed *bicycle recycling schemes and maintenance training* (from seven bids to one). This was in contrast to the slight increase in *Dr Bike* initiatives, indicating that there may be a perception within the DfT that cycle maintenance should be undertaken by a professional rather than individuals gaining the competence to repair their bicycle themselves. The *Dr Bike* services are also provided as part of a range of events and incentives to encourage people to travel sustainably.

For traffic management initiatives there were slight reductions to the introduction of *20mph zones*, *junction improvements*, *traffic and parking management* and *car clubs*. *Sustainable travel corridors* showed a significant drop (from six bids to one funded bid) and *access improvements* (from five bids to one). There was also a drop in *eco-driver training* schemes within the bids and both unsuccessful bids included this initiative. The analysis suggests the influence that national government can play in influencing the type of sustainable transport provision that should be delivered, with sustainable travel corridors and access improvement initiatives not being favoured by LAs following the advice received from the DfT.

There are several differences to the initiatives funded for marketing and engagement with the number of *travel planning initiatives* reducing from the original bids, particularly *school travel plans* which reduce from seven in the original bids to just four in the funded bids. The biggest increase shown within this comparison is the increase in bids including *travel passes for people seeking employment* (from one bid to seven funded bids). This highlights the importance given to transport initiatives that improve the local economy and social inclusion as identified in the 2011 White Paper (DfT, 2011b). There are also increases in *journey planning* (five to seven bids), *travel mapping* (six to nine bids) and *incentives and events* (eight to ten bids).

The largest reduction in a type of initiative comes from the creation of travel hubs, where 11 of the original bids included this measure; but it was included in just four of the resubmitted bids. The findings show that road safety campaigns were not funded through the LSTF with none of six bids that included this initiative including it in the resubmitted bid. Again this

suggests the DfT's power to influence the meanings of what should be deemed a sustainable travel initiative, as they advised LAs not to include road safety campaigns.

5.2.8. Coding Summary

The analysis from this section suggests that the types of initiatives included within the LSTF are predominantly designed to alter the materials available and the competences of practitioners to undertake the practices of travelling in a sustainable manner. However, as Figure 5-6 illustrates, a variety of materials and a programme to develop competences are also to be delivered as part of a package of initiatives, providing an array of options to people who wish to travel. The results show the meanings of what a sustainable transport initiative come from national government objectives, with the majority of LAs designing schemes that are designed to stimulate the local economy and reduce carbon emissions from transport for these trips.

At the delivery level, which directly influences the practices of travelling, few initiatives actively challenged the meanings associated with transport. Only Dorset's *Child Miles* travel awareness initiative provided clear evidence of how this could be achieved. It is possible that many of the initiatives and the skills of *sustainable travel champions* or *Bike It* officers may help to alter the meanings of the practices of travelling, but these changes would take place over many years and evidence may be difficult to provide for the DfT and Council Members.

Although restriction or dis-incentivising of particular modes of travel are effective tools at changing travel behaviour only a few bids include this type of initiative as part of the package of measures. This demonstrates the importance placed on choice by the national government in relation to the type of initiatives that were funded.

Based on this analysis, Figure 5-6 provides a summary of the three elements that make up the practices of delivering sustainable transport, a practice that has a direct influence on how the practices of travelling is performed. The findings show that the LSTF schemes are designed to provide materials and competences for sustainable travel, but very few schemes actively challenge the meanings associated with travel. This highlights a key deficit in the approach of the LSTF if viewed through a social practice lens. The theory would suggest that providing new infrastructure and the skills to travel sustainably may not be enough if the meanings associated with travel are not also influenced. This is because other factors influence travelling is predominantly undertaken by private motor vehicle in England and therefore need to be considered if attempting to create a change.

5.3. The Role of Funding

When assessing the practices of providing sustainable transport schemes, the availability of funding to deliver initiatives is crucial. The LSTF provided a level of funding devoted to delivering sustainable transport initiatives that is unprecedented in England. This means that the practices that exist around the bidding process; decisions of who would receive funding; and the awarding of funding ultimately influence what will be delivered and where. Rather than the practices of travel being altered by innovation within business the provision of sustainable travel initiatives is decided through decisions taken at the national government level as to what sustainable travel should constitute and how it should be funded.

However, funding for sustainable travel is not explained by the 3-Elements model. Whilst management of finances is a competence required by transport officers, the funding itself does is not one of the three elements. However, financial support from the DfT provides the resources to deliver the transport solutions. Without this funding it would not be possible to provide the new infrastructure (materials) delivered through the process and to employ staff with the competences to deliver the schemes. Funding cannot be considered physical material; it is a manifestation of power to create change to a practice. So funding does not fit within the categories of the 3-Elements. Yet, without funding the links between the elements the changes to these materials and competences would not exist.

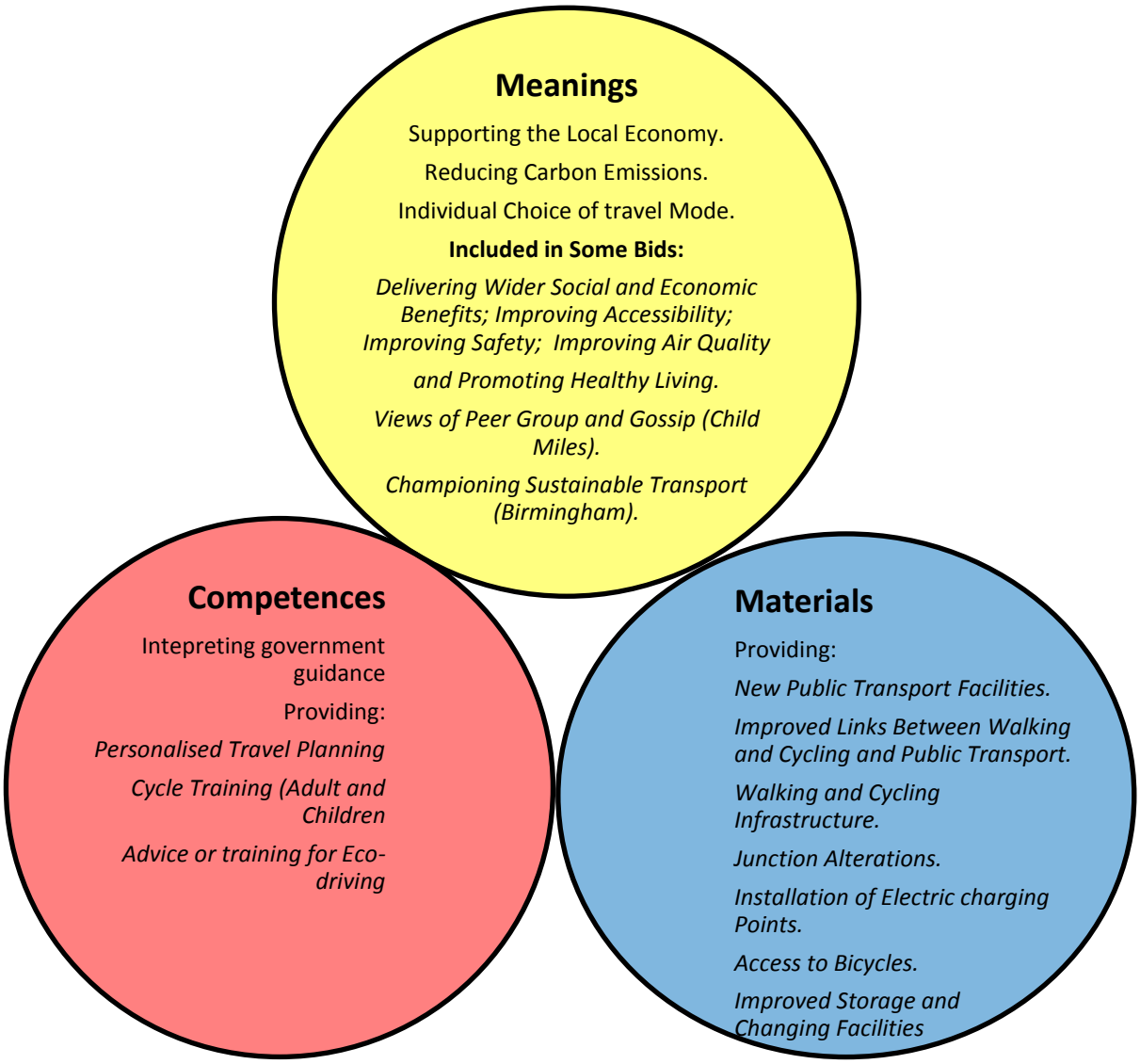

Figure 5-6 3-Elements of Transport Scheme Design for the LSTF

5.3.1. The Influence of Funding

Of the 96 bids awarded funding through the LSTF, 29 only received partial funding for their proposed project. The 96 successful bids included requests for funding from the DfT of £618.7m, with £538.1m being awarded. This created a shortfall of £80.6m across the 29 partially funded schemes. To cover this shortfall LAs may have reduced the costs, removed some initiatives from their initial bid or, if possible, funded them through local contributions (as discussed in Section 3.5.1). The LAs provided an additional £602.3m of funding from

local contributions bringing the total committed spend between 2011 and 2015 to £1.2bn. The funding figures assessed in this research only include the money that was committed by the DfT through the LSTF as this demonstrates the power that the national government has in deciding where sustainable transport schemes are implemented. However, it is uncertain whether the funding from local contributions (that include other government funding sources) would have been committed to sustainable transport initiatives on this scale without the LSTF funding from the DfT being in place.

In assessing how the LSTF funding was divided it is possible to highlight disparities in how this was distributed between LAs. This is important as it further suggests the power national government have over deciding how and where new infrastructure and services would be provided. The analysis shows that if the funding was split evenly for everyone in England, excluding London (ONS, 2013), the national government funding would provide £12 per head of population spent on LSTF schemes between 2011 and 2015. To put this level of funding into context: the Transport Select Committee's report on Safe Cycling (2014) identified that £10 per head of population per year is required to be spent just on cycling alone by 2020 to make the network safer for cyclists (Commons Select Committee, 2014). Whilst Williams *et al*. (2013) found that overall spending on new highway infrastructure in England during the same period as the LSTF was being delivered equated to approximately £4.8bn or £106 per head of population. This suggests that the decisions made by ministers at the national government level influence the location and the type of transport infrastructure developed.

The DfT (2014d) stated: "*In total, the Department for Transport awarded funding to 96 packages to 77 authorities to deliver their schemes between 2011 and 2015.*" The 77 authorities mentioned includes consortia of LAs, which were also awarded bids. In total just six of the 118 eligible local authorities did not receive any funding through LSTF. These authorities were: Essex County Council, Medway Council, Milton Keynes Council, Norfolk County Council, North Lincolnshire Council, and Nottinghamshire County Council. Although the majority of LAs received some Government funding from the LSTF, the level varied greatly and may not have been delivered by the LA's transport department. Table 5-8 shows the level of funding that both the top 10 and bottom 10 authorities received (excluding the unsuccessful authorities). Funding for joint bids was broken down as per the description within bid document. If the exact split was not defined within the bid it has been assumed that the funding was split evenly between all of the authorities within the group, with an additional share for the authority involved with the co-ordination of the project. The full table

and an explanation of how the costs were broken down for each joint bid are available in Appendix M.

Table 5-8 Split of LSTF Funding by Local Authority and Population (Top 10 and Bottom 10)

Rank	Name	Population	DfT Funding	DfT Funding/ Person
Top Ten				
1	Reading Borough Council	155,700	£ 20,468,877	£ 131.46
2	Rutland Council	37,400	£ 4,016,000	£ 107.38
3	Telford and Wrekin Council	166,600	£ 9,626,000	£ 57.78
4	City of Portsmouth Council	205,100	£ 10,946,333	£ 53.37
5	City of Nottingham Council	305,700	£ 15,245,000	£ 49.87
6	Bournemouth Council	183,500	£ 8,947,292	£ 48.76
7	Bath and NE Somerset Council	176,000	£ 7,529,375	£ 42.78
8	City of Southampton Council	236,900	£ 9,906,333	£ 41.82
9	Darlington Council	105,600	£ 4,076,000	£ 38.60
10	North Somerset Council	202,600	£ 7,529,375	£ 37.16
Bottom Ten				
103	Kirklees District Council	422,500	£ 1,334,338	£ 3.16
104	Blackpool Council	142,100	£ 432,818	£ 3.05
105	Bradford District Council	522,500	£ 1,502,968	£ 2.88
106	East Riding of Yorkshire Council	334,200	£ 943,000	£ 2.82
107	Buckinghamshire County Council	505,300	£ 1,299,818	£ 2.57
108	Leeds District Council	751,500	£ 1,646,132	£ 2.19
109	Wakefield District Council	325,800	£ 557,400	£ 1.71
110	Kent County Council	1,463,700	£ 2,273,000	£ 1.55
111	Northamptonshire County Council	692,000	£ 594,165	£ 0.86
112	Derbyshire County Council	769,700	£ 525,100	£ 0.68

Looking at the extremes, Reading Borough Council has the equivalent of £131.46 to spend per resident compared to Derbyshire County Council which received the equivalent of just £0.68 to spend per resident as part of Bedford Borough Council's *Access to Stations* bid. *Access to Stations*[11] was a bid led by Bedford Borough Council with seven non-

[11] Access for Stations was led by Bedford Borough Council in partnership with: Buckinghamshire County Council, Cornwall Council, Devon County Council, Plymouth City Council, Swindon Borough Council, Derbyshire County Council and Warwickshire County Council.

geographically linked authorities. Derbyshire's funding is being spent on improving access to Chesterfield's station by bicycle. This project will only benefit a relatively small percentage of the population of Derbyshire travelling in and around the station whilst people wishing to travel sustainably across the rest of the County receive no new infrastructure or travel training through the LSTF funding from the government. In comparison, Reading's £131/head of population included: personalised travel planning, travel information, smart ticketing, a cycle hire scheme, an extended park and ride and a community bus scheme will be delivered by 2015 due to LSTF funding from the government. These two examples show the importance of funding in the provision of the materials and competences available for people to travel providing an enhanced opportunity for the practices of travelling to change in Reading compared to Derbyshire.

In total, 65 of the LAs awarded funding received more than the mean of £12/head of population of DfT funding, with the remaining 47 successful LAs receiving less than the mean. The six LAs that did not receive any funding have a combined population of 3.7 million people. This includes 1.3 million people in Essex alone. In terms of the total population of England, 15.4m people live within LAs that received more than the mean level of funding from the LSTF out of the population of 44.8m. This demonstrates the power that the national government has had through this initiative to influence what infrastructure and training is available for people to travel sustainably as they control how much money is provided to each authority and place labels on what this money can be spent on.

5.3.2. Revenue and Capital Funding

The second way that the national government use funding to influence the type of scheme delivered is through the balance of revenue and capital funding (defined in Section 3.5.3). Table 5-9 shows that the 2011 White Paper identified a funding pot of £560m, with a split 63:37 in favour of revenue funding. The type of funding has an influence on the type of projects the LAs can deliver, with revenue funding providing the opportunity to deliver schemes that can help create different competences for travel, rather than just materials. Table 5-9 includes the total funding requested within each bid document. In total just 54% of the funding requested was for revenue schemes. LAs applied for a higher percentage of capital schemes than the fund would theoretically allow. This demonstrates that transport planning officers still have some influence over the type of schemes delivered and is an indication of the existing competences within the transport planning sector at the time of the bidding process. However, despite the availability of revenue funding, many of the bids still

included a high number of capital based initiatives, designed to change the materials available for travelling. Although over half of the funding applied for was for revenue schemes, this was not at the levels to which Ministers and the DfT aspired.

Table 5-9 Revenue and Capital Split of Funding Applied for through the LSTF

	Revenue (£)	Capital (£)	Total (£)	Revenue	Capital
DfT Estimate of funding[12]	£ 350,000,000	£ 210,000,000	£ 560,000,000	63%	37%
Tranche 1	£ 94,820,673	£ 66,567,354	£ 161,388,027	59%	41%
Large Bids	£ 147,258,162	£ 137,298,227	£ 284,556,389	52%	48%
Tranche 2	£ 91,672,651	£ 81,062,267	£ 172,734,918	53%	47%
Total	**£ 333,751,486**	**£ 284,927,848**	**£ 618,679,334**	**54%**	**46%**

5.3.3. Funding by LA Type

As Table 5-10 shows, the bidders have been broken down into four categories: consortia of LAs; County Councils; Unitary Authorities and Metropolitan Boroughs. LAs were able to bid individually or as part of a consortia. The findings show that all of the consortia that bid bar one were awarded funding. The consortium bid that was unsuccessful in receiving funding was West Yorkshire's large bid. However all of the authorities within the West Yorkshire consortia received funding through two other bids submitted for Tranche 1 funding called: *DITA*[13] *Connecting the Dales* and *"Getting transport to work": An initiative to support the sustainable growth of employment in West Yorkshire*. The large bid was a follow on from the *Getting transport to work* Tranche 1 bid. West Yorkshire requested £31m of funding to enhance infrastructure for active modes, public transport and highway network, whilst providing behaviour change initiatives through travel planning and travel promotion schemes.

As well as the success of consortia, findings also show that individual Unitary Authorities (UAs) performed better than individual Metropolitan Boroughs (MBs) and County Councils (CCs) in terms of being awarded funding for their own projects. All of Metropolitan Boroughs however, were awarded funding as part of a consortium. This again highlights the level of

[12] Department for Transport [DfT] (2011b) *Creating growth, cutting carbon: making sustainable local transport happen*, Available from: https://www.gov.uk/government/publications/creating-growth-cutting-carbon-making-sustainable-local-transport-happen, [Accessed 11/10/2012].
[13] DITA – Dales Integrated Transport Alliance

control exerted by national government in deciding where new materials and training to adapt competences occur in England. This is because the funding of consortia, particularly those that are linked geographically, supports the national Government's desire for LAs to work together within Local Enterprise Partnerships (LEPs) that cover a wider area than the LA boundaries. Analysis suggests that when funding LSTF this approach has been favoured when awarding funding.

Table 5-10 Applications by Authority Type

LA Type	Funded	Not Funded	Total
Consortia[14]	24	1	**25**
County Council	25	14	**39**
Unitary Authority	44	12	**56**
Metropolitan Borough	3	5	**8**
TOTAL	**96**	**32**	**128**

As well as the success of consortia, findings also show that individual Unitary Authorities (UAs) performed better than individual Metropolitan Boroughs (MBs) and County Councils (CCs) in terms of being awarded funding for their own projects. All of Metropolitan Boroughs however, were awarded funding as part of a consortium. This again highlights the level of control exerted by national government in deciding where new materials and training to adapt competences occur in England. This is because the funding of consortia, particularly those that are linked geographically, supports the national Government's desire for LAs to work together within Local Enterprise Partnerships (LEPs) that cover a wider area than the LA boundaries. Analysis suggests that when funding LSTF this approach has been favoured when awarding funding.

The majority of UAs and all MBs are within urban areas although some predominantly rural UAs do exist such as Rutland County Council[15] and Cornwall Council. The focus on urban areas for funding demonstrates the power that national government have on deciding how practices should be undertaken in certain parts of the country through distribution of funding. The funding profile highlights an urban focus, as County Councils, which cover the predominantly rural areas of the country have been less successful in being awarded funding.

[14] Consortia include: Integrated Transport Authorities and collectives of authorities bidding together. The 24 successful bids provided funding for 56 LAs.

[15] Even though Rutland is called a County Council, it is actually a unitary authority.

5.3.4. Funding Results Explained by TPSOP

Funding and power flows within the 3-Elements model are not adequately dealt with. The emergence of new elements can alter how the practices of travel are undertaken. This emergence is not adequately captured by the 3-Elements model, as it fails to explain how this change occurs; just that it does. This research shows that by analysing the LSTF funding it is possible to suggest where national governments have exerted power to influence how and where practices are performed through both the type of funding they provide; and the materials and competences delivered through this funding. Shove *et al*. (2012) discuss practices that exist that influence each other, but through this research it is possible to identify the power that national government has to influence practices, as shown in Figure 5-7 as power flows downwards through the relationship between each level and via the processes of bidding and funding. What happens is that the performance of one practice or set of practices in the system influences the meanings in the practices at the next level, but it can also influence the materials and competences.

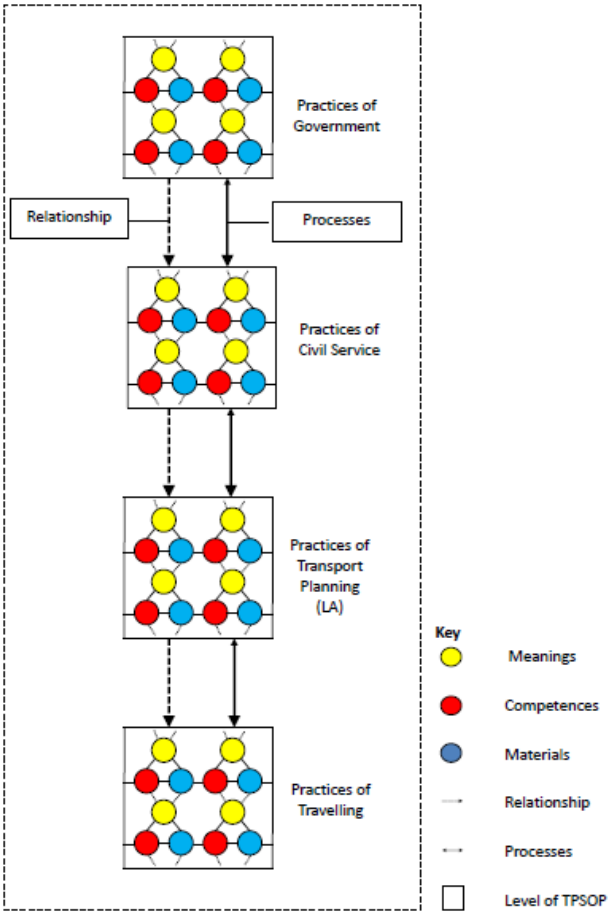

Figure 5-7 Process of Funding Working within the TPSOP

The practices of travelling, the materials and competences of how this is undertaken are directly influenced by how much funding is supplied by national government. Without this funding, and how it is manipulated and delivered through transport planning, infrastructure such as cycle and walking facilities or new buses are not built to create the opportunity for the practices to change. Without the skills and ability to use/access new facilities the practice is unlikely to change, as people do not have the competence to use them. Funding such initiatives creates a set of meanings from the national government as to how people should travel.

Ways of undertaking a practice do not only appear and disappear as random events or through technical changes as suggested by Shove *et al*. (2012) to some degree. With the practices of travelling they can be heavily influenced by the national government agenda, transport policies and funding provided to create the desired change. This analysis, discussed in Sections 5.3.1 to 0, therefore highlight the importance of funding in creating the opportunity for travel practices to change, even if this change does not actually occur.

5.4. Transport Planning Officer Survey Analysis

The second half of this chapter presents the findings of the transport planning officer survey. The following two sections outline where the meanings are created in the practices associated with bidding for funding are derived. These meanings influence the types of schemes that were bid for, so it is useful to understand how they were formed. The practices examined in this section occur at the LA level of the TPSOP.

To recap Section 4.7, a survey was undertaken between May 2013 and July 2013. The survey was designed to provide answers to questions raised in the content analysis, to understand whether there were any other influences that existed within the bid design process that would potentially influence the meanings of sustainable travel. This research explored the role that the practices of providing sustainable transport initiatives plays in influencing the practices of travelling, so it was important to gain an insight into how the practices associated with transport planning at the local government level of the TPSOP influence the practices of travelling. In total there were 69 unique hits from transport planners on the survey website. Not all respondents completed every question of the survey therefore for all questions the number of respondents to each question is indicated.

5.4.1. Designing the LSTF Bid Documents

The 2011 White Paper recommends that LAs develop working partnerships with voluntary groups, social enterprises, public service providers, other LAs and national parks as part of the LSTF working arrangements (DfT, 2011b). The LSTF guidance document explains that bids that include partnership working within the design and delivery phases *"will be favourably considered in the assessment process"* (DfT, 2011a:14). Whilst the bid documents made brief reference to partners involved in the LSTF process, the survey was designed to understand in more depth what role external partners played in the bidding process and in the selection of schemes to be included. This is important as the external partners are likely to emphasise different meanings when designing schemes, as well as provide options for new infrastructure or training programmes to develop competences. Therefore, to understand what level of partnership working was undertaken, the survey contained three questions regarding partnership working at the design stage of the LSTF bid submission. The responses to these questions help to explain whether the schemes were being designed in the transport planning 'silo' within LAs, or whether the solutions were developed with input from other transport disciplines and from non-transport backgrounds. The level of involvement for different groups was broken down into two categories: *consulted* or *worked with*. An explanation was provided for the difference between the two levels of involvement and can be seen in Appendix C (Questions 4-6). Figure 5-8 shows how the level of consultation and working that took place within the transport planning department (n=36) of the LAs in compiling the bid documents.

The data suggests that there was a significant level of consultation with other sections of the transport planning department particularly; *maintenance*, *parking*, *street works* and *asset management*. These teams are important within the transport department of an LA as they are responsible for ensuring that any new assets proposed within the bids are maintained, repaired and replaced as appropriate. Colleagues from the planning departments, both *strategic* and *local*, had a greater level of involvement in delivering the bids by actually *working on* them than the other sections listed, and this may have been to ensure that the bids reflected the LA's transport policies and delivered the targets set out in strategic documents such as the Local Transport Plan (LTP).

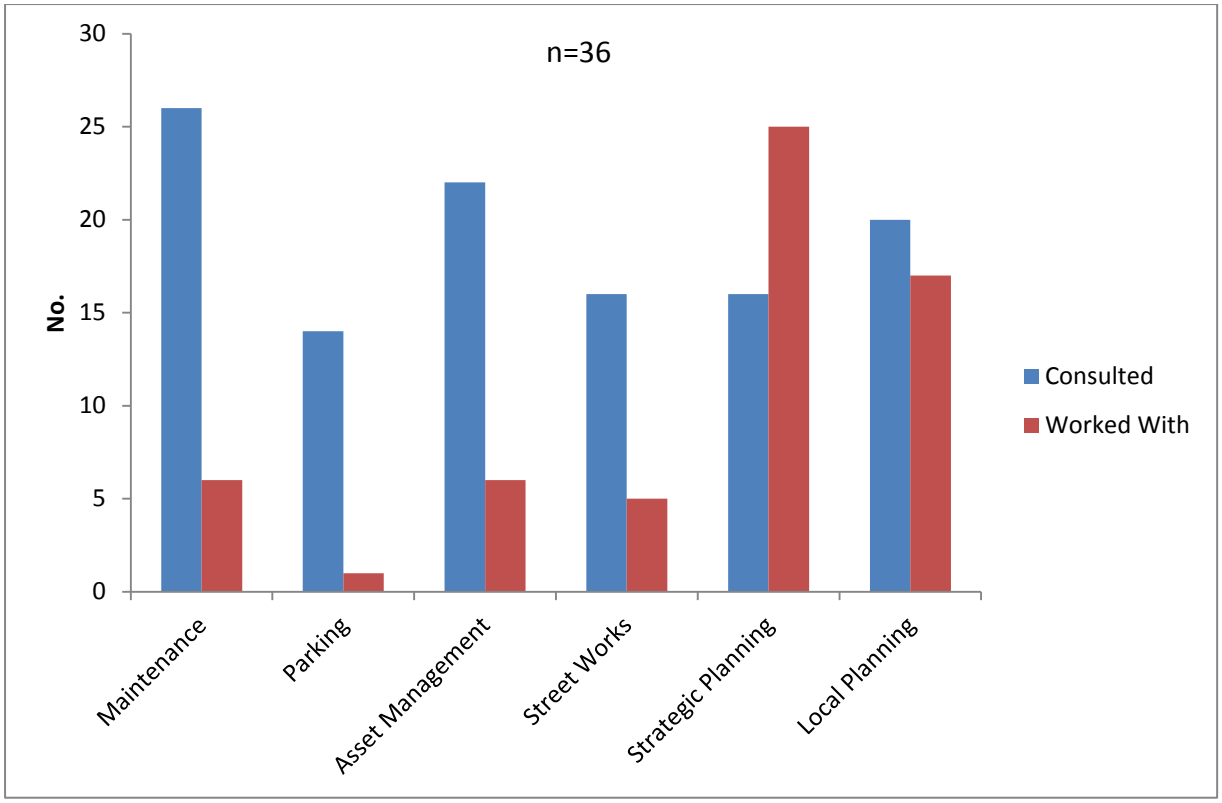

Figure 5-8 Other Teams within the Transport Planning Department Involved with the LSTF Bid

In addition to the six teams shown in Figure 5-8, transport officers used the free text box to describe working with their highway design team (three respondents) and the public transport team (three respondents) when writing the bid document.

The survey asked about the level of cross-working that occurred within the LA and between other LAs. This process was more complicated for CCs than UAs or MBs. This is because CCs work with District Councils in a two-tier arrangement and services such as air quality sit at the district level whilst the bids were completed at the CC level. Figure 5-9 provides a summary of the respondents' level of contact with other departments. Both the finance and legal departments have been omitted from Figure 5-9, as all 36 respondents indicated that there was contact with the finance department (24 consultation, 18 working), with 28 respondents indicating there was contact with the legal department (23 consultation, 5 working). This is a logical conclusion, as the bid team needed to ensure that they were complying with both the LA's and national government's requirements to ensure that they had the greatest chance of being awarded funding.

For the remaining departments within the LAs there are far lower levels of both consultation and collaboration than with the other teams, as shown in Figure 5-8. This indicates weaker links with these teams. The highest levels of consultation are with the department

responsible for *air quality*, with 17 respondents stating this department was consulted as part of the bid process, followed by *communications* (15), *education* (12) and *research* (10). When it comes to working on the bid, both the *communications* and *research departments* have the highest levels of involvement. These links are logical, as the bids were required to provide information to the public around sustainable travel options. Communications and survey writing (*research department*) are skill sets unlikely to have existed within the transport planning department competences prior to the LSTF due to a lack of funding to provide this type of role.

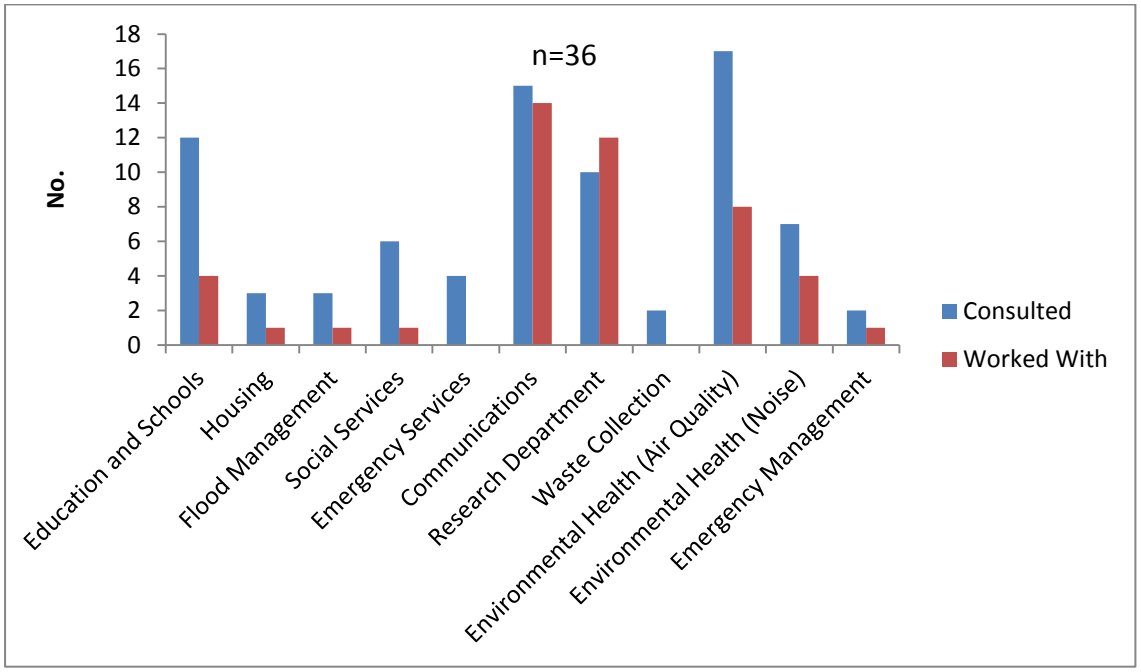

Figure 5-9 Other Teams within the LA Involved with the LSTF Bid

Figure 5-10 below shows that many of the respondents worked on bids with other LAs. In total, 24 of the 36 respondents say that their LA worked with other LAs when completing the bid document. The working relationships with other LAs were not always harmonious despite the respondents' previous experience of LAs working together as one respondent to the survey explained via the open text box:

> *"It has been difficult working with the other authorities involved in this joint bid (far more so than with the Joint LTP) - some have tried to dominate others"*, Practitioner Survey Respondent.

Also of note was the level of working with non-governmental organisations in developing the bids. From the review of the bid documents, this is predominantly with cycling charities such

as *Sustrans and CTC*. The results show that both private businesses (20) and business associations (14) worked on the bid documents, identifying that not all of the interventions were solely focused on the individual, but designed to engage with businesses to adopt a multi-level approach (businesses and individual change) to help people switch to sustainable modes of travel for commuting and business travel. This was reflected in the initiatives identified as part of the content analysis, such as loans for cycle facilities for businesses. It also shows that the schemes were designed in tandem with businesses and business associations, rather than the LA dictating what type of schemes should be employed. This also highlights the involvement of businesses leaders in the LEP process.

What is of interest in these findings is that the ideas for scheme design and the meanings associated with what the schemes deliver come from a wide range of stakeholders across both the LA and external stakeholders. Within the English planning system stakeholders are engaged through a consultation process once a draft scheme is designed. With the LSTF many of the stakeholders have been brought into the process at an earlier stage, potentially having a greater impact on the meanings associated with the schemes, and in relation to what materials and competences are provided through the funding.

Thirty-one of the respondents indicated that there was either consultation with (21) or direct involvement (10) in the bidding process by the LEP. This shows that LAs were starting to develop the processes for LA transport funding and delivery that have been used for the completion of the Strategic Economic Plans (SEPs) to win funding from the Single Local Growth Fund (SLGF) as discussed in Section 3.8.1.

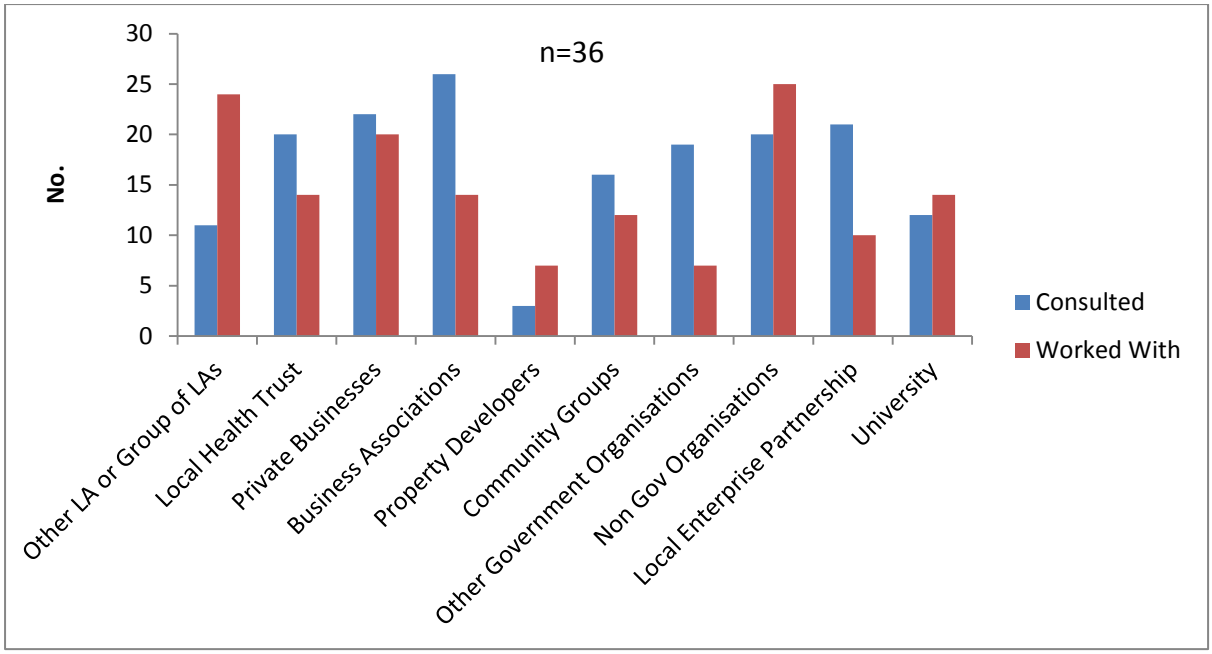

Figure 5-10 Other Stakeholders Involved with the LSTF Bid

Thirty-four of the 36 respondents indicated that there was some involvement in the bidding process from the Local Health Trust (LHTs). The public health responsibilities of LHTs became the responsibility of LAs in 2013 under the *Health and Social Care Act 2012* (UK Government, 2012), but this research shows evidence of relationships already being in existence between the LAs and the LHTs prior to this change.

The area that has seen the lowest level of consultation has been with property developers, with just three respondents saying consultation has taken place. Seven respondents say that property developers worked on the bids, but this is a relatively low level when developers are often responsible for providing new highway and travel infrastructure as part of the developments they complete. Developers have to comply with the *Manual for Streets* (DfT, 2007) when designing this infrastructure. The Manual for Streets is a guidance document from the DfT to guide developers responsible for designing, planning and approval of new residential streets as well as modifications to existing ones.

5.4.2. Origin of Schemes included in LSTF Bids

To gain a greater understanding of where the ideas for initiatives in the LSTF bids came from, practitioners were asked to identify their origins. This is of interest because, as explained in Section 3.5.3, traditionally LAs are relatively capital funding rich and revenue funding poor in terms of what they are able to spend their money on. Therefore it is likely

that LAs would have some capital schemes already in existence that would have been included within the bid document. With regard to designing initiatives one survey respondent highlighted the problem with the short lead time LAs had to deliver the bid:

> *"Short term funding opportunities like the LSTF make it difficult to have 'shovel ready' schemes ready to bid for (i.e. it takes time and resources to prepare schemes and keep them up-to-date in anticipation of bid opportunities)"*, Practitioner Survey Respondent.

This was supported by the results of the survey, where all bar one respondent (n=37) agreed that the LSTF process had allowed their LA to deliver some of their LTP3 objectives by providing funding for the schemes. As one respondent explained in the open box response:

> *"LTP sets out a set of objectives and external funding opportunities like LSTF may allow some of those to be realised. The two aren't separate but have different time spans and resourcing",* Practitioner Survey Respondent.

With this in mind Table 5-11 shows that the initiatives included within the bid documents were a mix of existing *'shovel ready'* schemes and new schemes designed specifically for the LSTF. What is of interest in Table 5-11 is the high number of revenue funded schemes that were identified in LTP3 documents that the LSTF allowed LAs to deliver in addition to the existing capital schemes. This shows that transport officers with LAs have experience in designing both capital and revenue based solutions when planning for future transport developments. Whilst the revenue schemes are considered they may not be a high priority as another respondent explained:

> *"As LSTF is a separate grant from Government it has been used to deliver much needed sustainable transport projects and schemes that would perhaps not have been prioritised using existing Council funding including the LTP3",* Practitioner Survey Respondent.

This shows that some of the schemes were identified in the long-term strategy of the LTP3, but may not have been delivered without this funding being made available and many would certainly not have been delivered by 2015. The LSTF funding provided an opportunity for these to be delivered further highlighting the importance of the funding process in influencing the provision of materials and development of competences around sustainable travel.

Thirty-two respondents (n=37) also said that the funding allowed for the development of new measures to be considered that were not included in their LA's long-term transport vision

within the LTP3 document. This highlights the opportunities transport officers were provided with to create new infrastructure for sustainable travel modes and new revenue based initiatives. Table 5-11 shows that new capital and revenue schemes were developed through the LSTF allowing LAs to go above and beyond their LTP3 transport strategies; providing they were successful in receiving funding.

Table 5-11 Origin of Initiatives within the LSTF Bids (n: 37)

Initiative Origin	Capital	Revenue	Total
LTP3	18	13	**31**
New	13	18	**31**
External Stakeholder	0	0	**0**
Other LA in Consortium	0	1	**1**
Don't Know	1	1	**2**
Total	**32**	**33**	

Table 5-11 also highlights that although Figure 5-10 shows that external stakeholders were involved in the bidding process, the initiatives that were included came from within the LA transport department. This helps to build a picture of the role practitioners play in influencing the meanings of sustainable travel, in comparison to the other stakeholders which is difficult to capture within the 3-Elements model. Whilst other bodies and departments within LAs were involved in the process the final decisions on scheme design remain with the transport officers.

5.4.3. Bid process - Time

One additional area that was highlighted by the responses to the open text box in the survey highlighted the relatively short timeframe in which LAs were expected to design and submit the bid document and then to deliver the schemes:

> *"LSTF is a short term fund and as so programmes had to be tailored to deliver in this time"*, Practitioner Survey Respondent.

> *"The competitive nature of LSTF bids is very resource intensive across all authorities. The LA commits significant staff time to this process which impacts on other areas of work"*, Practitioner Survey Respondent.

These criticisms of the short-term nature of the bidding and funding processes identify the difficulties that LAs face when bidding for additional finances and delivering schemes, so it is understandable that at least half of the schemes identified by respondents within the bid documents were already within the system and *'shovel ready'* as this would assist with meeting the tight delivery timeframes set by the DfT for bidding and delivering the LSTF.

5.4.4. Scheme Design Findings

The findings from the survey and the content analysis both demonstrate that there is a level of co-operation and working that exists within LAs that is required when creating a bid for funding from national government. Whilst the transport officers and other stakeholders' role in the bid process can be seen to have an impact on the meanings associated with the practices of travelling, and the materials and competences provided, the complexity of these relationships is lost within the model. Although there has been input from a number of sources within the LSTF projects, this level of influence is not adequately represented through the 3-Elements approach as shown in Figure 5-11.

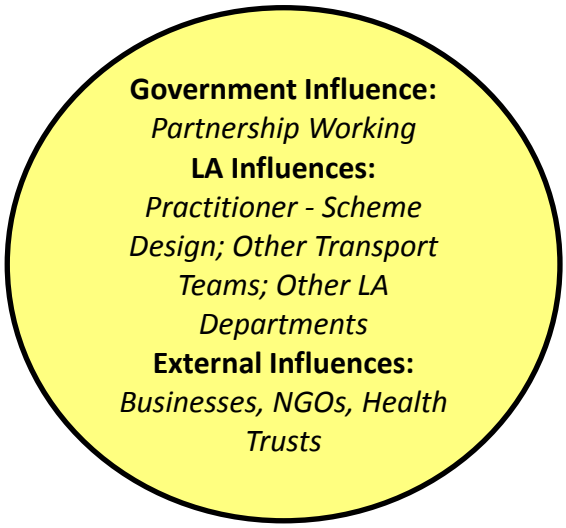

Figure 5-11 Sources of LSTF Bid 'Meanings'

The findings presented in Section 5.4 show that the meanings associated with transport may be derived from a number of sources, but the actual schemes are designed by transport officers, giving this group a significant level of power in influencing the design of the initiatives and how they are delivered. The Transport Planning Officer Survey was therefore designed to understand their views on issues facing transport in England.

5.5. Influences on Transport

5.5.1. Transport Officers' Impact on Climate Change

Any practitioner performing any practice will be influenced by the meanings that are an inherent element of the practice. When examining practices of transport planning the training, past experience, political and financial pressures of the role will impact on how transport infrastructure is designed and delivered. It is important to understand the influences on practitioners and how this effects the meanings associated with climate change that exist at the LA level of the TPSOP, as this influences the type of schemes delivered. The second half of the survey was therefore designed to elicit an understanding of where these meanings came from and how they influenced scheme design. This provides a greater understanding, due to the significant role transport officers play in scheme design as shown by the findings in Section 5.4.2.

The survey respondents were asked about the level of influence they think they have on limiting climate change, both as an individual and as a transport officer. The findings were then compared to the results from the National Statistics Opinions Survey 2011 to compare transport officer views to wider public views on climate change. The results have been shown as a percentage for comparison against the national survey (n=827). Figure 5-12 shows transport officers believe that they have more influence on reducing climate change in a professional capacity than as an individual. This is higher than the public's perception of their impact. A greater percentage of the public however believe they have a *large influence* (20%) compared to transport officers (5%).

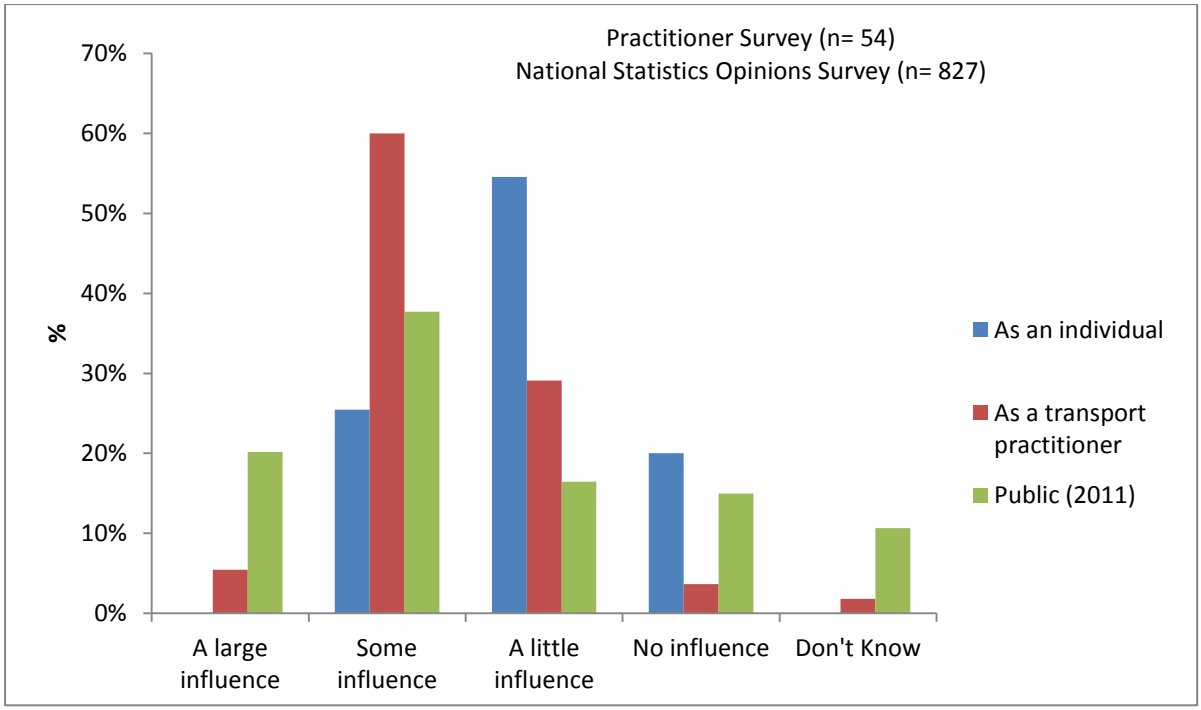

Figure 5-12 Practitioner and Public Perception of their Own Influence on Climate Change

5.5.2. Transport Officers' Views on Transport Issues

The results show that many transport officers understand that they have a role to play in tackling climate change, so from this perspective the survey then sought to understand their views on a number of other transport issues including:

- Traffic congestion;
- LAs' responsibilities to travellers;
- Use of non-highway infrastructure solutions;
- Climate change impacts;
- Restriction of private motor vehicle (car) use; and
- The possibility and likelihood of the UK meeting emissions targets by 2050.

The survey was conducted anonymously, so it was not possible to gather extensive data on each respondent. The sample is not representative of all transport planning officers, as it was focused on the officers involved in delivering the LSTF. As such is provides a representative sample of officers involved in bidding for and delivering the LSTF. Each respondent was asked: their job title (n=42); length of time working for their current LA (n=52); and length of time working within the transport planning industry (n=54). This allowed for a comparison to be made providing a greater understanding of whether a practitioners'

experience and their level within the LAs had any influence on their views regarding certain topics outlined below. Table 5-12 provides a summary of the topic areas asked within the survey and the possible responses. Questions 1, 4, 7, and 8 were individual questions within the survey, whilst questions 2, 3, 5 and 6 are combinations of various questions on specific topic. A copy of the full survey is available in Appendix C.

A chi-square analysis was undertaken to identify whether the responses to the topics above appear to be influenced by: *seniority within the LA*; *length of time with the LA*; and *the length of time within the industry*. This breakdown of respondents was undertaken to identify whether the views within the sector have changed since the DfT's 10 year plan was implemented in 2000 (DfT, 2000). This is important for understanding whether the increase in post-graduate qualifications within the transport sector has started to influence the views of transport officers. For each chi-square the hypothesis was that: seniority, length of service and length of time in the industry influence officer opinions on transport, with the null hypothesis stating that no link will be found.

Table 5-12 Topics Included in Survey Chi-Square Analysis

		P Value		
No.	**Question**	**Officer Level**	**Length of Time in LA**	**Length of Time in Industry**
1	Is congestion a serious problem? (n=53)	0.833	0.574	0.646
2	Do LAs/Government have greater responsibility for travel than individuals? (n=54)	0.345	0.495	0.463
3	In general does the respondent understand the need for non-highway construction solutions in transport planning? (n=54)	0.651	0.809	0.297
4	When, if at all, do you think the UK will start feeling the effects of climate change? (n=54)	0.739	0.280	0.531
5	Are significant changes likely to occur to transport planning due to climate change? (n=54)	0.936	0.592	0.280
6	Should car use be restricted on environmental grounds? (n=54)	0.813	0.813	0.080
7	Do you think it will be possible for the UK to achieve an 80% reduction in Greenhouse Gas Emissions from transport by 2050? (n=54)	0.198	0.616	**0.023 (Level 99%)**
8	Do you think it is likely for the UK to achieve an 80% reduction in Greenhouse Gas Emissions from transport by 2050? (n=54)	**0.009 (Level 99%)**	0.658	0.829

Key
Bold – Statistically significant result

In total 24 separate chi-square tests were completed to identify whether responses to each of the eight topic areas were influenced by the three criteria in Table 5-12. The full results are available in Appendix N. In all cases bar two, the null hypothesis was accepted. Responses to the UK's likelihood of achieving an 80% reduction in GHG emissions by 2050 differed in response due to the seniority of the respondent (p-value = 0.023) with those in senior roles having more confidence in the likelihood of the target being met. The senior managers also thought that this was likely (p-value = 0.009). This finding shows that many of the views held by the respondents, as a sample of transport planning practitioners, are similar with regards to congestion, LA responsibility to travellers, non-highway construction solutions, climate change and its impact on the transport sector, and the UK's ability to meet GHG emissions targets. This representation of the transport officer community who responded to this survey is therefore a homogenous group in terms of their opinions on the issues facing the transport sector.

Breaking down the responses into two sections: (1) *transport planning solutions*; and (2) *the environment*, it is possible to see that whilst not every respondent was in agreement, there is often a majority view held by respondents on most topics. In relation to transport solutions, 41 out of the 53 respondents believed that congestion was a serious problem with 36 out of 54 believing that it was the LA and Government's responsibility to manage peoples' travel rather than the individual's responsibility. This may therefore present an opportunity for behaviour change initiatives that are not based on individual agency to be considered by transport planning officers.

With regard to climate change the majority of respondents (39) were of the belief that we, as a society, are is already experiencing the effects of climate change. Eight respondents believed we would start to experience the effects within the next 50 years. One respondent believed it would occur beyond the next 100 years. One did not believe it would happen and five respondents answered that they did not know. Results were mixed as to whether respondents thought that this would influence the operation of the transport network, with 28 saying yes and 26 saying no.

Two-thirds of respondents 37 (out of 54) believed that restriction of private motor vehicle use was an option that should be considered on environmental grounds, which goes against the Government's approaches that tend to be against restricting or eliminating choice (the top two rungs of the ladder of intervention). Finally, whilst 34 (out of 54) respondents believed

that it will be possible for the UK to achieve an 80% reduction in GHG emissions from transport by 2050, only 14 (out of 54) think that this is likely. This highlights an issue that many of the respondents who work in the transport industry believe that the current policies related to GHG emission reduction are currently inadequate to meet the targets.

5.5.3. External Influences on Transport System

Respondents were asked to highlight the factors that had the most influence on transport planning within their own LA at the time of the survey (Summer 2013). Respondents were then asked to choose the factor they felt was the most important. Table 5-13 provides a summary of the top six responses when respondents were asked to select their top three answers and the most important factors.

Table 5-13 Factors that Influence Transport Planning in 2013

Selection of top 3 factors (n:56)		Most Important Factor (n:56)	
Factor (Top 6) [16]	**Count**	**Factor (Top 6)**	**Count**
Government Policy	42	Local Party Politics	16
Local Party Politics	35	Government Policy	13
Local Transport Authority	31	Local Transport Authority	13
Public Opinion	24	National Politics	3
National Politics	13	Local Media	2
Local Media	13	Public Opinion	2

The results show that local party politics, government policy and the Local Transport Authority (LA) are perceived as the top three most important factors as they were selected the most times by all respondents. This again supports the findings in Section 5.2 that identify the importance of national government in shaping transport infrastructure and ultimately influencing the practices of travelling. The results do however add an extra layer of influence at the LA level in relation to local party politics.

5.5.4. External Influences on the Practices of Travelling

Respondents were asked in their view: *"which factors prevented people from travelling sustainably"*? Figure 5-13 shows the list of 13 options provided within the survey and respondents were asked to select their top 3 in terms of importance in influencing travel

[16] Each factor scores one point.

uptake, and then highlight the most important. The survey also included an *'other'* option where respondents identified an additional 10 options. The results are shown as percentages so that it is possible to compare the results of the three most important factors, and the most important factor as designated by respondents.

The results show that many factors are thought to prevent sustainable travel uptake and that the respondents believe no single issue prevents this from occurring. *Family commitments*, *multi-trip journeys*, *provision of public transport* and the *highway network design* were the highest scoring factors when respondents were asked to give three important factors: all scored 10 percent or over. When it came to the most important single factor 16% of respondents chose multi-trip journeys, 15% network design, 13% public transport provision and 11% home location. The findings indicate that from what transport planning officers perceive to be the main issues in transport planning there is no *'quick fix'* available to improve uptake of sustainable travel options to reduce GHG emissions.

To help understand the importance of the LA's role within influencing these factors, Figure 5-14 splits each of the options into three categories: *local authority*; *individual* and *wider society*. These categories overlap where an issue falls between the categories. Figure 5-14 shows that many of these factors fall outside the control of an LA. Factors such as the weather can be managed by LAs in the treatment of surfaces for winter weather, but individual perceptions and wider societal expectations as to whether someone should travel sit outside the LAs control. LAs are able to address the structural issues and to subsidise public transport services (funding permitting) individual perceptions of cost, comfort, safety and reliability of public transport are more difficult to change. In addition non-transport issues such as school choice, home location, who undertakes family commitments and work pressures cannot really be influenced by LAs.

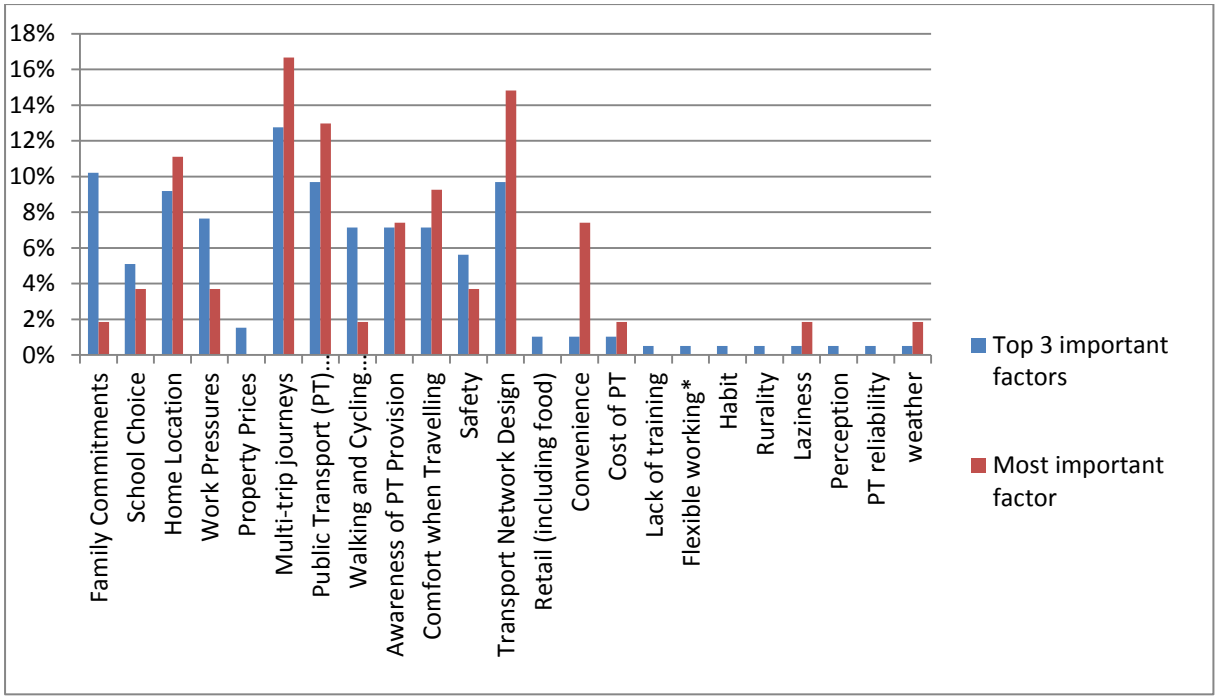

Figure 5-13 Transport Officers' Views on the Factors that Reduce Sustainable Travel Uptake (*Option Added by a Respondent)

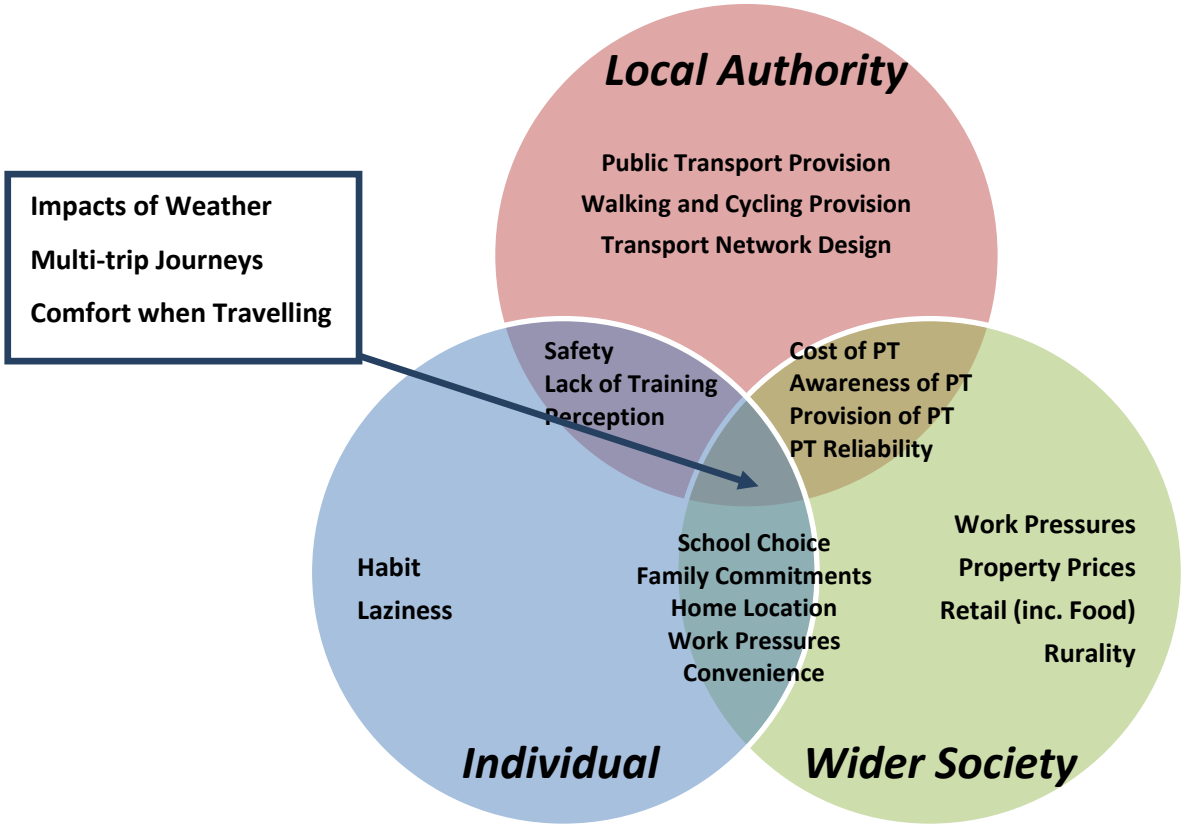

Figure 5-14 Influences on the Factors Identified by Transport Officers that Reduce Sustainable Travel Uptake

The results show that whilst LAs and their transport officers play a role in influencing the practices of travelling many of the changes will need to come from other areas of society. This will require a shift in expectations, such as businesses providing more flexible working arrangements, or a return to the presumption that children will attend their local school, all factors that sit outside the transport officers' control.

5.5.5. Influences on Transport – Summary

The findings show that transport officers are aware of the role they play in helping to mitigate climate change. The findings also show the number of factors that influence the practices of transport planning sit outside their control, with national government policy and local party politics highlighted as important factors in shaping transport. The findings identify that the respondents to the survey hold similar views on many of the key issues and challenges facing the industry and that seniority or length of time within the industry had little impact on these views. This sample of respondents shows that transport planning officers hold similar views regardless of seniority and time within the industry in terms of views on congestion, climate change and the challenges facing the industry.

What the findings show is the difficulty of using the 3-Elements approach to identify which of the surrounding practices are exerting the greatest influence on the practices of travelling. The findings above identify the influence national government policy making play in the uptake of travelling sustainably (via the practices of transport planning) and this demonstrates the requirement for the TPSOP model to explain how this influences the change to travel practices. The 3-Elements approach shows that the practices of travelling are surrounded by a number of other practices that all influence how and why it is undertaken in a certain way. What appears to be lacking from the 3-Elements model is a way of interpreting the power of each of these influences.

5.6. Chapter Summary

The content analysis and survey results have enabled a picture to be developed of the practices of transport planning that have a direct impact on the practices of travelling. The findings demonstrate the importance of meanings associated with how people travel and the influence that national government plays in this. Using the LSTF as a case study highlights that the national government set the objectives what is defined as a sustainable transport scheme. This definition was set out in the 2011 White Paper and implemented through the decision making process used to decide which schemes would be funded. The research

shows that to understand why a practice is performed in a certain way, you have to look at adjoining practices, in this case, for example, transport planning. The findings show that transport planning influences the materials, meanings and competences of the practices of travelling.

In designing the LSTF schemes transport officers have followed national government guidance in terms of the types of new materials provided, improving travellers' competences in relation to understanding travel options or to using alternative modes such as cycling. The national government's influence may have prevented a number of schemes that restrict or disincentivise private motor vehicle use if transport planning officers knew they were unlikely to be funding. Some bids also include initiatives that include private motor vehicle use as part of the solution to reducing GHG emissions, such as the construction of P&R sites.

Section 5.3 identifies the important role funding for sustainable schemes plays in deciding whether people have the opportunities to travel sustainably, and again this is controlled by national government. National government decided which initiatives would be received favourably and provided funding. The funding also favoured bids submitted by consortia of LAs. The distribution of funding is also varied by LA, with some such as Reading Borough Council receiving a significant level of funding and Derbyshire County Council receiving a low amount. With all bar six LAs received some funding through the LSTF process between 2011 and 2015.

Transport officers can also play a role in deciding which type of schemes will be delivered, as the results show that a higher percentage of capital funding was bid for than the DfT hoped for. The emergence of new elements for changing the practices of travelling is influenced by national government policy, but also to a lesser extent local party politics.

Focusing on the bidding process for the LSTF it is clear that transport officers had the final say on the schemes that were included, although other parts of the LA and stakeholder groups played a role in the design process. Transport officers' ability to design appropriate schemes was influenced by the time available to submit the bid which meant that many of the schemes included were already in the LA's long-term plan for deliver. The LSTF funding simply escalated their delivery. A high level of new initiatives would not have been programmed in for delivery, highlighting the importance of the funding being made available for such schemes.

The respondents to the survey, as a sample of transport officers, see themselves as playing an important role through their work in reducing GHG emissions. As such their views on how this can be achieved and whether the UK will meet GHG emissions targets differs from the national government's view. The majority of respondents believe that the UK is already experiencing the impact of climate change although there is some uncertainty as to how this will impact transport planning.

The 3-Elements model has been useful to identify the relative absence within the LSTF of initiatives that are designed to change the meanings around travel. The bids are primarily focused on developing the other two elements. From this perspective the model has proven useful.

With the findings it has been possible to show where the meanings around sustainable transport come from. The model does not deal with the power structures that exist that influence the practices of travelling. The findings also demonstrate that the 3-Elements model fails to deal satisfactorily with funding (which constitutes part of the power structures), as this is not a physical material, but plays an important role in influencing what local authorities are able to do. Chapter 6 discusses these two issues whilst integrating the qualitative findings from the transport officer interviews undertaken between December 2013 and March 2014. The interviews provide a broader understanding of the underlying system that exists within transport planning.

Chapter 6. Discussion

6.1. Introduction

Chapter 5 presented the findings from the content analysis, funding levels and the transport officer survey. This chapter draws together these findings along with the qualitative data collection phase of the research. This will form the discussion of how the new knowledge gained from this research adds to the understanding of the application of Social Practice Theory (SPT) within the transport planning sector. As discussed in Section 4.8 interviews were conducted with 23 individuals involved in the delivery of sustainable transport in England. The chapter investigates the research questions and provides an explanation of how the data gathered and presented in Chapter 5, plus the assessment of information from the qualitative interviews help to enhance the picture of travel in England.

The chapter will therefore explain:

- The relevance of the 3-Elements and the TPSOP models as a tool for understanding travel behaviour; and
- Whether the analysis shows that the LSTF is a significant difference in the application of transport planning.

This is to understand whether the two models (3-Elements and TPSOP) provide any explanatory power additional to the existing behavioural economic and psychological approaches to behaviour change.

6.2. The Practices of Transport Planning

6.2.1. Research Question 1 – Usefulness of the 3-Elements Model

As explained above, the first research question has been designed to identify the potential benefits of the 3-Elements model as a means of understanding the practices of travelling. The TPSOP model has been created to demonstrate whether the LSTF has created a change in how the practices of transport planning have altered through receiving predominantly revenue based funding. The analysis will explore the *materials*, *meanings* and *competences* of the practices of transport planning and how they have been altered due to the creation of a funding stream designed specifically for delivering sustainable transport

schemes. Shove *et al*. (2012) explain that practices are co-located and exist as part of a bundle of practices. Within this bundle different adjoining practices have varying degrees of influence on each other. The research is designed to see how much influence the practices of transport planning have on the practices of travel and how they are performed. Using the example of the practices of travelling, this is influenced by personal, societal and structural influences which lead to it being performed using private motor vehicles, even when other modes or means of travel exist, are available and are potentially less harmful to the traveller, other people and the environment. If we understand how the adjoining practices of transport planning work then it is possible to identify changes that can be made to this that will provide the opportunity for the practices of travelling to change.

6.2.2. Meanings

The findings presented in Section 5.2 and shown in

Figure 5-3 show a clear relationship between national government policy and how these define a sustainable transport scheme. This important for understanding the how meanings of the practices of designing transport schemes are influenced by the relationship that exists in the TPSOP that is top down through the system. As Respondent DfT1 explains practitioners had to meet the primary objectives of the 2011 White paper (DfT, 2011b), if they were to be awarded any funding:

> *"Evaluation* [of bid documents] *essentially had the twin primary objectives of local economic growth and reducing carbon emissions: not as competing factors. Philip Hammond* [Parliamentary Under-Secretary of State for Transport 2012–2014] *used to say: 'we are trying to create local economic growth whilst at the same time reducing carbon emissions: it is not a choice'",* Respondent DfT1*.*

Whilst other factors could be included in developing sustainable transport initiatives, if the two primary objectives, creating growth and reducing carbon emissions, deemed to be the most important by the national government were not met within the bid document, the schemes would not receive funding. Respondent DfT1 also makes reference to the secondary objectives within the 2011 White Paper: "*Which were things that were regarded as important, but not as essential as those primary two."* In addition other factors were considered including: "*value for money, deliverability, good governance, risk management, clear commitment to local contributions, financial sustainability and recognition that this isn't just for the funding period it's for the long-term."*

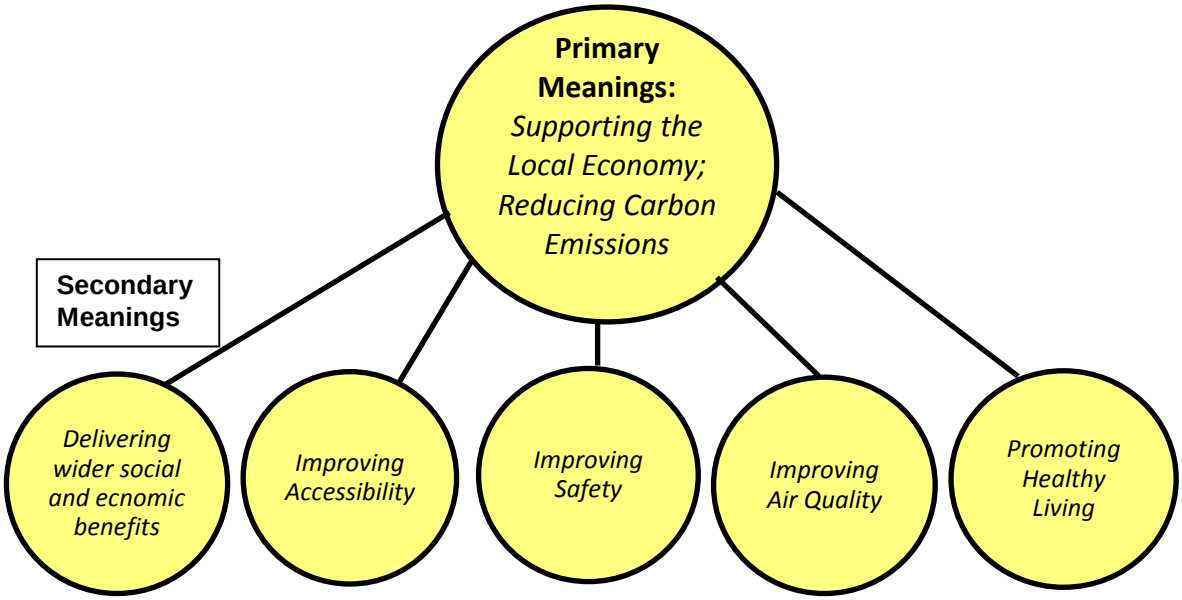

Figure 6-1 Meanings from LSTF Funding in Transport Planning

The definition of what is a sustainable transport initiative comes from the national government level and filters through the TPSOP. This guides the transport planning officers into selecting certain types of scheme, even if it does not meet the local objectives. For example if local air quality has been deemed the major issue for a certain LA, providing a scheme solely to tackle this issue would not have been funded if no commitment had been made to improving the local economy and reducing carbon emissions as well. Likewise, as Section 0 discussed, the bids that were invited to resubmit showed LAs that included road safety initiative were asked to remove them when invited to resubmit for funding. This change to the bid document was explained in the response from a transport officer whose LA was invited to resubmit their bid:

> *"It got hijacked by colleagues wanting to put their schemes in irrespective of the fact that it didn't match the actual department's criteria. So we had a massive element in there trying to support road safety... The second bid was just done by me: I scaled it completely back, looked at what they were after",* Respondent UA7.

This quote demonstrates the importance of meeting the criteria set out by national government in terms of what sustainable transport is designed to achieve when bidding for funding. Respondent UA7's colleagues were trying to gain funding for initiatives that were important locally, but ultimately they didn't receive funding. When the bid was updated to reflect the national government's definition of a sustainable transport scheme the LA received funding. Many of the respondents describe this process as '*playing a game'* in

terms of winning funding. As respondent CC2 explains when discussing council member buy-in to funding initiatives such as the LSTF:

> *"I think whether that's because they realise that's how to play the game at the moment. But I think, I mean maybe you are right, in their heart of hearts they might be not that in to it and more about roads: but they play the game",* Respondent CC1.

The meanings around sustainable transport are changed at the various levels of the LA (political, executive and officer), but not it would appear for the expressed desire of reducing emissions or improving peoples' health, rather that there is a need to ensure funding continues to flow into the LA. This change to the importance of sustainable transport may therefore be linked to the availability of the funding ahead of the other benefits the funding brings. The meanings of practices can therefore be influenced by short-term variations in funding. Whether the meanings revert back to previously held views on transport and travel depend on the success of what is delivered through the LSTF. Certainly some of the interviewees were able to see changes occurring within their LA as to how sustainable travel was viewed:

> *"We've had cross-party support for sustainable transport and the infrastructure measures going in. So it has been very beneficial in that sense"*, Respondent MB1.

There is a lack of understanding as to how long this consensus will last if the funding were to stop. The delivery of LSTF schemes does however allow for people to see changes occurring:

> *"The Councillors now are seeing things going on in their wards, both on the training side, on what we've worked with people and businesses, but also the capital infrastructure side. So it's been very successful there",* Respondent MB1.

With the benefits being seen by both the public and council members the meanings of what should be supplied through transport funding have the potential to change. The meanings within transport planning at the LA level have been influenced by the addition of the LSTF funding stream, but at present it is too soon to see how much of an influence it will have. Certainly there has been an increase in public support for schemes when people see what is being delivered elsewhere within the LA or by neighbouring LAs and this can put pressure on councillors to make long-term changes:

"We've seen local communities get behind cycle routes... So people have just gone out and talked and engaged with the local community… It's coming through to local politicians who are saying to us suddenly how fast can we promote these cycle schemes? We say we've taken it to a certain point we just need the funding to deliver it, which we don't have", Respondent UA1.

So the meanings associated with sustainable transport are starting to change within other parts of society, such as education and health awareness and these are likely to have a direct influence on what LAs provide in the future. If councillors are put under pressure from the public this could lead to a rise in the number of sustainable transport initiatives, but this can only happen if the funding is available to make the desired changes. This demonstrates that although pressure from the public can influence the meanings of transport planning practices, change cannot occur until the process of funding is in place within the TPSOP.

6.2.3. Cross-Working - Meanings

As discussed in Section 5.4.1 the findings from the content analysis demonstrated that transport planning officers, following the DfT's guidance, involved stakeholders in the bidding process. This joint working has led to different meanings being applied to the practices of transport planning, due to the influences of different departments and external bodies such as Sustrans. This influence has not only been included in the design phase, but also the delivery phase as explained below:

"We're based in urban regeneration and what we've found through the LSTF we've worked very closely with economic development. Also we've worked closely with the environmental protection department because they are the engineers who deliver the schemes. Another area we've interfaced quite a lot with is the health and we've made quite good connections with support for the LSTF. They've got involved in a number of LSTF funded projects and they've also got funding potentially to support LSTF matching into the future. They've certainly seen the benefits of sustainable transport within a wider context: with delivering the health agenda as well. So it's been very good relationships made there", Respondent MB1.

The addition of the health agenda to sustainable transport planning initiatives has added the meanings from the health department within Respondent MB1's authority. The way that Respondent MB1's colleagues in the health department think about transport and bid for

funding brings new meanings, as well as possibly materials and competences, to what is defined as a sustainable transport initiative within the LA.

By an LA having access to funding through the LSTF, new relationships have formed that are mutually beneficial for the LA and partners in meeting their varying objectives. Whilst the benefits of healthy travel were a secondary target of the national government's transport agenda for LSTF, the very fact that the funding has been made available has allowed transport officers to identify opportunities and alternative funding sources to enable the delivery of further sustainable transport schemes moving forwards.

The interviews also highlight the difficulties for LAs that were unsuccessful in receiving funding are having when building up similar links with partner organisations. This is demonstrated by Respondent UA12's comment:

> *"I think it's more to get transport planning out of the transport planning silo and working across the whole gambit and bringing planning and transport together. But it is more than that. I think it is economic development, social care and bringing all that together. There needs to be an all-encompassing policy with an objective that gives everybody the opportunity to travel",* Respondent UA12*.*

Respondent UA12 demonstrates that there is an understanding of the benefits of cross-working which is prevented by a lack of time and funding for this to happen within their LA. By the national government providing clear guidance on the need for cross-working this has allowed this to happen in LAs awarded LSTF funding and this demonstrates the power that national government has to influence the meanings of transport planning and how it is practiced.

6.2.4. Competences

The impact of the LSTF on LAs and their ability to deliver sustainable transport initiatives is noticeable in the competences that have developed within transport planning teams both through the new skills learnt by existing transport officers, but also by the new skills brought into the teams through people employed directly because of the funding. Respondent DfT1 describes this change as:

> *"There is a massive community of sustainable transport professionals now… which I hadn't even realised was a benefit until I went to the December* [2013] *Conference in*

Manchester and I thought: 'my God there are all these eloquent, passionate people who are fighting for a future here'. This is great", Respondent DfT1*.*

Many of the interviewees working at the LA sector level explained that they were either employed, or that the staffing levels in their team had increased as a direct consequence of the LSTF funding being awarded. In other cases, part-time staff or staff working on other projects switched to delivering the LSTF schemes on a full-time basis. The reason for this influx of new staff is explained by Respondent UA5:

"The best way to use the funding to achieve transport behaviour change, economic growth and CO_2 reduction is to actually have people to deliver schemes on the ground. So we have delivered PTP [Personalised Travel Planning] and *business travel planning",* Respondent UA5*.*

The LSTF provided LAs with the opportunity to deliver schemes such as PTP, which have only been delivered through trial schemes in England, such as the Sustainable Travel Towns (Sloman *et al*., 2004). The practices of transport planning were therefore altered through the national government's clear directive relating to the types of transport schemes that should be delivered. The new skills brought in for many LAs involved improvements to the marketing of the transport schemes they were delivering.

"Where we didn't traditionally deliver was around marketing and communications, which is a big part of this. There has been a big increase in understanding about it as a team", Respondent UA1*.*

"I think they have had more specific staff employed directly since that funding, there were 3 or 4 who joined pretty quickly afterwards, who were involved in the marketing and getting out there really, getting the message out there", Respondent UA3*.*

"We've now taken on a full time PR and Comms officer [Public Relations and Communications] *internally to help with the distribution and marketing of the media effectively and getting that message out, developing the website, developing the brand, which is very important",* Respondent UA7*.*

Within the LSTF the importance of marketing has been identified by several of the interviewees as a skill that was deficient within transport planning prior to the LSTF as shown in Figure 6-2. The competences of marketing and communicating the schemes that

are being delivered through the LSTF have been added to many of the LAs transport planning teams who were successful in winning funding. These competences did not exist within most teams, due to the lack of revenue funding for such roles, prior to the inception of the LSTF and was demonstrated in findings in Section 5.4.1 in relation to who was consulted in the design of the bids, with the communications teams consulted or involved in the bid writing process. Several of the interviewees highlight the importance in the type of funding that was awarded to LAs.

> *"I think on the behaviour side LSTF has been good, it has provided revenue funding to allow a lot of different behavioural changes to go ahead",* Respondent MB1.

> *"Revenue funding is absolutely critical… A lot of revenue funding can make a big difference",* Stephen Joseph CBT.

Figure 6-2 Competences Created in Transport Planning Through the LSTF Funding

The results show that the changes to the competences of transport planning can be linked back to the availability of LSTF funding. Similarly for LAs that were unsuccessful in securing funding the opposite has happened with reductions occurring to staffing levels, due to the cuts to LA funding:

> *"The team that I sit in ten years ago was a number of different teams and at a guess it probably had something like 25 people in it. Now we've got, 10",* Respondent CC3.

"The Council has just been through a review as part of the Government cuts and they've restructured and we've actually lost a number of key staff as well", Respondent UA9.

National government decisions play an important role in influencing how transport planning is practiced across the country, as it allows LAs who were successful in being awarded funding to grow their teams, whilst others have had to make cuts and reduce the competences available for delivering all types of transport schemes. This then has a knock on impact on the practices of travelling due to the opportunities of training and the availability of infrastructure for sustainable travel which as a result of the funding will vary greatly across the country. This again demonstrates the influence national government policies and funding decisions have on influencing practices throughout the TPSOP.

6.2.5. Cross-working – Competences

The desire by national government to see cross-working or an integrated approach is described as a: "*holy grail… that has not really happened in practice",* Respondent LEP3*.* This is one of the successes of the LSTF funding steam, as it has enabled and encouraged different groups to become involved in the planning, design and delivery of transport schemes even if this process has yet to become fully integrated. As Respondent LEP2 explains:

"LSTF was quite good because it did actually get engineers out of a particular box and put them you know working with others in a more collegiate sort of framework", Respondent LEP2*.*

This change to cross-working arrangements was only achieved because of the national government's insistence that cross-working be undertaken as part of the LSTF programme. One of the drawbacks of this cross-working approach is that transport is still seen as a distinct and separate department of the LA to many other departments: many of which may not see or have the time to deal with the transport implications of their own department.

"I think because those other departments or policy functions like health and education have their own problems and transport is just something that they'll worry about when there is an issue, or when something needs to be done or money needs to be saved. But they won't engage with it at the strategic level because they just see it as something else to add to their already busy agenda and they just don't have the time. So I don't think it's

because they don't want to, or because they are blind, but it's just a function of the resource pressures that local authorities are under", Respondent LEP3.

The reality is that for many partners involved in cross-departmental working, transport issues are one of many other issues that they face and if another department exists to deal with this issue then they may be less inclined to engage with the debate. Whilst the results of whether transport planners have actively engaged with other departments are mixed, the LSTF has provided an opportunity for this to happen with transport issues and this cross-working culture may not have occurred to the same extent without the national government steer and funding.

6.2.6. Materials

The one element of the practices of transport planning that has not been directly influenced by the LSTF funding stream is the materials that make up the practices of transport planning. Funding is not a physical material, but is a manifestation of power that guides where resources are provided and therefore does not fit neatly into the 3-Elements model. Funding is the process that allows the changes to the practice to occur as Respondent UA5 explains: *"There has been an increase in resource* [additional staff]*: because that is what the funding allows you to buy"*. This is shown in Figure 6-3 in addition to the new materials for delivering new infrastructure that allow the practices of travelling to be performed by the undertaking of sustainable travel.

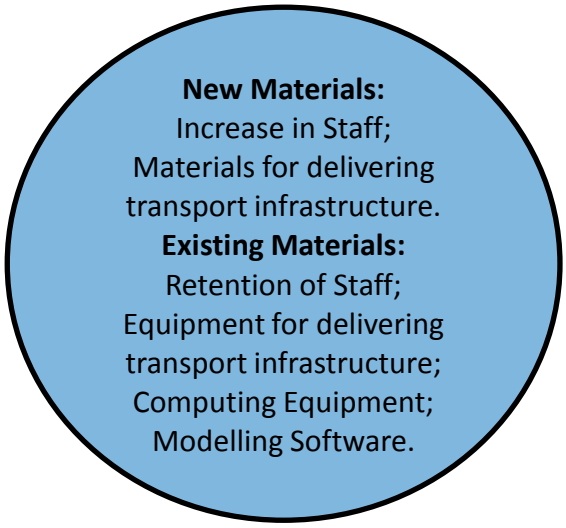

Figure 6-3 New Materials Available to Transport Planning Through the LSTF Funding

6.2.7. The Practices of Transport Planning - Summary

Social Practice Theory, with particular reference to the 3-Elements model, provides a useful frame of the summation of the practices of transport planning, as shown in Figure 5-6. The main question that this raises is what does this tell us about the practices that make up transport planning? Firstly the results in Chapter 5 and the interviews outlined in Section 6.2.1 demonstrate a clear link between the national government's definition of what constitutes a sustainable transport initiative and what is initially bid for and ultimately delivered. Although other factors may be important locally these will not receive national funding unless they are also seen to meet the government's criteria.

With regard to competences and materials and how they are altered, this varies depending on whether an LA was successful with their bid for funding. What the research shows is that the LSTF funding, particularly revenue funding, has been used to bring in or retain staff with the skills and, ultimately, time to deliver the projects and that would not have been feasible without the LSTF funding.

The practices of transport planning are however, like all practices, complex and multi-faceted, incorporating many different skills of management and delivery of the transport infrastructure in England at the LA level. The £538m commitment by the Government is a small amount compared to the £5bn committed to new highway development between 2011 and 2015 (Williams *et al*., 2013). It is therefore difficult to know whether the funding programme will have a long lasting impact on the type of schemes delivered. The application of the 3-Elements model to examine the LSTF only provides a snapshot of the practice focusing on the bidding stage, so from this perspective it is representing a brief period in time in time that is changed by the influences that push and pull it in differing directions by the other practices surrounding it, as discussed in Section 5.5.5. This limits the practical use of the model, as it only provides a historical representation rather than the dynamic process of the practices you wish to change.

The 3-Elements model fails to address the influence of funding as a manifestation of power that influences and drives change to practices, both to transport planning and how people travel. The bidding and funding processes exist as part of a wider structure, as explained in Chapter 3, with the introduction of the Transport Planning System of Provision (TPSOP) model that influences how and why practices are performed and this will be addressed more detail in Section 6.4.

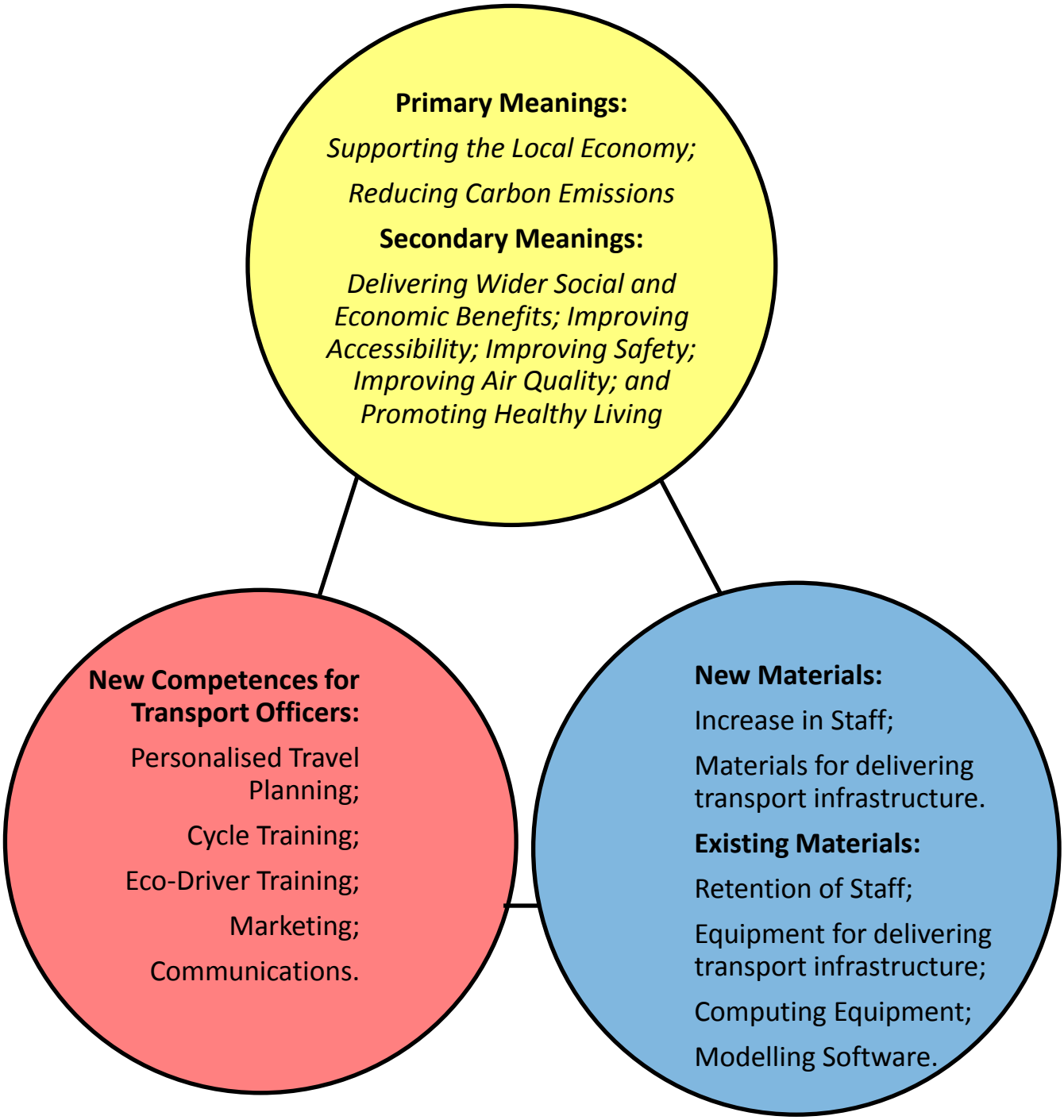

Figure 6-4 3-Elements of Delivering LSTF Schemes

6.3. The Practices of Travelling

Whilst Section 6.2 has found that the 3-Elements model is limited in its capacity for fully describing the practices of transport planning. The application of the model may still be useful for transport officers in identifying how their schemes influence the practices of travelling, adding another potential means of understanding behaviour, in opposition to individualist models. The analysis of the practices of travelling, outlined below, will show where changes have been made that could influence how travelling is performed as a result of the LSTF funding.

6.3.1. Meanings

As discussed in Section 5.2.5 the LSTF schemes included very few initiatives that appeared to challenge the existing meanings of transport and travel and why people chose a preferred mode. Dorset's *Child Miles* initiative proved to be the exception as it was designed to directly challenge the meanings of the practices of travelling. What is of interest with this scheme is that it attempts to deal with the *causes* of travel rather than the *symptoms*, which is what many existing approaches in transport planning set out to achieve (Kenworthy, 2012). For example, transport planning tries to solve issues such as congestion through providing new infrastructure or managing demand. What it fails to do is look at the reasons people are travelling in the first place. After consultation with Dorset County Council officers in March 2014, it was confirmed that the *Child Miles* initiative fitted well with existing practices that schools currently undertook through the *School Travel Health Check* which provides parents with information on how they can travel sustainably to school. This means the process of delivering the *Child Miles* initiative was not onerous to deliver for the LA. Through the Child Miles initiative schools were provided with maps identifying where children were *'leaking'* from their catchment and travelling to schools that were further away from home. This initiative highlighted several wider spatial planning issues that influenced school choice rather than solely individual behavioural issues. The *Child Miles* initiative removes blame for these journeys away from the individual. Other issues that were identified related to the importance of a school's reputation through local opinions of other parents as a council officer explained:

> *"After commissioning the report from UWE we found that health and community benefits or cost savings were not sufficient motivations to parents to choose local schools.*

However, we found that the reputation of the school locally (gossip) was essentially the most powerful motivator: more so than Ofsted reports", Dorset County Council Officer.

The benefits derived from children attending their local school and the aim of the *Child Miles* initiative is backed up by the House of Commons Health Committee (2004) who concluded that the importance of ensuring that a child has the best possible education, in the view of the parents' peer group, appears to far outweigh the financial, environmental, health and educational performance benefits that could be gained through physical activity. Meanings not associated with transport influence how people travel and these can be very difficult for LAs to influence or change. What this process does, however, is allow LAs to identify what the specific problems are, e.g. gossip, before devising a strategy that allows schools to promote themselves in a way that mitigates this issue in the future. The benefit of this could potentially be huge if it helps to reduce the level of congestion at considerably less cost than increasing highway capacity which may also induce more traffic to the network (SACTRA, 1994).

The findings from the *Child Miles* initiative appear to show that the person or group delivering the message can be important in changing behaviour. This fits with the MINDSPACE framework, discussed in Section 1.1.2. The *M* in MINDSPACE explains the importance of who the *messenger* is. This is a principle that can also be important in creating changes to practices within the 3-Elements model. Using the 3-Elements model it may be possible to identify the importance that meanings and their sources play, at an earlier stage, in determining the success or otherwise of transport initiatives. The use of changing the *messenger* for an LSTF initiative has been used to show that the message coming from an appropriate source:

"We've linked back to British Cycling to help with that push to get away from this stigma that it's the local authority telling people to cycle… And that's why we are badged in with British Cycling", Respondent UA7.

British Cycling has partnered many of the LAs as a *messenger* though marketing campaigns for new infrastructure. Using a brand that has been successful recently in the field of cycling sends a positive message about the benefits of cycling. This approach has not been adopted by all LAs, however. Some of the bids are designed to show that cycling is undertaken by ordinary people and that you do not need to invest significantly in a bicycle and the associated kit of a professional cyclist:

"The image of cycling, we've tried to portray through the Local Sustainable Transport Fund is that it's easy, it's instantly accessible, you don't need to turn it into Bradley Wiggins or Chris Froome. You don't need it, you don't need a hard hat, you just need to get on your bike with your bag and just pedal", Respondent UA5.

The quote above highlights the issues that LAs face when attempting to change meanings of transport towards sustainable travel. The messages that are delivered will have differing impacts on people who see them. It is possible that some people are may be put off by the *British Cycling* association and the perception of cycling for fitness and the need for the right kit. Respondent UA5's approach is more focused on developing a culture that exists in cities such as Amsterdam and Copenhagen (Watson, 2012) where people perceive they can cycle without the need for a helmet and Lycra. Both approaches at trying to influence more people to cycle have their merits but can ultimately alienate some people who are likely to perceive that cycling is not something they would do.

6.3.2. Competences and Materials

As discussed in Section 5.2.8 the LSTF has provided the opportunity for people to learn new competences and access the materials to travel sustainably within the LA areas that were awarded funding. The delivery of initiatives to improve skills of travellers and the infrastructure they can use to travel via sustainable modes only provides the opportunity for the practices of travelling to change. This is because people will have the skills to navigate both their existing and new travel options that have been made available through the LSTF. The LSTF only provides new infrastructure, skills and information about sustainable travel, it does not include any restrictions that will force practices of travel to change to more sustainable modes.

Delivering sustainable transport initiatives does not actually create the change and this is a key point to understand. Applying the 3-Elements model to the issue of how people travel adds the additional sphere of meanings associated with travel, and this can prevent perfectly acceptable schemes from working, despite new infrastructure being installed and people being taught how to use it. Section 5.2.6 highlighted the issue that the use of private motor vehicles has not been restricted through the LSTF funding, so despite the investment in the new training schemes and infrastructure the LSTF lacks a means of pushing people towards the behaviours that are seen as desirable. Respondent CC1 sums up why other campaigns designed to change behaviour have been successful:

"A good example would be something like the seatbelts wouldn't it? It's one they always look back on. Whether that was a campaign designed to change at a societal level or whether it impacted on individuals, I don't know: It's the individuals that had to put the seatbelt on, but there was legislation", Respondent CC1.

The key point with this comment is the use of legislation. Using seatbelts is standard practice for most drivers in the UK now, but prior to 1983 when this was made compulsory for people in the front of the vehicle just 40% of drivers chose to wear one compared to 93% after the legislation came into force (DfT, 2010e). The introduction of legislation surrounding how people travel is an important step within the LSTF approach, as the seatbelt example shows that despite the obvious benefits of wearing one, many people chose not to until it became compulsory. It is likely that there will be a need to develop restrictions to how people travel if the practices of travelling are to change on a societal level.

6.3.3. The Practices of Travelling - Summary

At present it is too soon to be able demonstrate the influence (if any) that the LSTF will have on the practices of travelling in England. The impact of the LSTF however is likely to be different across the country. For example the Borough of Reading had the equivalent of £131.46/person to spend between 2011 and 2015 compared to the County of Essex that did not receive any LSTF funding, as discussed in Section 5.3.1. It is therefore probable that if any change is recorded in how people are travelling the likelihood is that the increase will be in Reading rather than Essex, as additional materials and competences have been provided to facilitate this change. The funding available for the promotion of the new services and infrastructure are also likely to influence the meanings of sustainable travel. The level of funding does not mean that the practice will definitely change, just that the opportunity for change has been created, as the LSTF does not have any supporting legislation that prevents people from travelling by private motor vehicle. Without a means of making people move away from travelling by private motor vehicle the likelihood is that most people will continue to travel in the same way as before, regardless of the new information, skills or facilities that have been provided, as other factors external to transport continue to make travelling by private motor vehicle the best choice.

In investigating the practice of travelling using the 3-Elements model it is possible that civil servants would be able to identify the impact of new funding streams. It can also be used by transport officers designing new initiatives both in highway construction and through the delivery of sustainable transport initiatives. This is because the 3-Elements model allows the

user to understand where the meanings of the practice come from and to find solutions that counter any obstacles that exist. This approach already exists (although not called the 3-Elements model) as demonstrated by Dorset County Council's *Child Miles*. This however appears to be the exception.

The 3-Elements model can be used for understanding many types of transport interventions and provides the designer and other parties with an opportunity to understand the meanings they are creating. For example, building a new road, as shown in Figure 6-5, it is possible to identify the new materials, competences and meanings that this creates and reinforces. Constructing a new carriageway provides a new piece of infrastructure that allows people to travel by private motor vehicle, unless restrictions are put in place to prevent this. When designing a new carriageway, consideration needs to be made as to who will use it. The DfT's Manual for Streets suggests new highways should consider pedestrians first and motor vehicles last (DfT, 2007:28). The designer then has to decide how the space will be used. Will the construction include a footpath, cycle path or bus priority or shared space to be used by all highway users? These decisions need to be made by the designers, as committing a significant level of space for private motor vehicle use sends the message that this mode of travel is acceptable to the government who approve the new scheme, despite the GHG emissions and associated health impacts.

Carriageway construction will continue to be a function of transport planning officers' work, particularly as will be discussed in Section 6.6, due to the proposed funding set aside by the national government transport infrastructure between 2015/16 and 2020/21. Being able to understand the wider impacts of the highway designing process through the use of the 3-Elements model may help to identify alternative means of managing demand for travel that are not construction based.

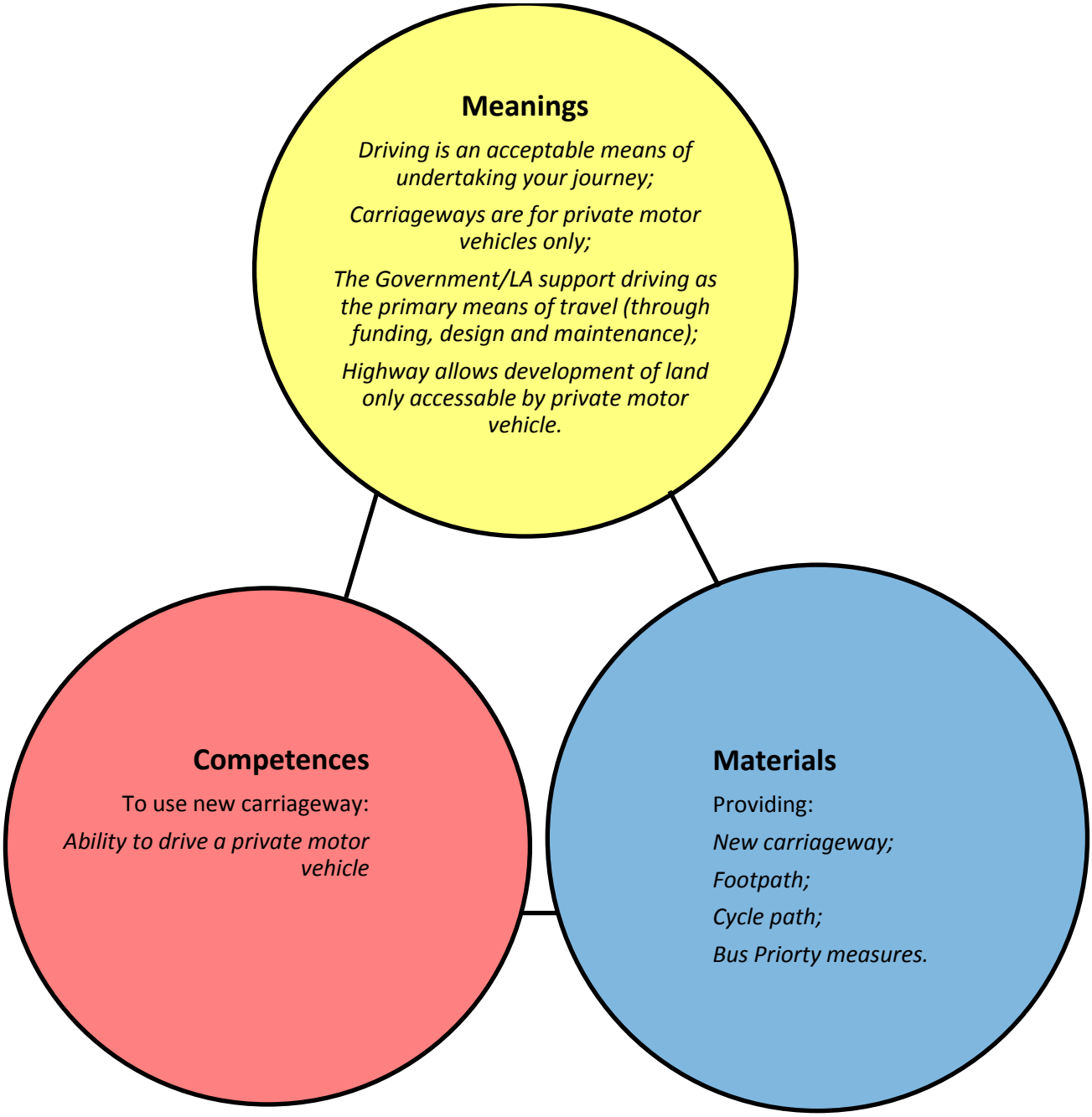

Figure 6-5 3-Elements of Building a New Carriageway

6.4. Research Question 2 – Benefits of Applying the TPSOP Model

Section 5.3 presented the findings that showed the important role that funding plays in deciding where and how sustainable travel infrastructure and training will be provided and, as discussed above, the 3-Elements model fails to adequately capture this process. The funding of transport initiatives does not create changes to behaviour, but creates the opportunity for change to occur. This research takes concepts from the 3-Elements

approach and integrates them with the Systems of Provision. This integration of provides a means of understanding the system that underlies the process or practice. This offers the opportunity to understand the agents, processes, relationships and structure of the system. Figure 6-6, included for ease of reference, shows the relationship as a vertical process. This research is concerned with the direction of influence from Government policy-making through to how the performance of the practice differs due to the intervention.

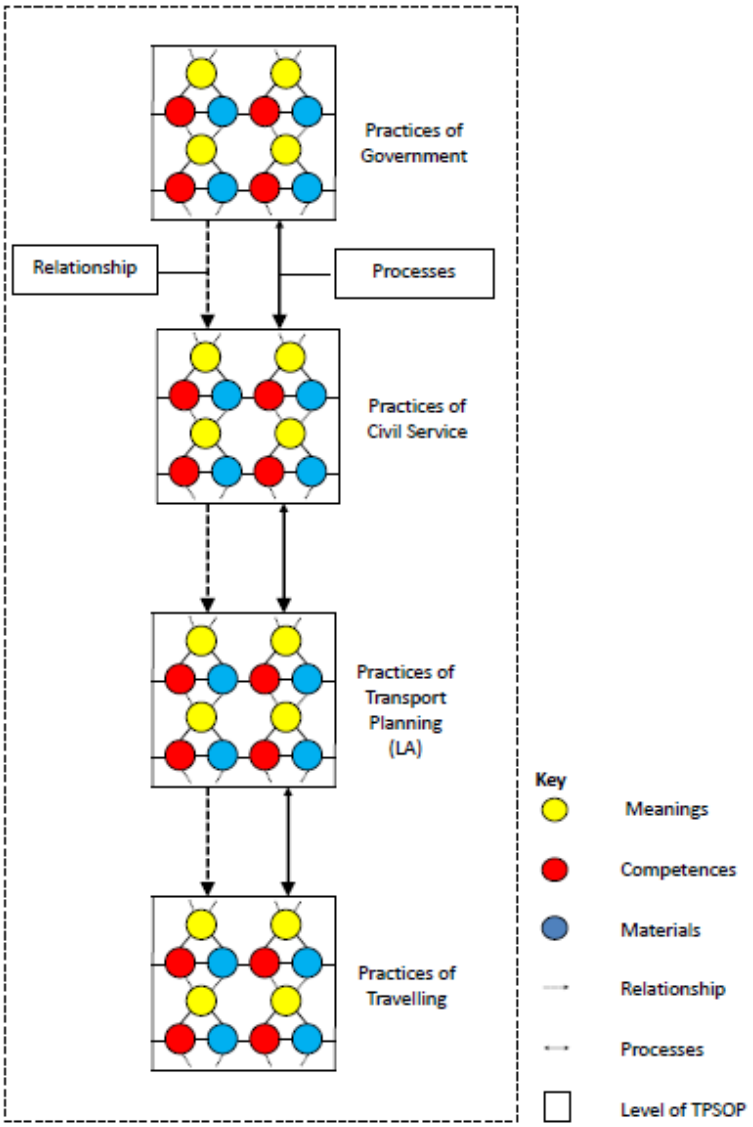

Figure 6-6 Influence within the TPSOP system

The practices of transport planning occur at the local government level of a wider Transport Planning System of Provision (TPSOP) and are the means by which transport planning schemes are delivered. The TPSOP starts within the national government and the policy making processes shown in Figure 6-6. The LSTF provides the opportunity to examine this

structure by following the funding stream from inception through to delivery within the TPSOP structure. This helps to provide an understanding of how the wider system influences the uptake of sustainable travel. From this it will be possible to demonstrate the processes, relationships and actors involved within the delivery of sustainable transport initiatives to demonstrate where the power to potentially influence the practices of travelling lie.

Chapter 3 introduced the TPSOP model and this section (6.4) and Section 6.5 discuss how this system has been identified through this research and will explain how the relationships and agents within the system ultimately influence how people travel. Section 6.5 will discuss how the financial and bidding processes are used to exert control through the TPSOP. Section 6.6 discusses how these changes will occur post 2015/16, when funding is moved to the Local Enterprise Partnerships.

6.4.1. National Government

The TPSOP represents a hierarchical chain of activity (Fine, 2002) and as Figure 6-6 shows there are various levels within the system that make up the structure and each of these influences the rest of the system. A funding stream such as the LSTF forms just a small part of the overall system, as other funding streams exist for highway maintenance, the integrated transport block and LA major scheme funding which all provide different sources of funding for LAs. Within the LSTF the split of funding in favour of revenue to capital makes it different from the other funding sources. The LSTF also provides an opportunity to show what changes (if any) have been made at the various levels of the system. To understand how the LSTF came into existence it is important to start at the top of the system at the national government level. As Norman Baker MP for the Liberal Democrat (Lib Dems) party explained:

> *"*[The LSTF] *came from the Lib Dems and it was an idea that we wanted to ensure that there was sufficient funding for sustainable transport projects in this parliament. So we had the idea of a big fund right at the beginning and that also was something the Tories were content with in the sense that it fitted in with the reduction of funding streams to local councils* [consolidation of funding (UK Government, 2013b)]*, therefore the greater flexibility for local councils",* Norman Baker MP.

This comment demonstrates the various systems and practices that exist at this level of the TPSOP that ultimately influence the way people travel. The desire to fund CO_2 reduction

initiatives was identified at the party political level of the TPSOP and added to the Liberal Democrat manifesto in 2010 (Liberal Democrats, 2010). This was aligned with the Conservative Party's desire to develop a plan to improve the economy (Conservative Party, 2010), particularly local economies. The origin of the original idea for the fund is debated however:

> *"It was originally going to be called the carbon reduction fund and that was yes some time in summer 2010. So before the spending round had started but after the coalition had come in and Norman had his job. I think it had been Lib Dem policy and in fact if you trace it even further back I can name the two people who made sure it got into the Lib Dem policy, which was Jason Torrance from Sustrans and Stephen Joseph from the CBT",* Respondent DfT1.

The respondent DfT1 highlights the important role that lobbyists from cycling and sustainable transport charities played in ensuring that delivering this type of scheme made it into the Liberal Democrat manifesto. Stephen Joseph from CBT explains the long process involved in bringing the issue to the attention of national government:

> *"The Local Sustainable Transport Fund emerged from a long lobbying campaign around, in the days when people were worried about climate change. DfT recognised that was not so much the carbon agenda but generally it came out of the Eddington Review 2006 which had a whole chapter that said basically that small-scale projects have a better benefit cost ratio or as good and can be done quickly and more effectively…Alongside that there was the literature on smarter choices",* Stephen Joseph CBT.

The process of building the case and the design of the LSTF type funding stream was built over the previous decade with lobby groups identifying findings to support their views and taking this information to politicians with the aim of funding sustainable transport initiatives. Norman Baker MP however remembers things differently:

> *"There was some suggestion in the early days from Campaign for Better Transport and so on that it would be a good idea, but we were already there. And we actually delivered far more: we delivered a bigger sum of money than they asked for",* Norman Baker MP.

The level of funding delivered through the LSTF (excluding match funding), regardless of the original source of the idea, was unprecedented for schemes of this sort and this would not have been possible without support at the national government level. The political level

therefore represents the first stage of the TPSOP where the practices of politics ultimately influence what funding is provided for transport in England. Without making a change to the meanings of transport at this level it would not be possible to see the funding made available for schemes to be delivered on the ground.

6.4.2. Power Relations – National Government

Ministers within the national government are able to exert a great deal of power within the TPSOP. The civil service level of the TPSOP is the second level within the system and comprises of 46 departments, 24 of which are headed by a government minister. The Ministerial departments focused on in this research are the Department for Transport (DfT), HM Treasury and Communities and Local Government (CLG), as they all directly influence the TPSOP. The structure of the TPSOP shows the vertical nature of a system of provision as (identified by Fine, 1995) and the processes are the means of which control is exerted within this system. This gives the ministers the power to set the guidelines for the type of facilities available for travel and peoples' ability to travel sustainably. As discussed in Section 5.2.6 although restriction is one of the potential behaviour change options that exists on the *Ladder of Interventions* it will not be considered unless there is support at the national government level by ministers:

> *"There's absolutely no appetite from the coalition for anything that appears to be in any way anti-car as we heard from Philip Hammond [MP and former Secretary for State for Transport May 2010-Oct 2011] when he came in. But I don't think any of his successors, well we've only had two, have had any desire to visibly soften on his hard line",* Respondent DfT1.

Private motor vehicles are the primary source of GHG emissions in the transport industry (DfT, 2013c). Without the political will at the ministerial level to restrict their use this approach from the *Ladder of Interventions* will not be considered as part in the solution to the problem of emissions from transport. The LSTF therefore gives Ministers power in choosing the types of sustainable transport schemes that are delivered by LAs. This power was exerted as they could also veto schemes even if they met the LSTF evaluation criteria:

> *"We put recommendations to ministers. This was when Norman Baker was around. He personally read just about every bid, at incredible high speed. We'd go up to his office with a pile of bids and say 'we recommend you approve these'. He'd flick through them all and ask challenging questions and he really did influence the decisions, he was not*

rubber stamping what we recommended and made quite a few variations as did the Secretary of State to what we advised as officials should go forward for funding", Respondent DfT1.

This means that individuals as *agents* within the system are able to exert considerable power over deciding what type of schemes will be delivered and where.

6.4.3. Role of Norman Baker MP as an Agent in the TPSOP

Norman Baker MP was highlighted by several interviewees as the most important individual *agent* involved in ensuring that the LSTF funding stream was set up and made available to LAs to deliver sustainable transport schemes:

"It was driven really by ministerial, you know Norman Baker was a strong local transport minister in the few years he's been in government who kind of drove it through and made happen. So I wouldn't say that other officials were persuaded", Stephen Joseph CBT.

The last part of Stephen Joseph's comment is particularly pertinent regarding how the LSTF was viewed within national government, as it required one individual actor who was passionate about a subject to drive the policy and funding stream through. Although Norman Baker suggests that the LSTF was as a result of a Liberal Democrat policy, as discussed in Section 6.4.1, it is clear that his involvement was crucial for ensuring that the funding was available for 2011 to 2015, as well as the additional funding for 2015/16. This role of individual agents in creating change is not adequately captured through the 3-Elements model. Using the SOP approach, within the TPSOP model, to explore changes to the practices of travelling, it is possible to identify the agents who have the ability to exert power within the system. Dudley and Richardson (2000) found that the transport planning sector has been influenced by strong agents in the past, such as Ernest Marples, who was discussed in more detail in Section 3.3.1. The LSTF has shown that ministers with strong views such as Norman Baker MP can drive funding schemes through. As for the long-term implications of the changes created by the LSTF, it is difficult to know whether they will be sustained if, as Stephen Joseph has suggested the funding of sustainable transport initiatives in this way was not accepted by all ministers who have the potential to influence the TPSOP.

6.4.4. Central Government - Departments

The second level of the TPSOP shown in Figure 6-6 represents civil service departments that are responsible for helping the national government deliver their policies. Although the departments are headed up by government ministers, the work undertaken to deliver policies is performed by civil servants. Their role is to interpret the national government thinking behind a policy and find a practical means of delivering it. This means that for the LSTF the DfT's civil servants were responsible for designing the application guidance and evaluating the bid documents against the criteria agreed by national government. The DfT is also the funding body responsible for ensuring the money is provided to LAs to deliver the schemes:

> *"Well we have a huge influence in that we are the funding body and if we hadn't had my predecessors argue that we should have had a fund back in 2010 then we wouldn't have an army of sustainable transport officers around the country demanding future funding. It's as simple as that really",* Respondent DfT1.

The government departments form a crucial stage within the TPSOP ensuring that policies are delivered in line with the politicians' vision. This vision has the power to create significant change to how practices are performed and by whom. The way that the DfT designed the LSTF led to an increase in transport planning officers who were responsible for delivering transport initiatives. The LSTF remains a relatively small funding stream in comparison to other funding streams provided by the DfT, as the LSTF delivery team in 2014 at the DfT was made up of just four people, responsible for communication, evaluation, administration of grants and paying the grants to the LAs. This limits the amount of contact time available between civil servants and the LAs for the LSTF as this quote explains:

> *"I would like our team to be spending much more time, even now, working more directly with local authorities to trouble-shoot, to fight through barriers and to identify common issues that are happening across the country. To work at a national policy level to unblock things that might be getting in the way again and again and again, just to do some national level work to smooth the progression of the implementation of sustainable transport projects",* Respondent DfT1.

Due to the size of the team and the task of managing so many LAs, there has been a reduction in the contact time between the DfT and LAs. The realities of the work pressures on the central team delivering the LSTF for the DfT mean that there is little or no opportunity for contact directly with LAs, although several interviewees at the LA level make reference to

the importance of the DfT's regional advisors as a *'critical friend'* when writing their bids for the second round of LSTF funding (2015/16).

Other departments also played a role in the evaluation process for deciding whether there would be any funding available for the LSTF, most notably HM Treasury. One of the primary difficulties was justifying sustainable transport schemes in line with the existing evaluation processes for deciding what will be funded:

> *"We really struggled through the Spending Round 13 to get the money for 15/16 to keep a balanced argument to Treasury about the need for capital and revenue investment. And the problem there was that capital investment is very easy to understand: capital investment is what the department spends money on all the time. We say we are going to build something, we need money, and we build it",* Respondent DfT1.

This is due to the lack of understanding within the Treasury of the importance of the revenue funding for transport and the difficulty of demonstrating how successful revenue funded schemes have been:

> *"It wasn't easy to prove the benefits to a standard that would justify to the economists within the DfT, therefore the whole thing was rubbished",* Respondent DfT2.

Respondent DfT2 also highlights a wider issue in terms of the acceptance of sustainable travel schemes that include revenue funding at the highest levels of the DfT:

> *"Civil servants: that was where the biggest block was. The civil servants many of whom, because of the way the promotion works had been economists earlier in their career",* Respondent DfT2.

The DfT's financial funding structure is based around an economic model that is perpetuated by the TPSOP and the importance of financial justification for all the money that is spent by the department. When the benefits of a scheme are difficult to quantify they appear to be rejected for funding at the senior civil servant level, particularly if the results do not fit into a quantitative model. As with the level above in the TPSOP, the practices, systems and behaviours at the civil service department level influence the next stage of the TPSOP: the LA level. Changes need to be made at the civil service level of the TPSOP to ensure the acceptance of sustainable travel and the benefits it provides if the practices of travelling are going to change in the way ministers' hope.

6.4.5. Power Relations – Civil Service Departments

As discussed in Section 6.4.2 civil service departments are run by a government minister or Secretary of State. For the DfT this role is the Secretary of State for Transport. Departments are an important source of information and advice for ministers. Respondent DfT2 explained that it could be difficult to convince Secretaries of State of the value of sustainable transport schemes:

> *"Junior ministers were not the problem. They had the tendency to be very very enthusiastic. Problems have been with say the Secretaries of State, who don't necessarily buy into these things* [sustainable transport schemes]*",* Respondent DfT2.

This lack of 'buy in' can often be because the senior civil servants do not believe the findings they are presented with, as the quote from Respondent DfT2 in Section 6.4.4 demonstrated. This can be an issue even when the results show the success of sustainable transport initiatives:

> *"There's a broader problem with this entire area, which is that the whole concept of smarter choices, behaviour change, all of that. The strand of the transport economics profession that is represented strongly within the DfT doesn't believe in any of this stuff, and tend to downplay it",* Stephen Joseph, CBT.

Ministers rely on senior civil servants to advise and support their decision making process making them powerful *agents* within the system, and many of the decisions at this level are based around providing an economic case for justifying schemes, for which infrastructure schemes are easier to prove. Respondent DfT2 certainly found this level of government the biggest barrier when working for the DfT:

> *"And even when we would demonstrate that sustainable schemes like the travel to work schemes in business parks could actually achieve better benefits than the infrastructure schemes: those in senior positions actually refused to believe it",* Respondent DfT2.

Within the TPSOP the views of the senior civil service need to be challenged for sustainable transport initiatives to gain acceptability. This can be achieved by repeatedly demonstrating the success of sustainable transport initiatives such as the LSTF. There are obstacles to this as Respondent DfT2 found the results were not accepted at the senior level despite being able to demonstrate their success in reducing travel by private motor vehicles. Without this

view being challenged it will be difficult for sustainable transport schemes to retain support. With Norman Baker moving to the Home Office in 2013, the LSTF has lost its driving force at the top of the TPSOP, meaning it is uncertain what role sustainable transport will play in the next few years in terms of the transport schemes delivered. The dominance of the economic approaches in developing transport policy at present prevent the results from sustainable transport schemes being accepted, as the current system is designed to accept large scale capital schemes that fit more neatly into the economic modelling profile:

> *"I think that one of the problems is that the economists who look at the analysis have a very narrow view as to what actually counts for these analyses. This is, the figures aren't right but this is to give you an idea. I remember coming across when I was working there, there was a particular transport issue that needed sorting out. There was one option which was about £1m dealing with, doing some sort of sustainable scheme. And there was another scheme which involved infrastructure which was say £100m, not exact figures but you get the drift. And of course it was without a doubt that the £100m [scheme] will be funded",* Respondent DfT2.

In Section 2.4 the research discussed the Abraham Maslow quote *"It is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail"* (Chatterton and Wilson, 2013: 6). The TPSOP provides an alternative way to interpret the success of a scheme that moves away from economic based evaluation. With the DfT focused on economic approaches to travel solutions, large-scale infrastructure schemes are accepted as the means of solving transport issues because it is possible to model the benefits better than for sustainable transport schemes. This remains an important barrier to sustainable travel becoming normalised as part of the practices of travelling, as the DfT continue to commit vast sums of money to constructing new highway infrastructure that promotes the use of private motor vehicles as the primary means of travel.

6.4.6. Local Government

The third level of the TPSOP, shown in Figure 6-6, represents LAs and the various practices, processes and behaviours that exist at this level of the system. LAs include a council of elected members who are responsible for signing off the delivery of a whole range of services including transport, education and social care. Councils employ officers to support the elected members in delivering the policies set up both by national government and locally. Transport planning officers, the focus of this research, fit into this category. Most LAs also have an executive level of officers responsible for managing the LA, with a chief

executive officer who is accountable to the council members. Power lies ultimately with the council members to approve or reject schemes and these are not always made on the merits of the scheme, but can be a political process as explained by Respondents CC2 and UA4:

> *"Officers will advise where big schemes are necessary. We usually provide them with a number of schemes and the case for them, the benefits and what have you. But the prioritisation, we have scoring systems and things like that, but ultimately, and I think this goes for any local authority. There's a political process that they have to go through and that decides the direction the authority goes in",* Respondent CC2*.*

> *"There was a big upset when the authority went from (political party) controlled at its last election to (other party) controlled. Which one might have thought would be a good thing in sustainable transport terms. But it, it hasn't been totally in… the previous administration had come to quite a sensible agreement over the major scheme and the expansion and new park and ride site. Well the new party kind of, sort of threw all that up and came up with other ideas. Some of which are not very workable, like proposals for a railway park and ride which is far less feasible than a road based park and ride would be",* Respondent UA4*.*

In terms of the schemes that are eventually delivered there can be a move away from the best or most option if the previous party in control of an LA supported it. When it comes to sustainable transport there are also issues relating to the acceptability of schemes and as discussed in Section 6.2.1 many schemes are supported by local council members as they are *'playing the game'* to ensure the funding comes into the LA. Several interviewees highlighted that one of the biggest barriers to sustainable transport came from the senior officers, who were in charge of managing the LAs finances, rather than council members:

> *"I mean politically we had very positive reception. More than at the senior levels* [executive officer level]*. We've seen more resistance at senior officer level to sustainable transport than there is at a political level",* Respondent MB1*.*

> *"I certainly don't think this authority sees sustainable transport as a particular priority. The officers that work in it may do, but I'm not convinced that at a higher corporate level it is viewed as a priority",* Respondent UA4*.*

> *"If I was going to be brutally honest I would say it's your senior officers here, not within transport, but your chief executive, the sort of heads of... your directors. They will either*

support or not support anything coming through from the transport team", Respondent UA7*.*

The LA level, like the levels above it in the TPSOP is made up of a complex network of various practices and underlying systems that influence how and why some schemes are supported. The views of sustainable transport may vary at the different levels of the LA, council members and executive level, compared to the views of the transport officers. The views of these groups influence how transport is perceived by each group and need to change towards promoting sustainable travel if the practices of travelling are likely to change significantly.

6.4.7. Relationships at the LA Level

Although national government and the DfT retain control of the funding and decide whether a bidding process is required, the design of schemes as discussed in Section 5.4.1 remains almost exclusively with transport planning officers as explained by Respondent CC1:

> *"I think ultimately the influence probably comes from the local authorities, because ultimately they design the schemes, they build the schemes, they deliver the schemes and you know you can play whatever you want in the media. The members do have an input, depending on the well, the well briefed member will have a bigger input than a member who is just told to do by his lead officers",* Respondent CC1*.*

Whilst the final decision over whether a scheme is delivered sits with the council members, they are often deciding between a range of schemes designed by the transport planning officers. These schemes are often assessed and prioritised in terms of which would be best for the local area but: "*There's a political process that they have to go through and that decides the direction the authority goes in",* Respondent CC2*.* This means that sometimes the best schemes are side-lined for political rather than suitability reasons. This may also be because they are accountable to the public:

> *"Members are accountable to the electorate at the end of the day. We give our best advice, they make the decisions. They may wish in the light of public opinions or concerns to see amendments to the scheme",* Respondent LEP1*.*

This influence and bowing to public pressure from members of the public can often mean that sustainable transport schemes do not deliver the benefits that they are intended to:

"There was a scheme here recently to put a cycle way across a junction and I wanted to put a left turn ban in. A very small number of traffic movements at that junction: but the Ward Councillor got involved and local residents got involved and it was just vetoed. So that resulted in an interruption to the utility of the scheme for cycling. It is harder to cross that junction now. You have to wait, basically, which cyclists don't like doing, because they are like everyone else, they are lazy and they like to go in a straight, not up and down any hills as quick as they can", Respondent UA6.

This creates difficulties for LA officers as the sustainable transport schemes can often be watered down versions of the original design. This means the schemes often fail to achieve the benefits for people who use them. Residents in an area objected to a scheme that would provide a benefit for cyclists, compared to the few people who wish to make a certain manoeuvre in their private motor vehicle, and unfortunately in this case the views of the latter were favoured. Sustainable transport also suffers when other priorities such as the local economy are deemed to be more important than environmental concerns:

"That's one thing, look at what politicians here are doing at the moment is that they are making car parking fairly easy to park now. They are reducing the costs; they are taking costs away completely for the first two hours, so they are encouraging people to use their cars. But that's on the back of trying to improve the town centre, the footfall the town centre shops; you get one versus the other if you like", Respondent UA11.

"So it is a difficult one, because like you say, we're competing with neighbouring smaller towns and the bigger cities for trying to get retail and trying to get investment. I think that anything that is overtly as anti-car would be seen by the business community as a very bad thing. And I think politically at the very top of the chain in the authority then it is deemed to be not acceptable. So as much as we can promote sustainable transport I still think we are in the situation where the car dominates; without doubt", Respondent UA7.

The comments above highlight the importance that is still placed on people being able to drive into town centres and the importance this plays to the local economy. Smaller towns in a bid to compete with larger towns and cities see this as a selling point, where people have to travel by sustainable means to enter many towns and cities these days. Making town/city centre parking, cheaper and easier is clearly an incentive that goes against the environmental agenda aimed at reducing CO_2 emissions from transport. The introduction of free parking also removes a disincentive for people travelling by private motor vehicle.

6.4.8. Use of the Transport Network

The lowest level within the TPSOP is the transport network and this is where the practices of travelling are undertaken. How people choose to travel is linked to the transport system and wider societal cues as to what is the best and most acceptable way to travel. The TPSOP can have the greatest influence on the first of these. Providing a network that promotes sustainable travel over private motor vehicle use is a means of achieving this but, without changes occurring at each stage of the TPSOP that see travelling sustainably as the main target of travel, this is unlikely to happen.

The findings in this research do not support Fine's (1995) assertion that the SOP model follows a downward flow of power, as discussed in Section 2.8.4. Whilst this is certainly the case for the majority of processes, users of the transport network can influence the practices and processes further up the system. Members of the public are able to meet with MPs and council members and attend council meetings, so the opportunity to create a change to what is delivered is possible. This can often lead to the views of the members of the public who are actively engaged in local politics being over represented in the decision making process:

> *"The public have undue influence if they complain. There are a lot of, dare I say it, NIMBYs* [people who take the approach of "Not In My Back Yard"]*, particularly here that have undue influence: the people who are anti-things rather than the people who are for things and the politicians are probably more influenced by them than they are by practitioners",* Respondent UA4.

A lack of engagement was cited by several interviewees as a problem when developing schemes. The public rarely become politically engaged with issues of transport planning until there is a direct impact on their life.

6.5. Processes of the TPSOP

As described above, each stage of the TPSOP has various practices and processes that are followed in the delivery of transport schemes in England. This section focuses on two of these: finance and bidding, as they run through the whole of the TPSOP and, as has been discussed above, influence what transport infrastructure and training is provided and where it is constructed.

6.5.1. Finance in the TPSOP

As discussed in Sections 5.3 and 6.2, funding is the most important process within the TPSOP. Without it no transport initiatives would be delivered. The priorities of the funding allocation are decided at the national government level, with the funding to meet these objectives agreed and administered at the departmental level. The introduction of conditions as to what money can be spent on has allowed, as Norman Baker MP explains, LAs to deliver schemes: "*that would never have happened without this fund".* This view is backed up by the results in Section 5.4.2 which found that half of the schemes put forward in the bid documents were designed specifically for the LSTF.

The LSTF funding also provided other benefits for transport officers by providing additional funding for schemes to: *"Do the sorts of the things we wanted to do set out in the Local Transport Plan"* (Respondent UA5) and to: "*fill in the gaps"* (Respondent UA9) that exist in the existing transport funding. MPs control the money that is provided to LAs and this gives them a great deal of influence within the TPSOP, as their decisions on what type of transport schemes will be funded will ultimately influence the transport network. As has been discussed in Sections 3.5 and 5.4.2 the type of funding is also important.

6.5.2. Revenue Funding

As explained in Section 3.5.3, revenue funding forms an essential part of the funding available to transport planning officers. It can be spent on a range of things such as promotion, subsidising transport schemes, personalised travel planning and wages for staff to deliver the schemes. This forms an important role in ensuring that LAs are able to continue to deliver transport initiatives previously delivered through other funding sources, as explained by Respondent CC3:

> *"The authority is in a position where any revenue implication is extremely serious. So any new piece of kit that we put on the highway, we have to think through what the revenue implications of that are. And we've taken out ticket vending machines for buses, simply because we can't afford to run the things",* Respondent CC3*.*

The construction of any new asset through the LSTF funding stream will have a long-term liability for the LA that will have to be met by the LA's revenue funding and, as Respondent CC3 has highlighted, the budget cuts to LAs since 2010 have meant that some assets that are beneficial for sustainable travel are being removed as there is no revenue funding

available to service and maintain bus ticket vending machines. Stephen Joseph of CBT explains:

> *"One of the things that we've said about this is that in the transport world capital funding is over-estimated. A lot of revenue funding can make a big difference. In some cases targeted fare cuts which has happened in Reading that kind of thing. Or funding to set up new bus services is as important as new capital funding, more important in some cases",* Stephen Joseph CBT.

The LSTF provides significant levels of revenue funding was broadly supported by transport officers, even if it was not understood at other levels of the LA or DfT or by all bidders at the time of bidding:

> *"LSTF came along and offered that revenue split which we've always as a local authority said 'great we'd love to do this, but what you do is give us capital. We need the revenue'. So thankfully this has come along",* Respondent UA7.

> *"The feedback from our bid which was around further capital investment into our network: we have got many kilometres of segregated cycle routes and our emphasis should be on promoting their use rather than building more when they are currently poorly used. So as a direct consequence of that feedback we have taken the decision within the authority to allocate further resources to revenue projects, which is around promotion type activities",* Respondent UA12.

The LSTF revenue funding therefore gave LAs the opportunity to invest in the promotion side of transport planning provision, highlighting the new schemes and training programmes that were available for people to use. Whilst LAs have been providing these types of schemes for many years there has never been a sufficient budget to market them effectively as explained by Respondent UA7 who used the funding to employ a member of staff to market the sustainable travel initiatives his LA were providing through the LSTF. As Respondent UA12's comment shows, the fact that their LA was unsuccessful in receiving the LSTF funding led to a review of the LAs policy on revenue funding for transport. This review led to the allocation of resources by the LA for marketing of the existing sustainable transport network. This suggests how the practices at the LA level of the system are directly influenced by the processes and meanings that exist at the national government level (albeit not through a conscious, direct application of power); as the LA has used the government feedback on their LSTF bid to change their delivery of transport planning.

6.5.3. Long-term Revenue Funding

One of the main problems with revenue funding is that it is spent on providing services: compared to capital expenditure that leaves the LA with an asset (or liability) at the end of the initiative. This makes the provision of long-term commitments by LAs very difficult, as budget cuts and priority changes within the LA due to changes to political parties in power can lead to funding priorities changing. Norman Baker MP however suggests that there was an expectation within the funding that any initiatives delivered through LSTF would have a long-term strategy to support the scheme once the funding finished:

> *"In terms of revenue as well we expected, if for example there was match funding for a bus service, the council would carry on funding the service for particular period of time beyond the LSTF, so it didn't just stop",* Norman Baker MP*.*

The second issue with the long-term planning for revenue funding is that the revenue element should be used for scoping the best schemes to be delivered (through officer time) and consultation, but the short delivery timeframes within the system make this difficult to achieve:

> *"It's our fault really* [the DfT]*; we design programmes with capital and revenue elements that don't really speak to each to other. And the best way to get them to speak to each other is to spend a year or two years doing the revenue information gathering that you need to do. And then you plan your capital infrastructure off the back of what you've done through the workplace and personal travel planning",* Respondent DfT1*.*

The transport officers interviewed understand the benefits of a prolonged investment of revenue funding into public transport services that provide a cost-effective means of travel:

> *"If the government are really keen on making sure that public transport is the way that they want people to travel, to actually make it affordable, I mean, particularly the trains, the* [fare] *rises at the moment they are just discouraging people to use the trains, particularly longer journeys",* Respondent UA3*.*

> *"*[European Countries] *invest in sustainable transport so you know it's accepted, why do so many more people cycle on the continent? It is because actually the facilities are safe and pleasant. What is the impact of congestion on their economy? It's less because they've actually invested in the roads properly and they work well. And why do perhaps*

more people travel on public transport systems in cities? It is because they have invested", Respondent UA1.

The comments above highlight the need to change the perceptions of transport funding across the TPSOP so that significant levels of revenue funding are invested to make public transport a realistic option. The UK has invested significantly in transport infrastructure since the 1960s as discussed in Section 3.2.2 as a means of solving the problems of transport. The majority of this money goes into infrastructure, which is seen as an investment or a grant, whereas investing in public transport services is seen as a subsidy. Understanding the practices of travel through the TPSOP model identifies that processes within the system that have, in the past, created a barrier that prevents sustainable travel uptake.

6.5.4. Benefits of Revenue Funding

One of the biggest challenges for LAs is to demonstrate the benefits derived from revenue funding:

"That's a constant criticism. There's always questions about we don't know whether revenue investment has any effect after it's gone in. But if you send a school travel planner in, or a Bike It officer in and they enthuse children that it would be great not to be driven to school anymore and they walk and cycle. And they get 100% uplift in active travel and then the Bike It officer goes onto another school, what then happens? Do they all go back to their old ways? Well hopefully if the Bike It officer's done a good job, they don't. The Bike It officer has created a school where 'that's just how it is' and they maybe need to go back three years later and do a bit of a light touch refresh, a bit like maintenance on infrastructure. But it is a bit of a foreign territory. How do you appraise revenue investment? How long does it last for? Is there a decay rate attached to it? Do we really have to keep spending loads and loads of money on these people who have to keep going back. When they leave it just deteriorates. Well hopefully not if they've done their job well. It's a bit of a dark art really", Respondent DfT1.

Respondent DfT1 sums up the issue with revenue funded schemes: they do not fit neatly into economic models in the same way capital investments do. The value of a *Bike It* officer for example is so difficult to quantify, as the individual who receives training may continue to cycle for their whole life, pass down the knowledge to their children, or alternatively never cycle a bicycle again. The likelihood for many children may be somewhere in the middle, but it cannot be easily quantified. If the actions of the individuals who receive this training mean

that they choose to cycle rather than travel by private motor vehicle there is a benefit to the environment and a reduction in GHG emissions from transport, which is the desired outcome of the LSTF even if it cannot be easily quantified. Other schemes do however show that it is possible to quantify the benefits of revenue investment. Discussing revenue funding for a rail scheme that became financially viable:

> *"Initially it was £400,000 a year* [subsidy] *and then it dropped to about £200,000, down to zero now. It was roughly a train every hour and this brought it up to a train every 40 minutes* [due to the subsidy]*, so it's not a huge difference* [in the level of service]*, but we've seen phenomenal growth on the line. It's gone up well over 100% over the last eight years or so",* Respondent LEP1*.*

It is clear to see with this example that providing revenue funding although (not through LSTF in this case) to support a rail service saw a significant growth in passenger numbers thanks to the LA investment to make the services more viable for people wishing to travel by train. Another example includes identifying where previously unemployed people have been helped into work thanks to LSTF funding:

> *"Because we've been able to pick up the pieces where there's a slip through the system: 80 people have found themselves in full-time employment. And we are talking about all spectrums here as well from people with learning disabilities to people who've been made redundant and just want to get back into employment. They've found our assistance has helped, it was very worthwhile",* Respondent UA7*.*

This example shows a clear link to the economic benefits of providing a relatively low level of funding to people who were unemployed to allow them to travel to work by sustainable modes. This is the very essence of what the LSTF was designed to achieve as people are growing the local economy, whilst travelling sustainably. It may be possible to quantify the benefits of this scheme through calculating the taxes these individuals will pay into the system and calculating the emissions their trips by sustainable modes save compared to if the trips were made by private motor vehicle.

Whilst the two examples above do provide quantitative answers to the benefits of revenue funding, many smaller initiatives included within the LSTF will not fit so neatly into an economic model: *"What's the value of a walking bus? We've got some very successful walking buses, but you would not appraise them with a WebTAG style BCR calculation"* (Respondent UA5). Whilst you can produce heat-maps or case studies as has been the

approach for the LSTF to date (DfT, 2014d) it can be difficult to demonstrate the success of the schemes in economic terms. This is an issue being addressed by the LSTF team at the DfT:

> *"The research project we're progressing is looking particularly at what benefits you get from revenue investment and how much further they take the capital investment. So because we really struggled making the case to treasury that we needed revenue as well as capital. They were saying 'what do you need revenue for'? And we'd say well work place travel planning, PTP and they'd go what are you talking about'? Well there's this process where people go and talk to people. So actually crisply defining why you need revenue investment is a struggle. Valuing how revenue investment makes capital investment worthwhile as far as I'm aware hasn't really been done",* Respondent DfT1.

There are benefits for delivering schemes with revenue funding, but they are difficult to define in transport planning and this makes it difficult to get and retain funding for them. This is less of an issue for capital funding.

6.5.5. Capital Funding

The need for capital funding is understood at the various levels of the TPSOP, as it is possible to quantify the benefits of installing new infrastructure. Capital investment remains just as important as the revenue funding for delivering sustainable transport schemes. This is because much of the existing transport infrastructure that has been built in the last 50 years has not been designed for sustainable travel modes:

> *"I'd really like to have a much bigger capital budget to retrofit things and deal with problems to make sure they look usable and attractive, because a lot of the stuff built in the 60s, 70s, 80s and 90s didn't come with cycleways*", Respondent UA5.

The highway network in the UK has been designed around the private motor vehicle, with some space (if available) at the side of the road provided for people to walk on the pavement. This means that much of the bus priority and facilities for cycling need to be added to the existing highway network. Providing such facilities is important to create the perception that cycling is a safe mode of travel:

> *"Before we delivered the scheme it was a 50mph road and was the start of the trunk road between authority's principal town and another local town. So it was a pretty unsafe*

road to cycle on. But it serves the business park which is quite heavily used and it has certainly encouraged people to cycle. A lot of people lived in the north of the town and didn't feel it was safe to get to work by bike, so the only option they had was to drive. Quite a few employers actually discouraged their staff from cycling", Respondent UA3.

Whilst there is some debate as to whether segregated cycling is important or whether the highway network should be available to all users:

"I'm of the view that I'm a road user, I'm not a cyclist. I'm on my bike but I'm a road user so I have every right to be on that road as much as anyone and I should not just be confined to a 1.5 metre width", Respondent UA7.

What is essential to provide through capital funding is a network that is both perceived to be safe and has a low number of casualties. Cycle routes do not need to be on-street and can often provide routes that link key sites within a town or city without the cyclists needing to travel on the highway:

"The other aspect is I suppose the infrastructure works that we are doing which is an improvement for cyclists in terms of a new segregated cycleway to east of the city. Basically it runs between the main residential area and the city centre. Now within the city all this area here is part of the enterprise zones. So the idea behind it was that you are trying to get easy access into these enterprise zones using walking or cycling. I mean, it is primarily these areas that are within the top ten of the indices of deprivation. So it is trying to encourage access to employment. It also doubles up because there are quite a few schools there who can access through there as well", Respondent UA9.

The delivery of sustainable transport, and any other transport scheme, is that if there is an infrastructure element to the bid from capital funding, there is a need for LAs to firstly examine whether the scheme is appropriate, to ensure the public have the skills to use it appropriately and to market the scheme when it is completed. All this will come from the revenue budget. The last area that needs to be considered when discussing finance is maintaining the asset once it is in place.

6.5.6. Maintenance

Once an infrastructure asset is in place the LA has a liability to maintain that asset to ensure it remains fit for purpose. This is where the whole life cost of transport assets need to be

understood by local council members and executive officers. Changing political priorities can mean that schemes are not maintained to a high standard, making them less desirable for people to use to travel:

> *"I'm not convinced that there is enough money set aside for maintenance. Particularly, new cycle schemes and cycle paths. You only have to look at what's happened where I live. They got a lot of money from a previous fund, a lot of things like painted cycle lanes have now just faded. They are parked all over and I think that sort of throws such facilities into disrepute. And I am not convinced that enough onward provision is being made for maintenance",* Respondent UA4.

This is a common problem for many LAs due to the uncertainty over budgets:

> *"It is how it should be in the real world of how you incorporate within the whole life cost. What you are able to achieve by doing this, this and this per year without it falling into disrepair. Because obviously we are right on... well it is living on the shoe string isn't it? That's the thing with the maintenance in the future, you know that it's, there is a lack of money isn't there",* Respondent UA8.

One of the main challenges of introducing a funding stream is that the construction of new assets means that LAs will be left with a maintenance burden that may not be deemed as a priority by the LA unless there is continued support for this type of scheme from national government.

6.6. Changes to the TPSOP Post-2014/15

From April 2015 the TPSOP will change, as discussed in Section 3.6. An additional level has been added to the system that has not had any direct involvement in the LSTF prior to 2015. This level sits between the central government departments and the LAs and is formed of 24 Local Enterprise Partnerships (LEPs). LEPs are partnerships formed between the LA and local business leaders, as discussed in more detail in Section 3.8. This change is shown in Figure 6-7. The introduction of the LEPs therefore adds an additional level to the system where sustainable transport initiatives will need to be accepted as part of the solution to reducing GHG emissions. Revenue funding is important to sustainable transport initiatives, as discussed in Sections 6.5.2 to 6.5.4. The problem is that LEPs do not have access to revenue funding when delivering transport initiatives as Respondent LEP2 explained:

"As far as the decisions that have been taken by the local transport board so far it's about making capital investments in new infrastructure without an ongoing revenue cost as far as the LEP is concerned, because the LEP doesn't actually have a revenue stream", Respondent LEP2.

This lack of access to revenue funding limits LAs to requesting capital funding only for sustainable transport, shifting the focus away from revenue based schemes.

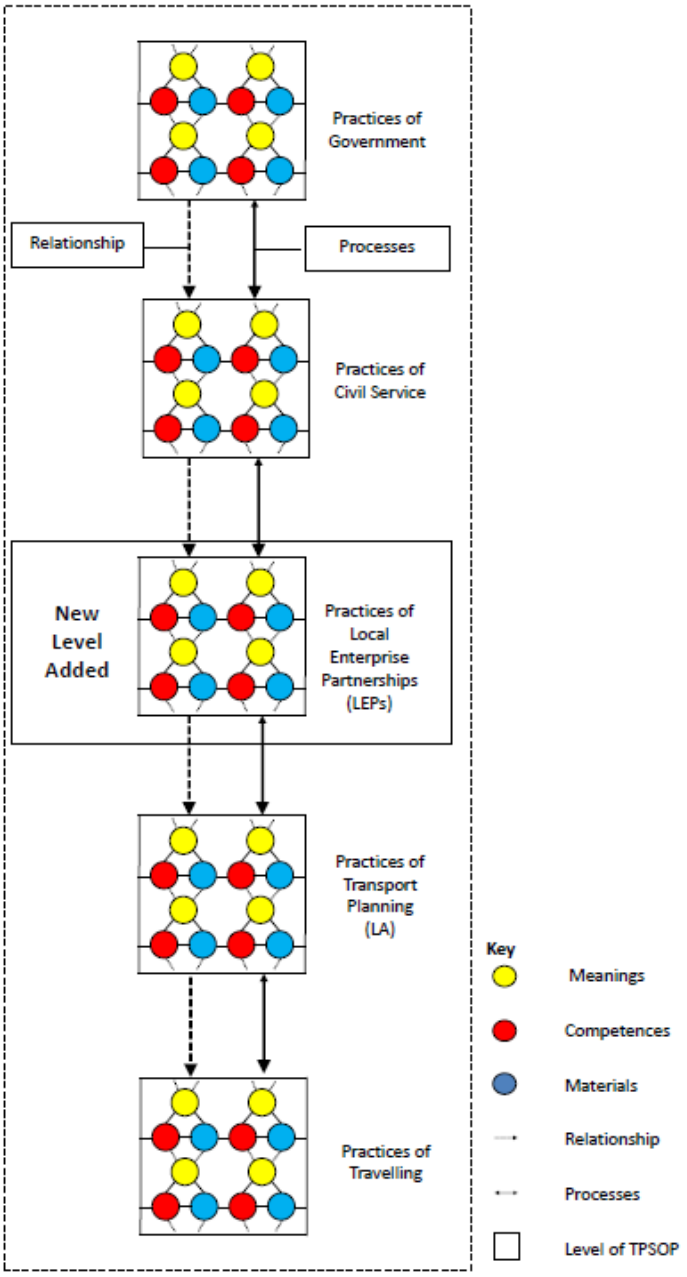

Figure 6-7 The Local Authority Transport Planning System of Provision (SOP) for England Post 2015

The LEPs have been created by the national government as new means of delivering transport initiatives, devolving power away from the national government at the top of the TPSOP (UK Government, 2010: CLG, 2011b: Heseltine,2012). The LEPs are responsible for delivering the Single Local Growth Fund (SLGF) schemes for the five years post 2014/15, deciding what schemes will be delivered at the LA level. As discussed in Section 3.6 the schemes that will be delivered are now focused on delivering strong economic growth, with reducing carbon emissions becoming a secondary target. As shown in Table 3-2, 70% of this funding is for capital investments. The introduction of the LEPs has led to uncertainty of how this will impact on what LAs deliver everyday though funding such as the integrated block, with allocations to LAs being halved post-2014/15 as the remainder of the money has been included in the SLGF. This uncertainty was described by Respondent UA12:

> *"I think most of the officers that I've come across in my dealings with them share my views. There's a great deal of nervousness around the Local Enterprise Partnerships managing the small scale local integrated block and the LSTF given that they are a big body covering, in our case, a very large geographic area. It's not just our authority; we are made up of four highway authorities and around 17 districts. So it is a big area. And for them to have a focus on looking at what is happening at the local level which I believe the LSTF and integrated block should look at fills us with anxiety at the moment so we are not sure how it is going to work",* Respondent UA12*.*

This uncertainty over how the system will work and whether LEPs will have control of budget decisions for the small-scale schemes is likely to cause problems. One issue is that members of LEPs are not elected and, as Respondent LEP3 explains, therefore not accountable for their decisions:

> *"One of the problems with the LEPs is the decision making process is very opaque, to put it mildly. At least with the LTBs you have an assurance framework which sets out how decisions would be made, who would be accountable and what those decision makers would have to do. We don't have anything similar with the LEP, they are just self-selected cliques of people who now seem to have a lot of power and money potentially",* Respondent LEP3*.*

The lack of transparency in the decision making process is the concern for sustainable transport that the inclusion of business leaders, who are not transport experts within the system, will focus the funding of transport towards highway schemes with the aim of *'growing the economy'*. How the LEPs work varies across the country. This was noted by

Respondent CC1 whose LA sits across two areas controlled by different LEPs. Respondent CC1 identified the issue of individuals making decisions that suit their own agenda without being accountable:

> *"It's interesting they've got two different LEPs and I think they've... It's about individuals. The Northern LEP seems to be working better; at the moment. And the Southern LEP, yes it's new: it's new at the moment and it's about individuals",* Respondent CC1.

Whilst Respondent CC1 noted issue of the creation of new LEPS for other respondents where cross-authority working has been established prior to the introduction of the LEP process there may not have been much change in day-to-day activities since the introduction of the LEP. The system of joint working was continuing as before, with a couple of additional individuals from business groups in the meetings:

> *"Well on the transport side, which is the only side I can speak with any authority, we have a transport executive committee, which is made up of the executive members for transport from the councils and they meet on a quarterly basis. That's our main forum for making joint transport decisions. That body is essentially the same four members of the joint transport executive committee plus two representatives from the LEP",* Respondent LEP1.

6.6.1. LEP's Power Post-2014/15

The reason for the introduction of the LEPs is that decision making power will be transferred away from the department level of the government. This would mean that LEPs would be able to utilise the funding made available by HM Treasury to deliver on the transport initiatives that they deem to be suitable for the area, as explained below:

> *"I think the big difference is going to be really from 2015/16 onwards when the devolved transport funding comes down to basically the LEPs. And the latest notice being published by the government is that the LEPs can pretty much have a free hand as to how they spend that money, what schemes they spend it on, how they prioritise, how they demonstrate value for money. So I think the LEP is going to play a bigger and bigger role",* Respondent LEP1.

This transfer of power means that there is likely to be a variety of different evaluation processes set up across the country that will not have the steer from the DfT in the same

way that LAs had with the LSTF bids. This will provide both the opportunity for sustainable transport to become an important part of what LEPs deliver, providing it is seen as a priority and funding is set aside accordingly. However on the flip side, without steer from the DfT, it is possible that sustainable transport initiatives may fall out of favour, as other elements such as the economy and growth prioritise which transport schemes are delivered.

Other interviewees were less certain as to how much power the national government and the Departments would be prepared to give up in reality, as explained by Respondent LEP3:

> *"There is uncertainty about the LTB. But from what I can gather from speaking to the DfT and also other government organisations like BIS and CLG is there still seems to be a recognition that transport schemes going forward, particularly more expensive ones do require a significant amount of business case work* [existing process of justifying proposed spending]*, even if it is commissioned by the LEP before money can effectively be spent in accordance with the Treasury Green Book. So it's not as if the LEP has now got a completely free reign just to give projects money without any assurance that those projects are actually going to deliver value for money, deliver against their various objectives and have evidence that they've actually made some difference in whatever form that may be. And I think the LEP might still be struggling with that realisation that actually there are still lots of conditions, a fair amount of the business case work, once the growth deal has been negotiated",* Respondent LEP3*.*

The retention of the requirement to justify spending to the DfT suggests that whilst the LEPs will have some power to design and evaluate the best schemes for their areas, these will only be funded once they meet DfT and HM Treasury's standards by demonstrating they provide significant benefits in line with governments' economic modelling processes.

6.6.2. Monitoring of the LSTF Schemes

The LSTF has provided an opportunity to demonstrate how successful small-scale sustainable transport initiatives can be at meeting the targets of improving local economic growth and reducing carbon emissions. The problem is that from the start of the funding stream no universal method of monitoring and evaluating the schemes was set up:

> *"I spoke to a particular ex-colleague and I said well how are you going to monitor it? To which he said we don't know we haven't thought about it, which I thought was absolutely appalling because the LSTF was a £500m-£600m* [of funding]*. A lot of money and*

somebody at some point somebody is going to ask what benefits and value have you got from that and they hadn't, it hadn't dawned on the civil servant that they could set up something from the very beginning, a monitoring regime so they could actually get lots of data which would prove that the, what benefits could be achieved from sustainable transport schemes. Because we've said over a number of years, the hard data that we need that would actually prove to the economists and analysts in a language that they understand that we could actually get these benefits", Respondent DfT2.

The lack of a clear evaluation process for the LSTF causes a problem for civil servants at the DfT in demonstrating the benefits to government ministers and senior civil servants. This also creates an issue for transport planning officers to show the changes these initiatives have made This means that monitoring has had to be considered retrospectively, making it difficult to gauge the success of some initiatives, as explained by Respondent UA1:

"It is difficult because you are not measuring in a traditional way. You know DfT have come up with a cost benefit analysis for major schemes and they are trying to apply it to LSTF. In some areas it is quite straight forward but we've struggled with is: what is the benefit of marketing? There are huge benefits but how long lasting are they? There's been little research into that area. What's the benefit of going in and engaging with young people and how that changes how they behave as adults?" Respondent UA1.

At the local level this has led to some innovative measures to demonstrate the success of the LSTF schemes to local council members:

"In terms of success to members, to councillors, that has been an important part. One thing we've had, when we got the LSTF is that the Scrutiny Panel picked up on the level of funding. They created a 'pedal power' Scrutiny Panel to look at cycling. We took the members to show them where we were investing, what we were building. We also took them up to a cycle demonstration town. We took them out on bikes, showed them what the offer was. We got a very positive reception back from them", Respondent MB1.

Respondent MB1's quote above demonstrates a successful method of highlighting the benefits of the schemes to council members that could be considered at the lower level of the TPSOP, but unfortunately it does not provide a means of demonstrating the overall benefits that the LSTF funding has provided in the areas where schemes have been delivered:

"If I asked the question what are the gross benefits of all these schemes together. I doubt that we would now know and they'll just have to fudge it a bit. And I think that is an absolute tragedy for the amount of money that has been put into it", Respondent DfT2.

This will be one of the challenges for delivering sustainable transport schemes in the future. The LSTF annual report 2012/13 (DfT, 2014d) includes a summary and case studies of successful schemes that have been delivered through the funding, but this does not fit neatly into the economic models that demonstrate the benefits of the funding in relation to the cost.

6.6.3. Sustainable Transport Post-2014/15

The research has found that the 3-Elements model provides a useful tool for practitioners designing transport initiatives, but that it should be considered as one of many tools for understanding behaviour. Chatterton and Wilson's (2013) *'Four Dimensions of Behaviour'* (4DB) framework demonstrates the diversity between different behaviours, as shown in Figure 2-3. For the 3-Elements model this could be considered for projects where you are looking at populations to change behaviour.

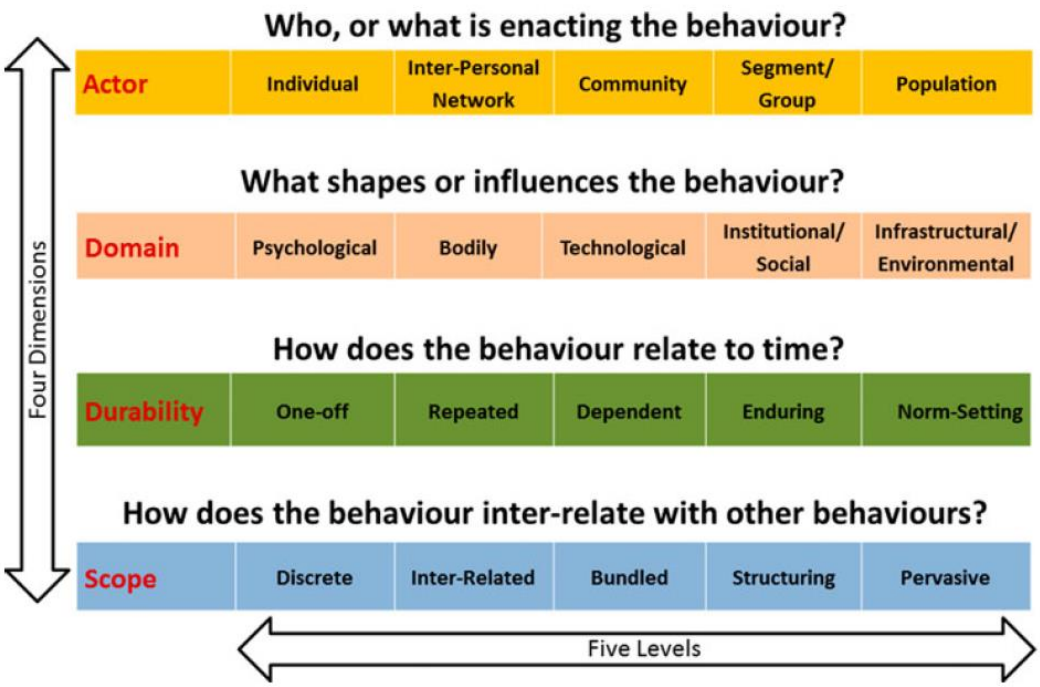

Figure 6-8 The 4DB Framework (Source: Chatterton and Wilson, 2013). Used with permission of Taylor & Francis Group.

The 3-Elements model could be used at the scoping stage of deciding future transport priorities, as it would add greater depth to the understanding of the behaviour that is to be the focus of policy. If the issue being tackled is congestion, it would be possible to use the 3-Elements model to identify the reasons why so many people are travelling at a particular time of the day and attempt to challenge the reasons why this is occurring. Research could be undertaken into other commuters travelling at this time in order to establish whether there are opportunities for employers to allow flexible working patterns that do not penalise people who wish to travel by sustainable means. Many of the LSTF schemes have involved active engagement with employers or, as Respondent MB1 explained, the local Chamber of Commerce through the LSTF so many of these links need to be retained or established in other parts of the country.

The second change that is required within the transport planning system is change to the evaluation system that continues to promote the benefit of time savings over the environmental and health benefits of sustainable modes of travel. This cannot be achieved until the benefits of sustainable initiatives are accepted at both the senior civil servant and ministerial levels of government, even if they cannot be demonstrated as part of a Cost Benefit Analysis CBA. This will not be easy to achieve but is necessary before the UK can start to reduce GHG emissions from private motor vehicles by the levels required to meet the target set to reduce overall emissions by 80% on 1990 levels by 2050 (DECC, 2009).

6.6.4. Need for Sustainable Transport Funding

The research suggests that the short-term funding of sustainable transport schemes is insufficient to create a lasting change to the way people travel:

> *"A funding stream is long term certainty that is crucial really to delivering any, I was going to say sustainable policy, but not in the same way as sustainable transport. Without knowing how much money we're going to get and being sure that you can then actually draw it down you can't plan what you are going to do",* Respondent CC3.

The uncertainty that exists currently within the transport planning sector means that many projects delivered through the LSTF will cease once the funding ends, as the staff delivering the schemes will have to leave the LAs due to the lack of revenue funding to maintain their roles. In July 2014 the DfT announced the LAs, or groups of LAs, that would receive the additional revenue funding for 2015/16 (DfT, 2014c). In total, 44 bids were successful in being awarded additional revenue funding, with the DfT allocation totalling £64.5m (*Ibid*,

2014c). What happens after 2015/16 to the revenue element of the LSTF is at present unknown. Funding of sustainable infrastructure is likely to continue, where LEPs have included these initiatives in their Strategic Economic Plan (SEP), as the capital element of LSTF funding has been included in the Single Local Growth Fund (SLGF). With no revenue funding in place post 2015/16 it is possible that the work completed through the LSTF could cease.

To continue with the delivery of the LSTF, particularly the revenue elements, there needs to be a long-term commitment to sustainable transport at the national government level of the TPSOP. This commitment needs to be demonstrated through long-term funding of sustainable travel schemes. This is essential, as funding is the catalyst within the TPSOP for creating the potential for change to occur. Without the funding, the potential for change reduces, as LAs will no longer be able to: subsidise tickets for people returning to employment; or provide people with the training to ride a bicycle; or negotiate the public transport network. None of these things would have been delivered to such a large degree in England between 2011 and 2015 without the LSTF funding to make them happen.

The level of funding required is relatively low in comparison to what has been committed by the Government through the SLGF. The SLGF commitment for 2015/16 is £2.002bn, which dwarfs the commitment of £538m of national government funding for the LSTF over the preceding four years (DfT, 2012b). This level of investment is expected to be matched each year until 2020/21 (HM Treasury, 2013b), equating to over £10bn investment in new infrastructure over the next five years. If a similar amount of funding to the last round of the LSTF could be committed for the same period, it would represent a 20th of the investment in infrastructure during the same period to 2020/21. Yet this has yet to be confirmed and it is possible that whilst new cycleways and bus priority measures may be implemented over the next five years, LAs will have no funding and fewer staff available to promote their new infrastructure to potential users.

6.6.5. Changes to Evaluation Process

In addition to identifying the need for a commitment to funding the TPSOP approach has also highlighted the issue of how transport schemes are evaluated. The first step in committing any future money would be the requirement that all schemes are monitored in the same way, to provide a robust set of data that either proves, or disproves the benefits of the approaches taken through the LSTF. This was a major issue with the LSTF as: *"There*

was not in existence any overarching philosophy for the type of data that should be collected", Respondent DfT2.

This data would then need to be used within the new appraisal model that incorporates the costs and benefits of all types of transport planning options. As Respondent UA4 explains many of these tools are already available to LAs:

> *"There has been more concentration on surveys and employers travel surveys, before and after surveys. We've always had a sort of comprehensive programme of, of traffic and pedestrian counts as far as before and after schemes, and cycle counts as before and after scheme monitoring is concerned, partly with automatic recording and partly with a team of enumerators that are used to conduct surveys",* Respondent UA4.

Future projects of traffic growth through existing modelling techniques have never proved to be accurate as discussed in Section 3.5.5, but they are used to predict and plan new highway infrastructure that will be delivered through the SLGF. Yet very few interviewees believe the figures, particularly those in the *Draft National Policy Statement for National Networks* which predict a 46% increase in the number of trips undertaken by 2040 (DfT, 2013d):

> *"Well I don't believe that to be honest with you. The road traffic levels are down from what they were 20 odd years ago. And the evidence if you look at, I was just looking at it this morning in one of the transport magazines. Road traffic is stagnating. Young people aren't bothering to get a licence as they did when I was young. The insurance is too high. They preferably want to go out for a drink in the evenings, so they don't drink and drive. So they get a train or a bus. We are not seeing the same growth in road transport at all. We are seeing a massive growth in rail, so I don't actually believe that statistic",* Norman Baker MP.

If former Under Secretary of State for Transport does not believe the results of the forecasts along with the evidence from the Buchanan Report's forecasts and Goodwin's (2013) findings show that the forecasts have never been accurate, yet economic growth has still continued, then it is essential that the way transport demand is forecasted changes. This includes rail forecasting:

> *"One thing in that, talking about the road forecasts, the rail forecasts look very much on the low side. They are using the erm, Network Rail's forecasts, which have always been*

conservative. So actually there's an issue there that we think they are being too conservative and we are going to have to plan for more. So you have that contrast really that yes road traffic is going to increase, but rail traffic may increase even higher than they expect. To give you an example: Network Rail's Route Utilisation Strategy which came out in 2010. It predicted a 41% growth in passenger numbers in our area by 2019. From our own annual rail surveys, which are admittedly are just an annual snapshot survey we hit 41% growth last year six years early", Respondent LEP1.

Whilst the predictions of growth in travel demand due to the rising economy, population and various other factors need to be considered, our knowledge of how this demand is absorbed by increases in the use of other modes needs to be incorporated into the modelling data. The suppression of demand and the changes to work and leisure practices to accommodate the existing transport infrastructure demonstrate that it should make it possible to devise a forecasting tool that delivers a realistic representation of future travel needs. At this point the emphasis should be on promoting initiatives that allow people to travel in the most healthy and least environmentally damaging way possible, rather than predicting increases in private motor vehicle use and attempting to construct a network to meet this predicted demand. Changing the emphasis within the TPSOP away from meeting the demands of private motor vehicles through the evaluation and forecasting of travel demand is an essential, but challenging, part of what is required to reduce GHG emissions associated with transport.

6.6.6. Maintaining the Network in the Winter

One other practice that was identified through the research related to the treatment of the transport network during the winter. As discussed in Section 5.4.1 the DfT's road user hierarchy from the Manual for Streets (DfT, 2007) states that pedestrians should be considered first in the design of new infrastructure, followed by cyclists with user of private motor vehicles last. The research found that there was a mixed response to the question of whether LSTF infrastructure schemes, such as new cyclepaths, would be treated during winter weather events where ice and snow make travelling conditions difficult.

"I wouldn't have thought maintaining cycle paths would be a priority at the moment", Respondent CC1.

"We have to prioritise, you know it is mainly the strategic routes that are gritted", Respondent UA1.

> *"I think a big issue with footways here that are never routinely cleared or gritted. And bearing in mind that a lot of elderly people and disabled people use the footways, far more priority needs to be given to this. I mean to some extent cyclists tend to be fitter, more mobile, more capable people, but the footways are being used by everybody, you know, I think that more needs to go into that",* Respondent UA4*.*

The responses show that in some LAs there is little consideration of clearing footpaths of snow and ice, as the priority appears to be ensuring the strategic network is clear for private motor vehicles and public transport services to operate. This is not the case for all LAs, with some interviewees identifying that this issue has been considered:

LSTF funded cyclepaths: *"They will be part of the adopted highway and therefore it will fit within the maintenance regimes, so hopefully they will be",* Respondent UA9*.*

> *"That aspect was certainly recognised here a couple of bad winters ago because there was a huge uproar that the snow ploughs went out and it piled the snow in the bus laybys, so the buses couldn't get into the laybys. So the bus users, you couldn't climb over the piles of snow which froze. They gritted the roads, but not the footpaths to the bus stops. We've bought a special machine that can run on cycleways. So we've bought a machine that disperses the liquid rather than spreading salt",* Respondent UA12*.*

The direction to include footways and cycleways needs to come from national government, as legislation requires LAs to clear the carriageway, as discussed in Section 3.5, leaving it at the discretion of individual LAs as to whether other parts of the network are treated. Again this influence can be through guidance, legislation or a commitment to funding for LAs who agree to clear these sections of the transport network. This will provide people with the opportunity to travel in a sustainable manner all year, rather than just in the summer.

6.7. Summary: The Value of the TPSOP for Analysing Transport Planning

Assessing the transport planning system using the TPSOP model provides the opportunity to identify problems with the 3-Elements approach to analysing transport. This is because the TPSOP is able to show the significance of finance as the primary process for creating the potential for changing the way people travel: the process of finance. The discussion has shown that this process is nuanced with the type of funding made available: the capital/revenue balance, playing a direct role in the initiatives that are delivered.

The finance process is the primary means of controlling the transport planning sector and the national government can exert some control over what type of transport schemes are delivered. Several of the interviewees highlight the problem of long-term planning and funding for maintaining assets once they are delivered, as the construction of new infrastructure leads to a maintenance commitment for LAs. This can lead to some assets, particularly sustainable transport assets not being maintained to a high standard once the initial funding has finished and the local authority priorities change.

For sustainable transport to become a 'normal' practices of transport planning changes are required to the system at: the national government level, senior civil servant level and chief executive level at LAs. This change needs to be to an understanding of the importance of revenue funding in delivering transport initiatives and maintaining capital developments once the initial funding stream ends.

6.7.1. Bidding for Funding

In general there is often uncertainty within the transport planning system as to the amount of funding, both revenue and capital that will be available: "*Without knowing how much money we're going to get and being sure that you can then actually draw it down you can't plan what you are going to do",* Respondent CC3*.* One of the criticisms of the LSTF approach that was repeated by several interviewees was the LSTF, like many other funding pots, was a '*Beauty Contest'* which has been criticised for making: *"Everything short term. It also means that local authority transport planners are spending a lot of time bidding for funding",* Respondent UA4*.* This also creates uncertainty in the industry:

> *"There is no guarantee that our bid will be successful. So if we're not successful this project dies after just three years and I'm sure that I'll be fielding loads of calls and emails from all the partners that we've worked with saying: 'well why has this service stopped? It was so useful'",* Respondent UA7*.*

This short-term approach to funding has implications for how sustainable travel is perceived in society. If the national government, and due to funding the LAs, are no longer committing funding to these types of schemes, the meanings associated with the benefits of sustainable travel may be lost. Whilst Norman Baker MP believes that there needs to be a commitment to revenue funded schemes being sustainable after the funding ends, the reality is that many of these schemes will have to finish as LA budgets continue to be reduced. If sustainable

transport is no longer seen as a priority (as indicated through funding) by national government it is likely to be challenged at LA level, as cuts are sought to the LAs outgoings.

Deciding how funding is distributed to LAs is the primary control method within the TPSOP. LAs receive the majority of their funding from government, but the government top these up with additional 'pots' of funding such as the LSTF.

> *"One of the frustrating things that we have over the last four years is the sheer number of funding pots that are out there. When the coalition government came in they said they would streamline the funding down to four pots. It was down from something like 25 different transport pots to four. Since then we are up to something like 40 separate funding pots... It never stops and some of these funding pots you are given incredibly short deadlines",* Respondent LEP1.

This approach to funding is a means of exerting control on LAs by the departments of Government and ensuring that only a certain amount of money is distributed:

> *"There was a funding pot last year called the new stations fund, for opening new railway stations. We had basically two weeks to submit a bid. Which ok if you've got a ready-made scheme: dust it down, submit it, fine. But for anyone that wasn't at such an advanced stage there was no chance of getting funding",* Respondent LEP1.

The approach fails to provide an appropriate amount of time for LAs to design and prepare new schemes that may be appropriate and this means that many LAs will have had to do an extensive amount of preparation just to be considered for some of the funding pots. Respondent UA7 also explains that many of the time limits do not account for the time required for the funding to be reviewed by the LA's own review process at both the executive and cabinet level.

> *"I mean you know the way local authorities are funded now from central government, it is a case of keeping your eyes and ears to the ground seeing where pots of money pop up and grabbing them where and when you can. It does not work well for long-term planned sustainable development and change. You know it is just piecemeal",* Respondent UA6.

Whilst this approach is currently dominating the TPSOP between 2011-2015 the national government hope to reduce the funding available to the Single Local Growth Fund which will be discussed in more detail in Section 6.6.3.

6.7.2. The Benefits of the TPSOP Model

Shove *et al*.'s (2012) 3-Elements model is insufficient to provide an explanation of how practices change. Using the TPSOP model, which combines Fine and Leopold's (1993, 2002) Systems of Provision framework with the 3-Elements model, it is possible to identify how the national government is able to influence the practices of travel. The schemes they fund create the opportunity for change, by providing new skills and infrastructure for travelling by sustainable means. What is delivered is controlled through the funding process for transport schemes. This can then have a direct influence on the practices of travelling.

The TPSOP is, as Fine (1995) suggests and discussed in Section 2.8.4, a hierarchical structure with the power situated at the top of the system. This is because ministers control the policies on issues such as transport that ultimately influence what funding is provided to deliver transport schemes. The model is useful as it shows that practices can be influenced by individuals within a wider system. This influence can be controlled by the level of funding that is committed to the various LAs in the country to provide transport infrastructure and services. As represented in Figure 6-9 the TPSOP has different practices and internal processes at each level. What the TPSOP model allows the observer to do is identify the blockages or problems that exist within the system that prevent sustainable transport from becoming established as a normal way of planning transport and allowing the practices of travelling to change to include more trips by sustainable modes.

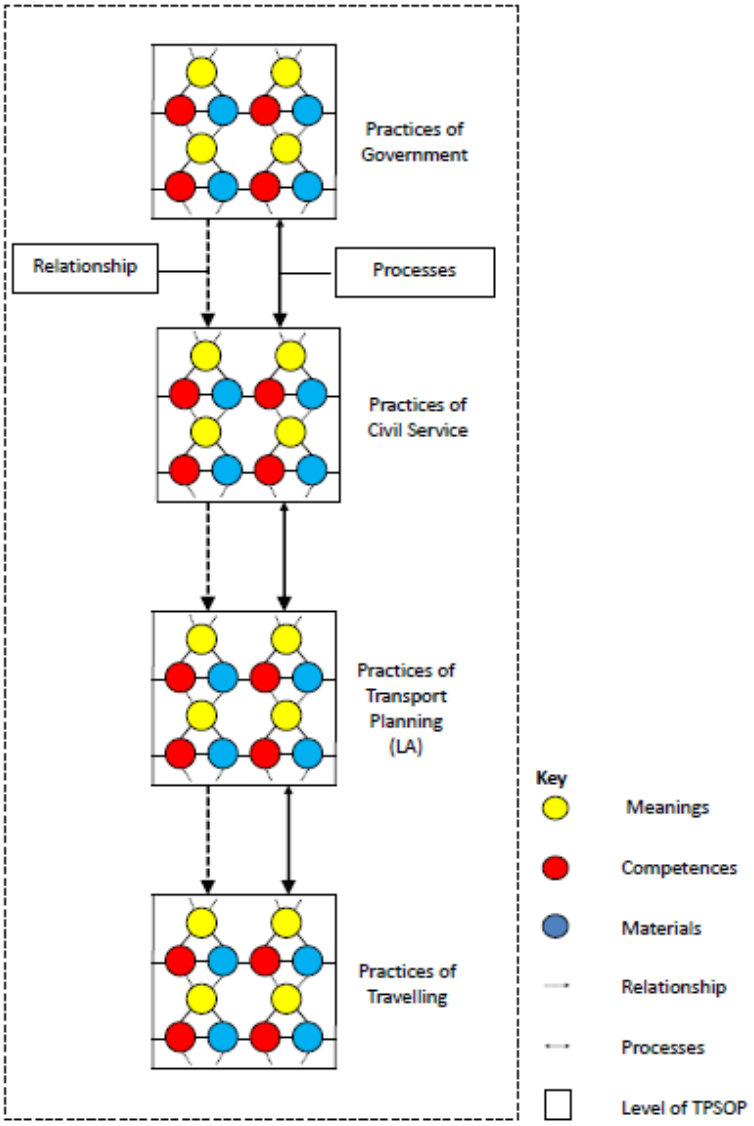

Figure 6-9 The TPSOP for England in 2011

At the national government level the exertion of power starts with the transport objectives that are set by the ministers. For the LSTF this power was demonstrated by the 2011 White Paper (2011b) and LSTF guidance (2011a) that set out what the transport schemes are designed to achieve. This power created meanings within the TPSOP as to what should be delivered. This guidance set out clearly that any schemes that were delivered should not restrict choice for people wishing to drive. The national government ministers then set out the budget available for the funding stream and made personal decisions as to the which schemes were funded.

At the government department level the team responsible for the LSTF within the DfT created the evaluation process and used this to decide which schemes should be funded.

Within the guidance produced by the DfT there was clear evidence of the requirement for LAs to work with other LAs and other stakeholders in delivering the schemes. The DfT also influenced the time that is made available to LAs for bidding for funding and this can often be incredibly short for funding pots, making it difficult to deliver within the LA's own regulatory period. Senior civil servants are also able to influence national government ministers through advice and knowledge of the transport sector. This can perpetuate the dominance of economic theory within the TPSOP.

At the LA level, transport officers are responsible for designing transport schemes, although council members have to sign off on schemes and are ultimately accountable to the public for what is delivered. The schemes that are delivered play a direct role in how the practices of travelling are performed. The type of funding received influences what is delivered, with infrastructure schemes being delivered through capital funding, whereas training, marketing, new services and staff to deliver schemes come from the revenue budget.

Finally, whilst the TPSOP shows the potential that funding provides to create change to the practices of travelling, the research has found that influences such as the weather, or where to work and live influence the decisions that are made on how to travel but sit outside the control of the practices and processes of the TPSOP. The research suggests that being aware of these issues helps to identify what it is possible to control, to create a change to the practices of travelling and what factors cannot be influenced. By understanding the limitations of schemes it is possible to plan for and mitigate issues that may arise, providing the potential for long-term changes in how people travel.

6.7.3. TPSOP post 2015

The key issues identified within the interviews post 2015 included the issue that the LEPs only have a capital budget and no revenue funding available. This obviously focuses the types of schemes that will be delivered to over the next six years in the UK. There is much uncertainty as to how the LEPs will perform without national government guidance, and this has already been demonstrated by the UK Government's decision to include a national *Cycling and Walking Strategy* amendment as part of the Infrastructure Bill in January 2015 (White, 2015). This decision was made as it was decided that national guidance was required in the development of walking and cycling infrastructure.

This continuation of national government control over transport supports respondent LEP3's view that LEPs would not have a free reign in designing and delivering the types of schemes that they want over the next six years.

Further difficulties were highlighted relating to the evaluation and monitoring of sustainable transport schemes, to identify how successful they are at reducing the number of trips by private motor vehicle. Also discussed in this section was the lack of maintenance of sustainable transport infrastructure in the winter months at some LAs that reduces the potential uptake of sustainable travel modes.

Chapter 7. Conclusions and Recommendations

7.1. Introduction

The practices of travelling, when they involve the use of private motor vehicles for part or all of a journey, are contributing to the release of GHG emissions. In addition they are impacting on peoples' health due to emissions that affect local air quality leading to respiratory and cardiovascular illnesses. Many different methods and measures are available to reduce the impacts of trips by private motor vehicles and this chapter concludes the main discussion in this thesis and draws together the key findings from the quantitative and qualitative data to consider what new knowledge has been gathered through this research. The research has been designed to examine whether a Social Practice Theory (SPT) approach or a combination of SPT/systems approach, developed within this thesis, provides a new way of interpreting behaviour (or practices) that will assist with the reduction of GHG emissions from transport sources.

Section 7.2 will demonstrate the original contribution to knowledge generated by this research. The section sets out the key and secondary findings. Section 7.3 reflects on the methods used, whilst 7.4 sets out the potential future use for the TPSOP model with Section 7.5 concluding the thesis.

7.2. Contribution to Knowledge and Key Findings

Sections 2.2 to 2.4 of the thesis discussed the different methods available to the UK Government for attempting to change behaviour, whilst Sections 2.5 and 2.6 discussed the potential for understanding change through the lens of SPT as opposed to the current psychology-based approaches to changing behaviour. Additionally the research investigated the influence of the wider transport planning system on how practices were performed. The research has therefore been designed to explain the benefits and weaknesses of both these approaches in explaining why people travel. The remainder of this section will present the key findings and explain and summarise how they add to our knowledge of the applicability of these theories to the behaviour change debate.

7.2.1. Key findings of the Research

The following section will outline the four most important findings from the research. The first finding relates to Research Question 1 and the benefits of using the 3-elements model as a behaviour change tool. The 3-Elements model could be extremely useful within the transport planning sector. If it were to be applied to a new transport initiative it would allow the transport planning officer to identify the potential meanings that will be associated with the initiative and the influence these meanings have on the practices of travelling. The findings in Sections 5.2.3 to 5.2.5 and 6.2.2 to 6.2.7 demonstrate how the model could be used to identify the meanings, along with the competences and materials for sustainable travel.

The 3-Elements model demonstrated, through the delivery of the LSTF initiatives, where alterations were made to the materials, or providing the competences of travelling enable this to happen in a more sustainable way. Dorset County Council's *Child Miles* scheme, as discussed in Section 6.3, was the only initiative that stood out as actively attempting to alter the meanings of travel, by challenging the *'causes'* of why people travel (peer group opinion on school performance) rather than *'symptoms'*, such as the traffic generated by trips to other schools in the area by private motor vehicles. Therefore it is possible that applying the 3-Elements model to highway construction it would possible to understand the meanings this creates. Including the meanings of transport schemes earlier in the design process will assist transport planning officers in deliver schemes that are less likely produce high levels of emissions from transport.

Viewing how people travel through an SPT lens provides an alternative interpretation of the possible success or otherwise of transport initiatives. This is important for government ministers and senior civil servants to understand as funding streams such as the LSTF do not create an immediate change to travel practices (or behaviour). Instead they create the opportunity in which this change can occur through providing materials, competences and altering the meanings of travel. None of this guarantees that change will occur, or in the way that is expected. Those at the top of the political hierarchy therefore need to understand that it is not always possible to demonstrate cause and effect with many VTBC schemes. The benefits of schemes are very difficult to evaluate for this type of initiative against economic benefits within an evaluation period or a political cycle. Yet, as Sections 6.2.4 to 6.2.7 explain, government ministers, civil servants, council members and executive officers at LAs, many of which are not transport experts, play a significant role in influencing how travel is practiced, so understanding these benefits in non-monetary terms would be beneficial in

delivering sustainable transport schemes. Viewing these changes through the lens of SPT could potentially provide benefits to the understanding of the impacts of the types of schemes delivered to both transport experts and non-transport experts within the TPSOP.

Many of the benefits of VTBC schemes may be found over time or occur in time through life-change events (Chatterjee *et al*., 2013). If people are provided with the competences (training) and materials (network) to travel sustainably this change to travel practices may occur, even if it is not captured within the evaluation process or a political cycle.

The second key finding relates to the usefulness of the 3-Elements and TPSOP models to explain change to practices. Whilst Shove *et al*.'s (2012) 3-Elements model provides a very clear and concise summary of individual practices it fails to demonstrate how changes occur to both the individual practice and the bundle of practices that surround it. From this perspective the 3-Elements model is limited, as it is not able to demonstrate the relationships and processes that exist within TPSOP that define what sustainable transport is. The 3-Elements model also fails to explain how initiatives that are designed to alter the materials (infrastructure) and competences (e.g. cycle training). To resolve this issue the research has developed the TPSOP model, as will be discussed below.

The research has found that to the benefits of viewing the practices of transport planning through the TPSOP model. Shove *et al*. (2012) describe practices as existing in bundles, with Schatzki (1996) explaining that they create causal chains of action. The 3-Elements model, whilst describing this causal chain does not provide any means of understanding the level of influence each corresponding practice has on the practice being explored, when the research identified clear causal links between the practices at each level of the TPSOP. This is identified in Sections 6.4 and 6.5 where the power relationships and processes of the TPSOP are explained by the interviewees. The TPSOP conceptual model provides a means of understanding a causal link between various practices, as it allows the researcher to identify the Systems of Provision (SOP) that exists to create change to practices in addition to understanding the practices that occur at each level of the system. The LSTF funding stream has provided an opportunity to explore the system at a point of change created by the funding that altered the links involved in creating the infrastructure for travel.

Exploring how changes are made using the TPSOP model has allowed for the identification of the primary power relations that exist within transport planning**.** The TPSOP in 2011 (at the time of the introduction of the LSTF) was comprised of four levels, with the power to define what a sustainable transport initiative should be, provide funding to the LAs to deliver

initiatives that fit these criteria and prevent schemes from going forward that do not fit with this vision.

The TPSOP also demonstrated the power individual agents can apply to the practices of transport planning. As demonstrated in Section 6.4.3, the research found that Norman Baker MP, the Senior Undersecretary of State for Transport (2010-2013), was instrumental in ensuring that the LSTF funding was made available to deliver sustainable transport initiatives. As was discussed in Section 6.6.4, without Norman Baker MP to support the continuation of revenue funding for transport, is uncertain after 2015/16.

The third key finding relates to the type of funding that is provided for transport initiatives is particularly important for delivering schemes that would be defined as sustainable transport schemes. The research, as discussed in Section 6.5.2, has found that many transport planning officers have identified the importance of revenue funding for delivering sustainable transport planning initiatives that may help to reduce GHG emissions from transport sources. The importance of revenue funding is not understood at all levels of the TPSOP, particularly at the senior level of the civil service and by some executive level officers at LAs. The delivery of sustainable transport initiatives requires new infrastructure (from the capital budget) and marketing, training staff to deliver these and where appropriate subsidies of public transport services (from the revenue budget) to provide the opportunity for a change to travel practices to occur.

The fourth key finding highlighted that making small infrastructure changes to the transport system and providing people with the skills available to negotiate it more effectively will not significantly alter how people travel until the meanings around the use of the private motor vehicle are challenged. As discussed in Sections 2.2.1 and 6.3.2, the government has already altered practices of travelling through a combination of legislation and information on issues such as drink-driving and wearing a seatbelt. A similar campaign designed to reduce emissions from private vehicles that restricted there use may help to improve the local environment and reduce GHG emissions would be likely to be effective, although very unpopular. If the UK is to be successful in meeting the targets for reducing emissions sustainable transport initiatives that are funding through revenue funding, such as subsidised public transport, travel training and tickets to help people into employment are essential in addition to technological advances.

7.2.2. Secondary Findings of the Thesis

In addition to the primary findings, several secondary findings were identified within the research. Firstly, civil servants remain powerful agents within the decision making processes influencing which types of transport initiatives will be funded, as discussed in Section 6.5.2. The prevalence for the senior civil servants within the DfT to come from a background in economics, as suggested by Respondent DfT2, means that this tends to favour transport initiatives that can be quantified and demonstrate a benefit, using the cost benefit analysis approach used by the DfT when funding transport initiatives. In relation to the LSTF the DfT civil servants were able to influence the types of bids that received funding, the level of cross-working that occurred in the bidding process and the amount of time LAs had to submit their bids. Civil servants also provide advice to government ministers on transport issues.

The second finding was that despite a desire from national government ministers for cross-working within LAs and with external stakeholders, ultimately transport planning officers are the people who design transport planning initiatives, as discussed in Sections 5.4.1 and 5.4.2. This control over the design of what was delivered meant that despite the DfT announcing that almost two thirds of the funding would be made available for revenue based initiatives, the final bids only included 54% of revenue based schemes. Transport planning officers therefore retain a high degree of influence as to what types of schemes are delivered within the confines of the funding available. This meant that many schemes delivered were the type of scheme that could be 'shovel ready' to be delivered within the timeframe set by the DfT.

The third finding was demonstrated in Section 5.5.4 was that despite the changes that can be influenced by the provision of alternative transport options within the TPSOP, there remain many factors that sit outside the system that still have an influence on the practices of travel. Many of these influences are not in the control of LAs, or their officers. This includes the continued capital investment in new highway capacity on the strategic network[17], school choice, property prices, work pressures and the continued convenience of driving a private motor vehicle.

[17] Managed by Highways England.

7.2.3. Recommendations for Changes to the TPSOP Post-2014/15

Based on the findings of the research and the future direction that transport planning is taking the research has identified the following recommendations for the delivery of transport initiatives designed to reduce GHG emissions associated with transport. Table 7.1 includes a summary of six key recommendations that would assist with the delivery of initiatives that enable people to travel sustainably.

Table 7-1 Recommendations to Improve the Transport Planning System

Recommendations
Recommendation 1: Provision of a consistent level of revenue funding for sustainable transport initiatives from the DfT would provide the transport planning sector at the local government (or to the LEPs) the opportunity to deliver marketing initiatives, training programmes and targeted subsidisation of appropriate public transport services, where a need has been identified or where it would kick-start potential demand, reducing the level of subsidy over time. The need for revenue funding was identified and discussed in Sections 5.3.2, 6.5.2 and 7.2.1.
Recommendation 2: To ensure the decision-makers made at the LEP level are accountable, as discussed in Section 6.6.1, introduce a system of electing members from the business community, e.g. Federation of Small Businesses and the Chamber of Commerce, the health sector, education sector and charities sector to provide a fair representation of the LEP area's transport needs rather than solely focusing on economic needs for transport.
Recommendation 3: With the proposed devolution of funding and decision making to the LEPs, the DfT and national government's role will change, although to what degree is uncertain. What remains clear is that national government still needs to provide national policy and guidance, supported by funding to deliver initiatives that provide the opportunity for people to travel sustainably. As discussed in Section 6.7.3, since completing this research the UK Government have included a Cycling and Walking Strategy within the 2015 Infrastructure Bill in the UK parliament.
Recommendation 4: As discussed in Sections 6.6.2 and 6.6.5, there is a need to update the existing transport evaluation process to base the outcomes on societal, environmental and health benefits. This would provide sustainable transport options with a greater opportunity of being funded, compared to highway schemes that provide for private motor vehicle trips.
Recommendation 5: Include analysis using the 3-Elements model within the earliest design stage of any transport initiative, as discussed in Section 7.2.1. This would allow for a greater understanding of the likely impacts an initiative would have on the way people travel. This would potentially lead to the development of schemes that would be able to treat the causes of transport issues rather than the symptoms.
Recommendation 6: Maintain the walking and cycling infrastructure during the winter, as discussed in Section 6.6.6, by treating surfaces to enable people to continue to travel by sustainable modes safely. This includes treating paths to and from bus stops and train stations. The treatment of footways is particularly important as they are used as part of most journeys. Whilst many LAs may lack the resources to treat every residential street, it may be possible to provide training to groups of volunteers within residential areas to treat footways, for the benefit of their local community. Revenue funding would be required for LAs to be able to provide this training.

7.3. Reflections on the Research Methodology

With any research undertaken there are always a number of limitations or issues that occur throughout the course of the study. This section reflects on the challenges and successes of this process. The following section will therefore discuss the critical realist approach and each of the data collection processes and the benefits of building on the information at each stage before discussing the general conclusions of the methods used.

7.3.1. Content Analysis

The content analysis of the LSTF application forms provided the opportunity to build on the findings later in the research, as it provided the basis to understand the practices of transport planning that exist at the LA level of the TPSOP. Content analysis is an unobtrusive method of collecting data, so it was possible to develop a detailed knowledge of what schemes were being proposed as part of the LSTF prior to making contact with the people delivering the schemes. Without this basis and understanding of the types of schemes proposed to be delivered through LSTF funding it would not have been possible to engage as easily with the transport practitioners at the survey and interview stages of the study, due to a lack of knowledge around the LSTF process. In addition to allowing a structured understanding of all the submitted bids, the content analysis also identified a political discourse that was shown through the language used to describe the types of schemes funded. The sociological discourse identified through this research was shown through the assessment of the materials, meanings and competences of the schemes being delivered.

Content analysis was the also a preferred method as the results are easy to replicate as the materials used are publically available from each of the LAs that submitted bids. A limitation of this approach is that the data generated only provided a description of the schemes being delivered rather than show why specific schemes were chosen. The assessment of what was meant was therefore based on the researcher's subjective analysis of the text. Therefore the secondary and tertiary stages of data collection were undertaken to provide a more complete picture the whole bidding process.

As discussed in Section 4.6.2, a decision was made not to include analysis of: Section A *Project Description and Funding Profile*, Section D *Value for Money* and E *Deliverability*, as the content analysis was designed to focus on the exact types of schemes being delivered. Following the completion of the interviews and the importance placed on cost benefit at the national government level of the TPSOP and the use of funding to exert power in the system

and assessment of the value for money may have added more detail to the decision making process. If this research were to be conducted again this data would have been reviewed at the content analysis stage to identify whether value for money and deliverability had a greater influence on whether schemes were funded.

7.3.2. Online Survey

The online survey built on the findings from the content analysis, as the first section of the survey focused on the methods undertaken to complete the application forms. This stage of the research had some inherent limitations due to the relatively small pool of respondents approached to complete the survey. The major limitation was that despite contact emails and reminders being sent to the bid manager, there were no respondents from LAs that were unsuccessful in being awarded funding. This means that, as was intended, a comparison could not be made between the levels of involvement of non-transport experts in the bid writing process to identify whether this was a factor in the awarding of funding. The DfT's guidance stated that bids incorporated partnership working would be assessed favourably (DfT, 2011c).This issue was remedied within the interview stage of the research, as it was possible to identify this problem and be more pro-active in ensuring that their views on the process were included within the research.

The second limitation with the survey was that it was undertaken prior to the inclusion of the Systems of Provision within the research, so views on the wider system could not be elicited through the survey. The survey was only completed by transport practitioners and does not include any responses from Ministers or civil servants. Again these issues were resolved by including questions and interviews that dealt with these topics.

7.3.3. Use of the Chi-square analysis

The chi-square analysis undertaken in this research provided varied results. If this research were to be conducted again this tool would not be used. This is because the chi-square test works better on larger sample sizes than were available in three of the four tests undertaken. Due to the relatively small sample sizes generated through this research either the exact test of goodness of fit and Fishers exact test would have been suitable for this research (McDonald, 2014). With hindsight these alternative methods of data analysis would have been selected for this research.

The results of the chi-square tests did provide useful data that could be included in later stages of the data collection. For example, the statistical significance of the inclusion of meanings, as opposed to competences and materials helped form the questions in the practitioner survey and face to face interviews. The chi-square results therefore provided a useful indication of how sustainable transport schemes were delivered and why.

7.3.4. Interviews

As discussed above including interviews as a third stage of data collection provided the option to gather information that was not collected at the first two stages of the research. This provided the opportunity to engage with transport practitioners from LAs that were unsuccessful in gaining funding and to try and identify the possible reasons for this. For example respondent CC3 identified the fact that his LA had previously received funding from another Government source for a major transport infrastructure scheme as a possible reason for the rejection of their bid. So despite following the advice from the DfT when resubmitting, the bid the authority was unsuccessful. Similarly UA12 identified the fact that the bid focused on providing capital funded schemes, rather than revenue based initiatives as a possible reason for the lack of success.

In general the interviews were successful in gathering data for the thesis that supported the key themes identified in the content analysis and survey phases of data collection information included in the thesis. This is despite the drawbacks associated with of this method of data collection such as a relatively small sample of interviewees. The interview stage of the data collection would have benefited from discussions with local councillors (members), as this would have added an extra level of information to the study. The biggest challenge from the interviews was identifying what information gathered should be included in the thesis. The interviews were successful as the three stage methodology allowed data to be gathered at three points throughout the research period providing the opportunity to identify gaps in the research and gather data to cover these. The process also allowed the focus of the data gathered to change with the development of the TPSOP model.

7.3.5. General Reflections on the Research

The LSTF consisted of three distinct stages: application for funding; delivery of schemes; and evaluation of the impacts of the schemes. The research primarily focused on the application process rather than delivery or the long-term benefits the LSTF schemes provided to the local economy and the environment. This was due to the information that

was available at the time of completing the research. With the LSTF finishing in 2016, some of the schemes were still being delivered at the time of completion of this research and therefore it was not possible to evaluate the overall benefits the LSTF has provided as part of this research project.

The research has been able to provide an interim assessment and interpretation of the schemes and their impact, particularly the interviews which provided information relating to the early success of some schemes. One example of this is UA7's comments in Section 6.5.4 relating to the success of enabling 80 out of work people to re-enter employment due to initiatives delivered through the LSTF funding.

The LSTF would have benefited from a longitudinal study to identify the before and after effects of schemes on how people travelled to see whether the funding had any impact on the practices of travelling. The TPSOP model could be incorporated into further research to identify changes to the system and how they influence the practices of travelling. Through analysis of changes to the system using the evaluation of the LSTF it should be possible to identify a link between funding and actual changes to travel practices. It was not possible to identify this link through this research as the evaluation has not been completed. Instead this research has identified the *opportunity* for change to occur rather than identifying the change itself.

7.4. Potential Future Use of TPSOP Model

The research was initially designed to understand whether Shove *et al*.'s (2012) 3-Elements model provided an alternative means of understanding travel compared to the dominant psychology-based behaviour paradigm. The 3-Elements was considered as a useful alternative model as it looked at the practices of travelling rather than individuals' behaviour and as such provides a useful tool for transport practitioners when designing new schemes. This is because it allows them to consider the meanings that are likely to be associated with any scheme they are delivering. This is not to say that the inclusion of meanings will be straight forward, as there is the possibility of unintended consequences of any scheme delivered. For example as discussed in Section 2.6.5, where a policy enforcing the use of safety helmets for cyclists in Australia led to a reduction in the number of people choosing to cycle (Cameron *et al*., 1994). Awareness of the potential meanings does however provide the opportunity to explore these issues at the earliest stage of policy or scheme design and where possible implement mitigating measures.

The TPSOP, developed through this research, provides a tool for academics to understand how governments influence the links that exist between practices and how these are made and broken through policies, legislation and funding. The limitations of the SOP approach are that no two SOPs are the same, as Fine (2002) explains in comparing the food and textiles SOPs. It is clear that the TPSOP model that incorporates Shove *et al.*'s (2012) 3-Elements model could be used to assess how national governments influence behaviour through the types of schemes they fund. For example, in December 2014 the Department for Transport announced £15bn of spending on the strategic network in the UK, managed by the Highways Agency. Included in this funding is £100m Air Quality Fund (DfT, 2014e). This is a significant investment of funding specifically ring-fenced for air quality management on the network. The TPSOP model can therefore be used to examine the potential impact this funding will have on travel practices and the whether this helps to reduce emissions generated on the strategic network in England.

Similarly the model can be used by academics exploring the impact of different funding schemes on the National Health Service in the UK. This would be of particular interest to politicians to identify which funding policies have had the most impact on: the Department of Health, nurses and doctors, and patients within the system.

From a theoretical perspective the TPSOP model can be used to expand our understanding of practice theory and how practices change and evolve over time. This understanding, in relation to the 3-Elements model, did not exist prior to the completion of this research and improves understanding of how change occurs to practices of travel. Understanding how practices are formed and how the links are broken provides an opportunity to identify the elements that lead to GHG emissions and develop policies and schemes that significantly reduce or prevent pollutants being emitted from transport sources.

7.5. Conclusion of the Thesis

Finally, in concluding this thesis, the final section summarises the contribution of this research in the field of social practice theory and how this understanding can be used to reduce GHG emissions associated with travel. It has been argued that current approaches to behaviour change are too narrowly focused on individual behaviour and that viewing actions as a performance of a practice provides an alternative understanding of why the majority of trips in England are made by private motor vehicle. Social practice theory, and in particular the 3-Elements model, offer an alternative means of exploring how transport funding is provided and how this influences the meanings associated with the practices of travelling

through the infrastructure and services that are delivered. This research enhances this understanding by demonstrating how government policies and funding make and break links between practices at various stages of the planning process and ultimately influence how the practices of travel are undertaken. The research therefore provides new knowledge on how social practice theory can be used to understand the impact of policies on how and why practitioners perform certain actions, such as travelling.

This research has applied this theoretical understanding of social practice theory and developed a mode of the transport planning system where it is possible to show how the links between the 3-Elements that make a practice can be broken through the practices that exist within national government. In the 3-Elements model these would be part of a bundle or complex of practices, where change would occur in one practice and influence others. The TPSOP model developed through this research shows a clear link between different practices and how they create the potential for change to the practices of travelling. Understanding how and why practices change is incredibly important if there is to be a reduction in GHG emissions, as the government can identify policies and funding streams that may be altered to reduce emissions from transport. These include funding for schemes that promote private motor vehicle use and potentially maintain the status quo, or promote modes that rely on high GHG emissions. This research highlights the existing paradigm within transport planning that is focused on economic benefits of travel and the benefits of schemes and provides an alternative means of understanding travel and the benefits alternative modes can provide.

The policy implications from this work have identified a need for consistent funding of sustainable transport schemes to allow local authorities to plan, design and deliver schemes similar to the LSTF that offer real alternatives to the private motor vehicle, but also challenge the notion that private motor vehicles are the default option for travel.

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Appendix A - Proforma

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

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 quantifiable 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

Appendix B – Funded Projects

	LSTF - FUNDED PROJECTS		
	OVERVIEW		
	Local Transport Authority name / Co-ordinating authority (for joint bids)	Tranche (1, 2, L)	Project name
Projects Approved for Funding			
1	**Birmingham City Council**	1	Bike North Birmingham
2	**Brighton & Hove City Council**	1	Lewes Road Corridor
3	**Bristol City Council**	1	West of England Key Commuter Routes
4	**Cumbria County Council**	1	Lake District Sustainable Visitor Transport Beacon Area
5	**Darlington Borough Council**	1	Local Motion
6	**Devon County Council**	1	Breaking the link between economic growth, carbon and congestion
7	**Dudley Metropolitan Borough Council**	1	Brierley Hill Active Travel Partnership (BHATP)
8	**Durham County Council**	1	South Durham embracing Local Motion
9	**Hampshire County Council**	1	Hampshire Sustainable Transport Towns
10	**Herefordshire Council**	1	Destination Hereford
11	**Hertfordshire County Council**	1	BIG HERTS BIG IDEAS
12	**Kent County Council**	1	Growth without Gridlock
13	**Leicester City Council**	1	Leicester - Fit for Business
14	**Luton Borough Council**	1	Sustainable Luton Improvement Partnership
15	**Merseytravel**	1	Facilitating Sustainable Access to Employment in Merseyside
16	**Nottingham City Council**	1	Nottingham Urban Area LSTF Key Component Bid
17	**Oxfordshire County Council**	1	The Oxfordshire Arc: Supporting Employment Growth and Accessing Higher Education & Healthcare in Oxford
18	**Peterborough City Council**	1	TRAVELCHOICE PLUS
19	**Plymouth City Council**	1	ITSO Smart Ticketing throughout All South West England
20	**Plymouth City Council**	1*	Plymouth Connect
21	**Reading Borough Council**	1	Sustainable Access for Reading: Overcoming Barriers & Boundaries
22	**Redcar & Cleveland Borough Council**	1	Get Moving Redcar & Cleveland
23	**Sefton Metropolitan Borough Council**	1	Sefton & West Lancashire Visitor Economy Project
24	**Shropshire Council**	1	Shropshire Sustainable Transport

			Package
25	**South Yorkshire ITA**	1	A sustainable journey to work in South Yorkshire
26	**Southampton City Council**	1	Southampton Sustainable Travel City
27	**Southend on Sea Borough Council**	1	Smarter, Active and Sustainable Southend
28	**Suffolk County Council**	1	Lowestoft Local Links
29	**Surrey County Council**	1	Surrey TravelSMART
30	**Swindon Borough Council**	1	SWIFT (Swindon Workplace Initiative for Transport)
31	**Telford & Wrekin Council**	1	Telford Future – local action for sustainable growth
32	**Thurrock Council**	1	Thurrock Sustainable Travel Choices
33	**Transport for Greater Manchester**	1	Greater Manchester Commuter Cycle Project
34	**Tyne and Wear ITA**	1	An Active Future for Tyne and Wear
35	**Warwickshire County Council**	1	Stratford-upon-Avon Local Sustainable Transport Project
36	**West Yorkshire ITA through Metro**	1	DITA Connecting the Dales
37	**West Yorkshire ITA through Metro**	1*	“Getting transport to work” An initiative to support the sustainable growth of employment in West Yorkshire
38	**Worcestershire County Council**	1	Choose how you move 2
39	**York - City of York Council**	1	Intelligent Travel York
40	**Bournemouth Borough Council**	L	South East Dorset Sustainable Travel Package "The 3 Towns Corridor"
41	**Centro**	L	Smart Network, Smarter Choices
42	**Hertfordshire County Council**	L	BIG HERTS BIG IDEAS
43	**Merseytravel**	L	Supporting Sustainable Access to Oportunity in Merseyside
44	**Nottingham City Council**	L	Nottingham Urban Area LSTF Main Bid
45	**Reading Borough Council**	L	Targeting Travel Choice Transitions
46	**South Hampshire**	L	A Better Connected South Hampshire: Supporting Growth, Reducing Carbon and Improving Health
47	**South Yorkshire ITA**	L	A Sustainable Journey to Work
48	**Surrey County Council**	L	Surrey TravelSMART
49	**Telford & Wrekin Council**	L	Telford Future – local action for sustainable growth
50	**Transport for Greater Manchester**	L	Lets Go to Work
51	**Tyne and Wear ITA**	L	An Active Future for Tyne and Wear (Addresing the barriers that transport creates to economic growth and accessing employment)

52	**West of England**	L	West of England Sustainable Travel (WEST)
53	**Bedford Borough Council***	2	Access to Stations
54	**Blackburn with Darwen Borough Council***	2	BwD CONNECT Project
55	**Bournemouth Borough Council**	2	BE SMArT – Bournemouth Economic & Sustainable Movement Around Town
56	**Bracknell Forest Council**	2	Town Centre regeneration with improved travel choices
57	**Cambridgeshire County Council**	2	Getting Cambridgeshire to Work; improving connectivity in key economic corridors in Cambridgeshire
58	**Central Bedfordshire Council**	2	South Central Bedfordshire Smarter Routes to Employment
59	**Cheshire East Council**	2	Growing Smarter Travel Choices in Crewe
60	**Cheshire West and Chester Borough Council**	2	Connect to Jobs
61	**Cornwall Council ***	2	Central and East Cornwall Sustainable Transport
62	**Coventry City Council**	2	Cycle Coventry
63	**Derby City Council**	2	Derby: Better Ways to Work
64	**Devon County Council**	2	Access to Education
65	**Dorset County Council ***	2	Weymouth – Dorchester Corridor
66	**Durham County Council**	2	Walk to School Outreach
67	**East Riding of Yorkshire Council**	2	Get Moving Goole' - Goole Sustainable Transport Package
68	**East Sussex County Council (with South Downs National Park Authority)***	2	Travel Choices for Lewes
69	**East Sussex County Council***	2	East Sussex Coastal Towns – Better travel to Work & Education
70	**Gloucestershire County Council**	2	Cheltenham and Gloucester Sustainable Travel Programme
71	**Hampshire County Council***	2	Sustainable Transport Solutions for England's two newest National Parks
72	**Isle of Wight Council**	2	Sustainable transport access to tourism
73	**Kingston upon Hull City Council**	2	HULL S.T.E.E.R (Sustainable Travel to Employment, Education and for Recreation)
74	**Lancashire County Council**	2	Targeting Key Growth Corridors
75	**Leicestershire County Council**	2	Smarter Travel for Business
76	**Lincolnshire County Council**	2	Access LN6
77	**Middlesbrough Council**	2	Sustainable Middlesbrough - A Place for Business
78	**North East Lincolnshire Council**	2	Travelling Towards a Vibrant Economy - 'Supporting Economic Growth in North East Lincolnshire'
79	**North Yorkshire County Council**	2	Harrogate and Knaresborough Sustainable Transport Package

80	**North Yorkshire County Council (with North York Moors National Park Authority)**	2	Boosting the tourism economy in Whitby and the Esk Valley
81	**Northumberland County Council**	2	South East Northumberland - Sustainable Transport to Work
82	**Portsmouth City Council**	2	A Sustainable and Connected Centre – Supporting Portsmouth's Retail, Tourism and Wider Economy
83	**Royal Borough of Windsor and Maidenhead**	2	Sustainable Growth for Maidenhead
84	**Rutland County Council***	2	Travel4Rutland
85	**Slough Borough Council ***	2	Smarter Travel Slough (STS)
86	**Somerset County Council ***	2	Moving Bridgwater Forward
87	**St Helens Council**	2	Mid Mersey Sustainable Cross Boundary Links
88	**Staffordshire County Council**	2	Access to Jobs, Training and Services in Stafford
89	**Stockton-on-Tees Borough Council (on behalf of Tees Valley Unlimited)**	2	Improving Access to the Tees Valley Rail Network
90	**Stoke-on-Trent City Council**	2	Stoking Employment
91	**Torbay Council**	2	Travel Torbay Regeneration Project
92	**Warrington Borough Council**	2	Warrington Sustainable Travel Triangle
93	**West Sussex County Council***	2	West Sussex Sustainable Travel Towns
94	**Wiltshire Council**	2	Improving Wiltshire's Rail Offer
95	**Wokingham Borough Council**	2	(1) Influencing Travel Behaviour in Wokingham
96	**Wokingham Borough Council***	2	(2) Sustainable Chilterns Gateways
Projects invited to resubmit through Tranche 2			
1	**Blackburn with Darwen Borough Council**	1	Blackburn with Darwen Connect Programme
2	**Cambridgeshire County Council**	1	Travel for Cambridgeshire
3	**Central Bedfordshire Council**	1	My Journey: Travel Choices for Central Bedfordshire
4	**Derby City Council ** **	1	Derby Sustainable Travel
5	**Gloucestershire County Council**	1	Cheltenham and Gloucester Sustainable Travel Programme
6	**Middlesbrough Council**	1	Sustainable Middlesbrough
7	**Norfolk County Council**	1	Connecting Norfolk to Growth
8	**Northumberland County Council**	1	South East Northumberland Sustainable Travel Towns
9	**Nottinghamshire County Council**	1	Nottinghamshire sustainable market towns
10	**Rutland County Council**	1	Travel 4 Rutland
11	**Somerset County Council**	1*	Moving Bridgwater Forward

12	**Stoke-on-Trent City Council**	1	North Staffordshire Sustainable Transport Package
13	**West Sussex County Council**	1	West Sussex Sustainable Travel Towns
14	**Derby City Council**	L	Connectivity for Growth: Supporting economic growth through sustainable travel - linking Derby City Centre and the extended Pride Park development
15	**Devon County Council**	L	Access to Education
16	**Lancashire County Council**	L	Lancashire Sustainable Transport and Jobs
Projects refused funding			
1	**Bedford Borough Council**	1	Access to Bedford
2	**Blackpool Council**	1	Jump-starting Blackpool's sustainable transport future: * Combating climate change, improving quality of life * Supporting the local economy, growing sustainable tourism
3	**Borough of Poole**	1	Poole Town Centre and Hamworthy Smarter Choices Package
4	**Buckinghamshire County Council**	1	1) Smarter Business Travel Solutions
5	**Buckinghamshire County Council**	1	2) Sustainable School Travel Support
6	**Cumbria County Council**	1	Cumbria Connected
7	**Derbyshire County Council**	1	1) Matlock-Buxton Cycle Ring and Connections
8	**Derbyshire County Council**	1*	2) Sustainable Transport in North East Derbyshire
9	**Dorset County Council**	1	School Travel Health Check (STHC)
10	**Essex County Council**	1	The Essex Integrated County Towns Smarter Choices Programme
11	**Hartlepool Borough Council**	1	Access Hartlepool
12	**Leicester City Council**	1	Bike Club Plus
13	**Luton Borough Council**	1	SEMLEP Inter-urban Bus Improvements
14	**Medway Council**	1	Medway gets active!
15	**Milton Keynes Council**	1	Milton Keynes Walking and Cycling Network Improvements, Information Provision and Promotion
16	**North Lincolnshire Council**	1	International Gateway Area Wide Travel Plan
17	**Northamptonshire County Council**	1	Connecting Northamptonshire
18	**Solihull Metropolitan Borough Council**	1	Lets Go Local
19	**Stockton-on-Tees Borough Council**	1	Stockton Active Travel

20	**Walsall Metropolitan Borough Council**	1	Active Sustainable Travel and Road Safety Scheme (A*STARS)
21	**Wolverhampton City Council**	1	Creating Capacity and Connecting Places
22	**Essex County Council**	L	The Greater Essex Integrated Network Management Programme
23	**Oxfordshire County Council**	L	Delivering Economic Growth and Reducing Carbon Emissions in the Oxfordshire Growth Arc (Science Vale - Oxford - Bicester)
24	**West Yorkshire**	L	Getting Transport to Work: An initiative to enable the sustainable growth of employment in West Yorkshire and reduce carbon emissions
25	**Gateshead Council**	2	TravelMatters
26	**Halton Borough Council**	2	Routes to Prosperity
27	**Norfolk County Council**	2	Connecting Norfolk to Growth
28	**Nottinghamshire County Council**	2	Nottinghamshire sustainable market towns
29	**Sandwell Metropolitan Borough Council**	2	Smoothing the Path for Walking in Sandwell
30	**Somerset County Council**	2	Two Moors Sustainable Visitor Travel Project
31	**Surrey County Council**	2	Realising Business and Energy Efficient Travel in Southern England
32	**West Berkshire Council**	2	‘Connecting West Berkshire’ – keeping our economy and people moving

Appendix C – Transport Planning Survey

Local Transport Planning Survey 2013

Thank you for helping with my research by agreeing to take the Local Transport Planning Survey. The research is designed to assess sustainable transport planning at the local authority level. The survey initially focuses on the Local Sustainable Transport Fund bidding process before focussing on transport planning in general.

By submitting the survey you are giving consent for the information that you have provided to be used for academic research on the RCUK Energy Programme funded Disruption project. All responses will be kept completely anonymous with no references made to either you or your local authority to allow you to be more candid with your responses. No personal data will be retained as part of this study, although you are welcome to leave contact details if you wish to receive the results of the study or to be involved in the latter stages of the research. The information collected in this survey will be stored on secure servers at UWE and will not be passed on to anyone external to the project.

The results from this survey will be used as part my PhD research which forms one part of the wider RCUK Energy Programme funded Disruption project.

The survey will be open until 30/06/2013 and if you have any questions please contact David Williams at:xxxx@uwe.ac.uk

The survey should take between 10-15 minutes to complete.

Many thanks for your help in advance.

Local Sustainable Transport Fund (LSTF)

Q1. Were you involved in the bidding process for LSTF funding?

Q2. Was your local authority successful in receiving funding from the LSTF bid process (either as part of an individual or a joint bid)?

Link from Q2 when answered ‘no’: The following questions are designed to understand your personal views on the LSTF process.

Q3: Has your local authority been able to deliver any of the schemes included in the LSTF bid from alternative funding sources?

For the next three questions only complete the columns that were relevant to your bid(s)

Q4: When designing the various schemes in your authority's LSTF bid(s) do you know if the bid team worked with or consulted the following teams within your local authority's transportation department: 'Worked with' MEANS other team were involved in bid writing or scheme design and 'Consulted' MEANS other team offered advice but were NOT involved in final bid or scheme design.

Q5: When designing the various schemes in your authority's LSTF bid(s) do you know if the bid team worked with or consulted the following teams within your local authority: 'Worked with' MEANS the other team were involved in bid writing or scheme design and 'Consulted' MEANS the other team offered advice but were NOT involved in final bid or scheme design.

Q6: When designing the various schemes in your authority's LSTF bid(s) do you know if the delivery team worked with or consulted the following bodies external to your local authority: 'Worked with' MEANS the external bodies were involved in bid writing or scheme design and 'Consulted' MEANS the external bodies offered advice but were NOT involved in final bid or scheme design.

Q7: To your knowledge where did the schemes included in the LSTF bid predominately arise/originate from?

To what extent do you agree with the following statements?

Q8: The LSTF has helped my Council to deliver some of its LTP3 objectives.

Q9: The LSTF enabled measures outside theLTP3 to be considered.

Q10: It is easier to deliver sustainable transport measures through the LSTF than it was through LTP2.

Q11: The LSTF measures will reduce the impact of disruptive events (e.g. severe weather events and maintenance works) on the transport network.

Q12: The LSTF measures will reduce the impact of disruptive events on the individual traveller.

Funding for transportation schemes is currently undergoing significant changes, with more decision making power transferring from Central Government to Local Transport Bodies (LTBs) which will be made up of local authority transport departments and the Local Enterprise Partnership (LEP). To what extent do you agree with the following statement?

Q13: The transferring of decision making powers to Local Transport Bodies will allow for more sustainable transport schemes to be implemented in the future.

Q14: Do you have any further comments about the LSTF process that you would like to raise as part of this survey?

Transport Planning

The following questions are designed to understand your personal views on the current state of the local transport planning sector.

Q15: How serious a problem for you is traffic congestion in towns and cities in England?

To what extent do you agree with the following statements regarding transport planning?

Q16: Local Authorities have a responsibility to enable people to travel. (Responsibility does not have to be statutory.)

Q17: Local Authorities have a responsibility to supportexisting travel choices. (Responsibility does not have to be statutory.)

Q18: Information and communications technology mean that solutions to transport problems may not come from the transport sector.

To what extent do you agree with the following statements regarding disincentives and disruption to transport?

Q18: Fuel tax, or other charges such as parking costs, should be increased to encourage people to travel by car less.

Q19: Building more roads encourages more traffic.

Q20: Reallocating road space for other modes reduces overall traffic.

Q21: It is the responsibility of local authorities to manage travel disruption at the local level. (Responsibility does not have to be statutory.)

To what extent do you agree with the following statements regarding climate change?

Q22: For the sake of the environment everyone should reduce how much they use their cars.

Q23: People should be allowed to use their cars as much as they like, even if it causes damage to the environment.

Q24: The government should ban cars with high carbon dioxide emissions.

Q25: How much influence do you think you can have on limiting climate change: as an individual; as a transport practitioner?

Q26: IN YOUR OPINION which of the following factors have the most influence on transport planning in your local authority area? (Please select the top 3.)

Q27: Of your selection which do you think has the most influence? (Select one only.)

Q28: IN YOUR OPINION which of the following factors do you think will have the most influence on transport planning in your local authority area once Local Transport Boards are responsible for funding local transport schemes? (Please select the top 3.)

Q29: Of your selection which do you think will have the most influence? (select one only)

- National Politics
- Government Policy

- Local Party Politics
- National Media
- Local Media
- Public Opinion
- Individuals
- Pressure Groups
- Private Business
- Local Enterprise Partnerships
- Local Transport Authority
- Other (please specify)

Q30: IN YOUR OPINION which of the following factors do you think reduce sustainable travel uptake in your local authority area? (Please select the top 3.)

Q31: Of your selection which do you think has the most influence? (Select one only.)

- 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
- Retail (including Food)
- Other (please specify)

The following questions are designed to help understand your views on the future of transport planning at the local authority level.

Q32: When, if at all, do you think Britain will start feeling the effects of climate change?

Q33: When, if at all, would you expect to see the following changes to the transport sector?

- Electric cars having a 50% market share
- Fuel shock(s)
- Increase in total car trips
- Decrease in total car trips
- Increase in public transport trips
- Decrease in public transport trips
- Increase in walking and cycling trips
- Decrease walking and cycling trips
- Increase in trips due to Information and Communication Technology
- Decrease in trips due to Information and Communication Technology
- Increase in disruptive events due to weather.
- Decrease in disruptive events due to weather.

Q34: Do you think it will be possible for the UK to achieve an 80% reduction in Greenhouse Gas Emissions from transport by 2050?

Q35: Do you think it is likely for the UK to achieve an 80% reduction in Greenhouse Gas Emissions from transport by 2050?

Q36: How much impact do you think climate change will have on the way we travel?

To what extent do you agree with the following statements?

Q37: The transport system will need to be radically changed to account for possible increases in disruptive events due to climate change.

Q38: Low carbon technologies alone will enable us to meet the UK emission targets.

Q39: It is an individual's responsibility to plan for future travel conditions.

Q40: Future government policies should include environmentally sustainable travel options only.

Final Questions

Q41: What is your job title?

Q42: How long have you been working for your current local authority?

Q43: How long have you worked in the transport planning sector?

I am hoping to undertake follow up interviews with a number transport experts like yourself for the next stage of my research. Please leave your email address if you would like to be involved in this process. This won't commit you to anything at this stage, but will allow me to recontact you to explain my research in more detail. Your email address will not be cross referenced with your answers to the questionnaire.

Please feel free to add any comments about the questionnaire, the topics and the area in general. (Optional)

Many thanks for completing the survey. By submitting this questionnaire you are giving consent for the information that you have provided to be used for academic research on the RCUK Energy Programme funded Disruption project.

If you have any queries about this or wish for your responses to be removed from the survey after submission please contact David Williams at: xxxx@uwe.ac.uk.

Appendix D – Contact Email

RCUK Disruption project: Local Transport Planning Survey

Dear Mr/Ms 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

RCUK Disruption project: Local Transport Planning Survey - Final Reminder

Dear Mr/Ms xxx,

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

David Williams

Appendix E – TPS Newsletter

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 xxxx@uwe.ac.uk.

Appendix F – Interview Guide

David Williams' Interview Guide 2014

Interview No.

Section 1 'Demographic data'

Position:

Career history:

Section 2 'LSTF'

Did you work in the transport department before the LSTF was funded? If so has the LSTF led to any significant changes in the Transport Department?

- Staffing
- Funding
- Priorities
- Changes to the way you work
- Links to other departments (formal/informal)
- Maintenance
- Working with stakeholders? (Property developers, businesses, NGOs, public, councillors?)

Do you currently deliver any schemes that are funded through the LSTF and if so are there any noticeable differences to other transport schemes?

- PTP being delivered in house?
- Cycle route
- Physical barrier removal
- How they are assessed?

Do you think the schemes will change the way people will travel in your area in the longer term?

- Reduced demand
- Use different modes
- Change destination e.g. local shops instead of out of town
- During disruptive weather will for example new footpaths/cyclepaths be treated for ice?
- *Why?*

Can you see the schemes being implemented enabling the network and people being able to manage disruptive events better?

Section 3 'Government Steer'

How do you think the changes to funding will influence transport in the future? Where do you think sustainable funding will sit within this?

- Single local growth fund

- Cost benefit analysis appropriate (difficulty with many small schemes)
- Strengths and weaknesses
- Change in priorities and stakeholders
- Influence of local politics
- Reduction to settlement funding for 2014/15 and 2015/16

Who do you feel has the biggest influence on what schemes are built?

- Practitioners,
- councillors,
- government,
- public,
- media

Section 4 'Behaviour Change'

Do you think focusing on individual behaviour change is the most appropriate means of creating significant change? Can you think of anything that needs to change at a societal level to the way we travel?

- Value action gap
- Materials
- Meanings
- Competences

In the survey the 60% thought they had more influence as a practitioner on reducing climate change than they did as an individual. Why do you think this is?

Section 5 'External Factors'

What factors outside transport do you think have the biggest influence on the way people travel? How should these be tackled?

- 'Lifestyle' choices (choice of retail outlets/shops/choice of children's schools/choice of leisure activities)
- Availability of work and accommodation
- Media
- Local politics
- National politics
- Engage with other policy makers
- Multi-level approach – role of Transport planners in this

Section 6 'Framing of Disruption'

Do you think that there is a need to include schemes that prohibit or disincentivise private vehicle use as part of a sustainable transport package?

- Removing road space
- Climate change
- Austerity - maintenance
- Inducement/reduction

- Peak car

When significant disruption to travel occurs (e.g. prolonged roadworks…etc) do you think that these might provide an opportunity to create enduring (beneficial) changes in travel patterns?

- Planned
- Unplanned
- Political impact
- Media

Section 7 Final Question!

From your experience of the LSTF and other initiatives what do you think the perfect transport planning policy or funding stream should involve?

Appendix G - Interviewees

Appendix I – Consent Form

Interview Information Sheet

Delivering a step change in travel: a social practice approach

David Williams PhD Student with Centre for Transport and Society, University of the West of England, Bristol

Thank you for helping with my research by agreeing to be interviewed for my project. The research is designed to assess sustainable transport planning at the local authority level. The interview will initially focus on the Local Sustainable Transport Fund before focussing on transport planning in general.

By signing the consent form you will allow the interview to be recorded and the information given to be used for academic research on the RCUK Energy Programme funded Disruption project. All responses will be kept completely anonymous with no references made to either you or your local authority. Some information such as authority type (e.g. County Council, Unitary Authority) will be used to identify different groups of respondents. The information collected in this survey will be stored on secure servers at UWE and will not be passed on to anyone external to the project.

You have the right to stop the interview at any point. You can also request that part or the entire interview is not used for the research project. You will receive a copy of

the interview transcript within four weeks of the interview and you will have two weeks in which to make a request.

The results from the interview will be used as part my PhD research which forms one part of the wider RCUK Energy Programme funded Disruption project. Upon completion of my research my thesis will be available for access from the University of the West of England Repository at http://eprints.uwe.ac.uk/#.

If you have any questions after the interview please contact David Williams at: xxxx@uwe.ac.uk.

Many thanks for your help in advance.

Interview consent form

Delivering a step change in travel: a social practice approach

David Williams PhD Student with Centre for Transport and Society, University of the West of England, Bristol

Please tick Box

1) I confirm that I have read and understood the information sheet for the study and have had the chance to ask questions ☐

2) I agree to take part in the study ☐

3) I agree to the interview being recorded onto a digital Dictaphone ☐

4) I agree to the use of anonymised quotes from our interview in publications ☐

5) I understand that my participation is voluntary and that I am allowed to withdraw at any time ☐

6) I understand that I will receive, (unless I do not wish to,) a transcript (a written copy) of our interview by post or email (whichever I choose). ☐

I will receive it within four weeks of our interview. Having received it there will be a two week period in which I can contact the researcher and ask for parts or the whole of it not to be used in the subsequent writing up of the research.

_____	_____	_____
Name of Participant	Date	Signature
_____	_____	_____
Name of Researcher	Date	Signature

Appendix H - Ethics Checklist

Authority type/ Role	Respondent Reference in Text	LSTF Bid funded?
County Council	CC1	Yes
County Council	CC2	Yes
County Council	CC3	No
Department for Transport	DfT1	N/A
Department for Transport	DfT2	N/A
Government Minister	Norman Baker MP	N/A
Local Enterprise Partnership	LEP1	N/A
Local Enterprise Partnership	LEP2	N/A
Local Enterprise Partnership	LEP3	N/A
Metropolitan Borough	MB1	Yes
Transport Lobbyist	Stephen Joseph	N/A
Unitary Authority	UA1	Yes
Unitary Authority	UA2	Yes
Unitary Authority	UA3	Yes
Unitary Authority	UA4	Yes
Unitary Authority	UA5	Yes
Unitary Authority	UA6	Yes
Unitary Authority	UA7	Yes
Unitary Authority	UA8	Yes
Unitary Authority	UA9	Yes
Unitary Authority	UA10	No
Unitary Authority	UA11	No

Authority type/ Role	Respondent Reference in Text	LSTF Bid funded?
Unitary Authority	UA12	No

University of the West of England
BRISTOL

Faculty of Environment & Technology

Research Ethics Committee (FETREC)

ETHICAL

Please provide project details and complete checklist overleaf.

Project Details:

Project title	A Study of the Role of Disruption in the UK Transport and Travel Planning: A Social Practice Perspective
Project funder	RCUK Energy Programme funded project, but my payments come from UWE
Proposed project start date	17/10/2011
Anticipated project end date	17/10/2014

Applicant Details:

Name of researcher (applicant)	David Williams
Faculty and School	FET. ACMRC/CTS
Status (PG Student/ UG Student)	Postgraduate student
Email address	xxx@uwe.ac.uk
Contact postal address	Air Quality Management Resource Centre Faculty of Environment and Technology University of the West of England Frenchay Campus Bristol BS16 1QY

Contact telephone number	xxx
Name of co-researchers (where applicable)	N/A

Name of Supervisor (for student applicants)	Dr Tim Chatterton
Supervisor's email address	xxx@uwe.ac.uk
Supervisor's telephone number	xxxx
Details of course/degree for which research is being undertaken	Postgraduate research. Disruption Project

Appendix J - Data Management

Data Management Plan

PROFILE	
Researcher:	David Williams
Project Title:	Disruption
Project Funder:	RCUK Energy Programme/ ESPRC
Project Duration:	3 years (October 2011 – October 2014)
Project Context:	My thesis applies the sociological approach of Shove *et al*.'s (2012) and cultural framework of Fine and Leopold's (2002, 1993) Systems of Provision to a professional practice of transport planning. The research looks at how sustainable transport schemes are delivered in England through the Local Sustainable Transport Fund (LSTF) to see whether the provision of sustainable transport and behaviour change schemes includes resilience as part of the scheme delivery.
CREATING AND DEFINING DATA	
Where does the data come from?	*Part I*: Each LSTF bid document was sourced either via each authority's internet site, or by email request. These have been assessed using NVIVO Data on spend on roads was sourced via the Campaing for Better Transport, various internet sites and email alerts. Each has been referenced. Part II: Data comes from internet survey through Survey Monkey.

	Part III: Data comes from face-to-face and telephone interviews.
How often do you create data?	Part I: Bid document collection over six months (May 2012 to October 2012). Data spend on roads, ongoing via internet searches and email alerts. Part II: Data created for two months (May 2013 to July 2013). Part III: Data created for four months (December 2013 to March 2014).
How Much Data do you Generate?	Parts I and II 7.53 GB Part III 9.24 GB (As of 20/03/2014)
What file formats do you use?	Part I .pdf, Excel, Word and NVIVO Part II Excel, SPSS and Word Part III Word and NVIVO
What different versions of each data file do you create?	Each word and excel file is updated daily with previous versions added to a 'superseded file'.
What additional information is required to understand each	All excel spreadsheets will contain an information sheet explaining how the data was collated and how it was used.

data file?	
Where do you store your data?	The data is currently stored on the FET Faculty drive (G) from HP computer Asset no: 15256 in room 3Q11. It is also stored on an external hard-drive.
How do you structure and name your folders and files?	All folders are structured to provide information as to what files are available in them.
How is your data backed up?	The FET drive is the backup of the research.
How will you test whether you can restore from your backups?	Random testing of 10 files on the G Drive to check if they work. Test if primary file becomes corrupted on external hard-drive.
SHARING YOUR DATA	
Who owns the data you generate?	As the researcher I own the intellectual property of my research.
Who else has the right to see or use this data?	*Supervisors:* Dr Tim Chatterton and Prof. Graham Parkhurst. *The Disruption Project team*: Prof. Greg Marsden Prof. Iain Docherty Prof. Jillian Anable Prof. James Falconbridge

	Dr Lesley Murray
Who else should reasonably have access?	Research associates on the Disruption Project When submitted to repository it will be available to the public.
What should/shouldn't be shared and why?	*Part II* The non-anonymised Excel files *Part III* All non-anonymised data relating to the interviews
ARCHIVING YOUR DATA	
What should be archived beyond the end of your project?	All data that is to be made publically available.
For how long should it be stored?	ESPRC state that this should be for 10 years
When will files be moved into the archive?	The final version of the Thesis has been submitted in September 2015. Files have be uploaded to the repository on completion of the corrections to the final thesis.
Where will the archive be stored?	UK Data Service Archive re-share site: http://reshare.ukdataservice.ac.uk/.
Who is responsible for moving data to the archive and maintaining it?	I as the researcher will be responsible for moving the data to the repository. UK Data Service will be responsible for maintaining it after this date.
Who should have access and under what	As the data will be anonymised there will be no embargos on it.

conditions?	
IMPLEMENTING YOUR PLAN	
Who is responsible for making sure this plan is followed?	David Williams Dr Tim Chatterton (Director of Studies)
How often will this plan be reviewed and updated?	Every six months
What actions have you identified for the rest of this plan?	N/A
What further information do you need to carry out these actions?	N/A

Appendix K – Chi-square Analysis - Coding

Summary of Chi-square Coding

Chi-square analysis of independence tests were undertaken to identify whether there was any statistical significance in relation to three separate sets of codes created as part of this research. The first set of codes related to the objectives identified in the DfT's 2011 White Paper and guidance for completing LSTF bids (DfT, 2011a, 2011b).

The second set of codes was created to identify whether the schemes proposed included initiatives to deliver: materials, competences or meanings, in line with Shove *et al*.'s (2012) 3-Elements model.

The third set of codes was designed to show what the schemes were designed to deliver and whether any actively restricted travel by private motor vehicle.

DfT Codes

The following 13 tables provide a summary of the chi-square tests completed for each of the 13 DfT objectives identified in the LSTF guidance. No relationships between any of the objectives and success in funding were found to be significant and therefore the hypothesis (that funding was related to specific objectives) was rejected. Each table includes whether the scheme was funded, invited to resubmit or refused funding. The totals were included in the table calculated in Excel and a P Value derived for each objective.

Table 1 - Supporting the Local Economy							
Original Table					**Expected Values**		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	91	6	97		**Funded**	91.6	5.4
Resubmit	16	0	16		**Resubmit**	15.1	0.9
Refused	30	2	32		**Refused**	30.2	1.8
TOTAL	137	8	145				
					p-value	0.591	

Table 2 - Reducing Congestion							
Original Table					**Expected Values**		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	76	21	97		**Funded**	74.3	22.7
Resubmit	11	5	16		**Resubmit**	12.2	3.8
Refused	24	8	32		**Refused**	24.5	7.5
TOTAL	111	34	145				
					p-value	0.684	

Table 3 - Improving Journey Time Reliability							
Original Table					**Expected Values**		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	50	47	97		**Funded**	46.8	50.2
Resubmit	9	7	16		**Resubmit**	7.7	8.3
Refused	11	21	32		**Refused**	15.4	16.6
TOTAL	70	75	145				
					p-value	0.192	

Table 4 - Improving Journey Time Predictability							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	27	70	97		**Funded**	27.4	69.8
Resubmit	6	10	16		**Resubmit**	4.5	11.5
Refused	8	24	32		**Refused**	9.0	23.0
TOTAL	41	104	145				
					p-value	0.654	

Table 5 - Enhancing Access to Employment							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	72	25	97		**Funded**	71.6	25.4
Resubmit	14	2	16		**Resubmit**	11.8	4.2
Refused	21	11	32		**Refused**	23.6	8.4
TOTAL	107	38	145				
					p-value	0.263	

Table 6 - Reduce Carbon Emissions							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	87	10	97		**Funded**	87.6	9.4
Resubmit	14	2	16		**Resubmit**	14.5	1.5
Refused	30	2	32		**Refused**	28.9	3.1
TOTAL	131	14	145				
					p-value	0.733	

Table 7 - Active Travel Walking							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	85	12	97		**Funded**	84.3	12.7
Resubmit	15	1	16		**Resubmit**	13.9	2.1
Refused	26	6	32		**Refused**	27.8	4.2
TOTAL	126	19	145				
					p-value	0.449	

Table 8 - Active Travel Cycling							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	93	4	97		**Funded**	92.3	4.7
Resubmit	16	0	16		**Resubmit**	15.2	0.8
Refused	29	3	32		**Refused**	30.5	1.5
TOTAL	138	7	145				
					p-value	0.308	

Table 9 - Deliver wider social and economic benefits							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	70	27	97		**Funded**	71.6	25.4
Resubmit	15	1	16		**Resubmit**	11.8	4.2
Refused	22	10	32		**Refused**	23.6	8.4
TOTAL	107	38	145				
					p-value	0.150	

Table 10 - Accessibility							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	86	11	97		**Funded**	82.3	14.7
Resubmit	13	3	16		**Resubmit**	13.6	2.4
Refused	24	8	32		**Refused**	27.1	4.9
TOTAL	123	22	145				
					p-value	0.160	

Table 11 - Improving Safety							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	80	17	97		**Funded**	82.3	14.7
Resubmit	16	0	16		**Resubmit**	13.6	2.4
Refused	27	5	32		**Refused**	27.1	4.9
TOTAL	123	22	145				
					p-value	0.194	

Table 12 - Improving Air Quality							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	53	44	97		**Funded**	48.8	48.2
Resubmit	7	9	16		**Resubmit**	8.1	7.9
Refused	13	19	32		**Refused**	16.1	15.9
TOTAL	73	72	145				
					p-value	0.332	

Table 13 - Promoting Healthy Living							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	84	13	97		**Funded**	82.3	14.7
Resubmit	13	3	16		**Resubmit**	13.6	2.4
Refused	26	6	32		**Refused**	27.1	4.9
TOTAL	123	22	145				
					p-value	0.700	

3-Elements Codes

The following three tables provide a summary of the Chi-square tests completed for each of the 3-Elements: materials, meanings and competences, described by Shove *et al*. (2012). The null hypothesis was accepted for materials and competences that there was no significant relationship between the inclusion of these codes and schemes being funding. For meanings the null hypothesis was rejected, with relationship being identified as being significant. Each table includes whether the scheme was funded, invited to resubmit or refused funding. The totals were included in the table and a P Value derived for each objective.

Table 14 - Materials							
Original Table					**Expected Values**		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	95	2	97		**Funded**	94.3	2.7
Resubmit	16	0	16		**Resubmit**	15.5	0.4
Refused	30	2	32		**Refused**	31.1	0.9
TOTAL	141	4	145				
					p-value	0.353	

Table 15 - Competences							
Original Table					**Expected Values**		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	68	29	97		**Funded**	64.2	37.8
Resubmit	11	5	16		**Resubmit**	10.6	5.4
Refused	17	15	32		**Refused**	21.2	10.8
TOTAL	96	49	145				
					p-value	0.207	

Table 16 - Meanings							
Original Table					**Expected Values**		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	90	7	97		**Funded**	85.6	11.4
Resubmit	12	4	16		**Resubmit**	14.1	1.9
Refused	11	6	32		**Refused**	28.2	3.8
TOTAL	128	17	145				
					p-value	0.005 (99%)	

Disruption Codes

The following six tables provide a summary of the Chi-square tests completed for each of the six disruption codes created for this research:

- Enabling travel;
- Enabling Journeys by Car;
- Incentivising (financial);
- Incentivising (non-financial);
- Disruption to private motor vehicle; and
- Reducing the need to travel.

In four of the Chi-Square tests the relationship between the codes: enabling journeys by car, incentivising (financial), disruption to private motor vehicles and reducing the need to travel, the success of bids was not found to be significant and therefore the null hypothesis was accepted.

For the codes: enabling and incentivising (non-financial) the null hypothesis was rejected, with both codes being identified as being statistically significant. Each table includes whether the scheme was funded, invited to resubmit or refused funding. The totals were included in the table and a P Value derived for each objective.

Table 17 - Enabling							
Original Table					**Expected Values**		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	96	1	97		**Funded**	94.3	2.7
Resubmit	16	0	16		**Resubmit**	15.6	0.44
Refused	29	3	32		**Refused**	31.1	0.9
TOTAL	141	4	145				
					p-value	0.034	

Table 18 - Enabling journeys by car							
Original Table					**Expected Values**		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	60	37	97		**Funded**	58.2	38.8
Resubmit	9	7	16		**Resubmit**	9.6	6.4
Refused	18	14	32		**Refused**	19.2	12.8
TOTAL	87	58	145				
					p-value	0.810	

Table 19 - Incentivising (Financial)							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	49	48	97		**Funded**	49.5	47.5
Resubmit	11	5	16		**Resubmit**	8.2	7.8
Refused	14	18	32		**Refused**	16.3	15.7
TOTAL	74	71	145				
					p-value	0.259	

Table 20 - Incentivising (Non-Financial)							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	92	5	97		**Funded**	87.6	9.4
Resubmit	14	2	16		**Resubmit**	14.5	1.5
Refused	25	7	32		**Refused**	28.9	3.1
TOTAL	131	14	145				
					p-value	0.019	

Table 21 - Disruption to Cars							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	32	65	97		**Funded**	32.1	64.9
Resubmit	9	7	16		**Resubmit**	5.3	10.7
Refused	7	25	32		**Refused**	10.6	21.4
TOTAL	48	97	145				
					p-value	0.058	

Table 22 - Reduce need to travel							
Original Table					Expected Values		
Success	**One**	**Two**	**TOTAL**		**Success**	**One**	**Two**
Funded	15	82	97		**Funded**	14.7	82.3
Resubmit	3	13	16		**Resubmit**	2.4	13.6
Refused	4	28	32		**Refused**	4.9	27.1
TOTAL	22	123	145				
					p-value	0.842	

Appendix L – Bids Invited to Resubmit

Differences between bids invited to resubmit

Schemes included in Tranche 1 Bids	Original Bid (16)	Resubmitted Bid (13
Public Transport Schemes		
Real time information at bus stops and interchanges	4	7
Hybrid and other low emission technologies for buses	2	1
New buses	2	0
low carbon park and ride vehicles	0	0
Park and ride extensions / enhancements	2	0
New / extended bus lane(s)	1	2
Bus corridor improvements	5	4
Improved public transport interchange(s)	8	5
Bus gate provision	1	2
Bus priority technology	4	2
Bus shelters and bus stops	7	8
Off-bus ticket machines	0	0
New / improved bus services / routes	4	7
Bus services for rural residents	2	1
Bike bus services	0	1
Driver disability / customer awareness training	0	0
Community transport	5	1
Integrated services development	4	4
New / enhanced park and ride services	1	0
Free / discounted bus 'taster' tickets	5	4
Travel advice (incl. at main employment sites)	1	2
Bus services information and promotions	8	5
Web-based services and smart phone apps for bus times and routes	7	5
Smart / integrated ticketing	4	2
Railway station / forecourt improvements	2	3
Real time information on trains and at stations	3	2
Cycle parking at station(s)	3	5
Cycle hire scheme at station	2	1
Electric vehicle charging points at station	0	0
Rail service improvements	0	1
Targeted rail promotions / travel awareness campaign	1	1
Station travel plans	2	3
Active Travel		
Pedestrian / cycle improvements	14	13
Pedestrian crossings	5	6
Links to employment sites, stations, schools	11	8
Access to parks / recreational areas / National Parks	3	1
Cycle contra-flows	0	1
Greenway / off-road cycle route improvements (incl. lighting)	9	6
Town / city centre accessibility	9	4
Cycle parking (incl. storage / lockers)	10	12
Cycle route signage improvements	4	8
Adult cycle training	6	9
Children's cycle training (Bikeability level 3)	9	5

Schemes included in Tranche 1 Bids	Original Bid (16)	Resubmitted Bid (13
Children's pedestrian road safety training	4	4
Promotions and events (incl. workplace cycle challenges)	4	10
Employer grants for cycle shelters, lockers etc	2	8
Dr Bike services	2	5
Promotions and events (e.g. cycle challenges, Dr Bike, Bike It, transition programmes)	6	4
Schools grants for cycle shelters, lockers etc	1	1
Cycle trains / walking school buses	2	4
Loan bike service and cycle hubs	6	6
Cycle hire scheme	5	4
Bike recycling scheme / maintenance training	7	1
Maps, signs and route planning support (incl. guided walks/rides to school/work)	7	4
Community route audits	5	4
Journey planner promotions	2	1
Partnerships and events	2	3
20 mph zones / lower speed limits	5	2
Junction improvements / upgrades	6	4
Sustainable transport corridor(s)	6	1
Traffic Management and Private Vehicles		
Traffic and parking management	6	4
Enforcement	1	0
Streetscape/access improvements (including safety)	5	1
Urban / integrated traffic management and control and signals review	2	3
Car share / park and share / lift share	8	6
Car clubs	6	4
Eco-driver training / advice	4	1
Electric car (and bike) charging points	4	4
Pool low-emission / electric cars for workplace travel	1	0
Freight measures	1	1
Marketing and Engagement		
Wheels to Work	4	4
Employer engagement / workplace packages (incl. travel planning)	10	8
Business grants for sustainable transport solutions	3	2
Targeted engagement with hospitals / further education / universities	5	4
Area / personalised travel planning / individualised travel marketing	10	9
Travel planning (general)	6	4
Schools travel plans	7	4
Improving access to high speed broadband for rural locations	0	0
Helping employers reduce business-related travel	2	2
Home working marketing and promotion	0	1
Home deliveries promotions	0	0
Establishment and promotion of work hubs for rural areas and market towns	0	0
Reducing the need to travel to access services	1	0

Schemes included in Tranche 1 Bids	Original Bid (16)	Resubmitted Bid (13
Travel passes for people seeking employment	1	7
Journey planning and travel assistance training	5	7
Marketing campaigns	11	12
Travel mapping and information	6	9
Incentives / events	8	10
Travel hubs	11	4
Web-based travel information	9	9
Sustainable tourism promotion	2	2
Road safety / 'share the road' awareness campaigns	6	0

Appendix M - Costs Breakdown

Summary of Costs Breakdown

The LSTF bid documents were broken down in to three categories:

- Individual Local Authority Bids;
- Integrated Transport Authority and Regional Consortia Bids; and
- Non-geographically linked Consortia Bids.

Where the bid document provided explicit information as to the breakdown of funding by authority this information has been assigned to the relevant authority. Where no information has been provided the funding has been broken down evenly between each LA within the consortia, with the LA named as the co-ordinating authority receiving an additional slice of the funding. For example if four LAs are involved in a consortia, the funding would be split into five, with the co-ordinating LA being assigned two fifths of the funding.

Rank	Name	Population	Authority Spend (£)	Spend Per head of Population (£)
1	Reading (B)	155,700	20,468,877	131.46
2	Surrey County	1,132,400	18,869,000	16.66
3	City of Nottingham (B)	305,700	15,245,000	49.87
4	Hertfordshire County	1,116,000	12,318,818	11.04
5	Hampshire County	1,317,800	11,090,152	8.42
6	City of Portsmouth (B)	205,100	10,946,333	53.37
7	City of Southampton (B)	236,900	9,906,333	41.82
8	Telford and Wrekin (B)	166,600	9,626,000	57.78
9	Bournemouth (B)	183,500	8,947,292	48.76
10	Birmingham District (B)	1,073,000	8,868,429	8.27
11	Coventry District (B)	318,600	8,241,429	25.87
12	Bath and North East Somerset	176,000	7,529,375	42.78
13	North Somerset	202,600	7,529,375	37.16
14	South Gloucestershire	262,800	7,529,375	28.65
15	City of Bristol (B)	428,200	7,529,375	17.58
16	Barnsley District (B)	231,200	7,394,750	31.98
17	Rotherham District (B)	257,300	7,394,750	28.74
18	Doncaster District (B)	302,400	7,394,750	24.45
19	Sheffield District (B)	552,700	7,394,750	13.38
20	Devon County	746,400	6,891,922	9.23
21	Dorset County	412,900	6,720,292	16.28
22	Sefton District (B)	273,800	6,213,400	22.69
23	St. Helens District (B)	175,300	6,013,400	34.30
24	Warrington (B)	202,200	5,690,000	28.14
25	Staffordshire County	848,500	5,603,275	6.60
26	Wokingham (B)	154,400	5,529,561	35.81
27	Swindon (B)	209,200	5,429,625	25.95
28	Wirral District (B)	319,800	5,406,218	16.90
29	Lancashire County	1,171,300	5,310,000	4.53
30	Warwickshire County	543,800	5,275,000	9.70
31	Gloucestershire County	597,000	5,239,625	8.78

Rank	Name	Population	Authority Spend (£)	Spend Per head of Population (£)
32	Oxfordshire County	653,800	5,217,000	7.98
33	Wiltshire	471,000	5,155,625	10.95
34	Dudley District (B)	312,900	5,107,429	16.32
35	Thurrock (B)	157,700	5,000,000	31.71
36	City of Peterborough (B)	183,600	5,000,000	27.23
37	Cambridgeshire County	621,200	5,000,000	8.05
38	Suffolk County	728,200	5,000,000	6.87
39	Cheshire West and Chester (B)	329,600	4,999,568	15.17
40	Luton (B)	203,200	4,996,000	24.59
41	Shropshire	306,100	4,990,000	16.30
42	Knowsley District (B)	145,900	4,973,400	34.09
43	Liverpool District (B)	466,400	4,973,400	10.66
44	County of Herefordshire	183,500	4,973,000	27.10
45	Central Bedfordshire	254,400	4,954,000	19.47
46	City of Derby (B)	248,700	4,922,000	19.79
47	Lincolnshire County	713,700	4,899,000	6.86
48	Cumbria County	499,900	4,890,000	9.78
49	City of Leicester (B)	329,900	4,850,818	14.70
50	Southend-on-Sea (B)	173,600	4,816,000	27.74
51	North Yorkshire County	598,400	4,763,000	7.96
52	Solihull District (B)	206,700	4,745,429	22.96
53	City of Wolverhampton District (B)	249,500	4,745,429	19.02
54	Walsall District (B)	269,300	4,745,429	17.62
55	Sandwell District (B)	308,100	4,745,429	15.40
56	The City of Brighton and Hove (B)	273,400	4,665,000	17.06
57	York (B)	198,000	4,645,000	23.46
58	City of Stoke-on-Trent (B)	249,000	4,555,140	18.29
59	East Sussex County	526,700	4,412,000	8.38
60	North East Lincolnshire (B)	159,600	4,330,000	27.13
61	Poole (B)	147,600	4,311,292	29.21

Rank	Name	Population	Authority Spend (£)	Spend Per head of Population (£)
62	Slough (B)	140,200	4,305,000	30.71
63	Tameside District (B)	219,300	4,172,618	19.03
64	Somerset County	530,000	4,161,625	7.85
65	City of Plymouth (B)	256,400	4,152,250	16.19
66	Darlington (B)	105,600	4,076,000	38.60
67	Rutland	37,400	4,016,000	107.38
68	Leicestershire County	650,500	4,000,000	6.15
69	Isle of Wight	138,300	3,950,000	28.56
70	Cornwall	532,300	3,797,760	7.13
71	Bury District (B)	185,100	3,739,800	20.20
72	Rochdale District (B)	211,700	3,739,800	17.67
73	Oldham District (B)	224,900	3,739,800	16.63
74	Trafford District (B)	226,600	3,739,800	16.50
75	Salford District (B)	233,900	3,739,800	15.99
76	Bolton District (B)	276,800	3,739,800	13.51
77	Stockport District (B)	283,300	3,739,800	13.20
78	Wigan District (B)	317,800	3,739,800	11.77
79	Manchester District (B)	503,100	3,739,800	7.43
80	Cheshire East (B)	370,100	3,509,000	9.48
81	West Sussex County	806,900	3,413,818	4.23
82	Torbay (B)	131,000	3,020,625	23.06
83	Northumberland	316,000	2,842,000	8.99
84	Worcestershire County	566,200	2,815,000	4.97
85	Redcar and Cleveland (B)	135,200	2,604,500	19.26
86	West Berkshire	153,800	2,562,561	16.66
87	County Durham	513,200	2,440,818	4.76
88	Middlesbrough (B)	138,400	2,324,500	16.80
89	Kent County	1,463,700	2,273,000	1.55
90	South Tyneside District (B)	148,100	1,980,800	13.37
91	Gateshead District (B)	200,200	1,980,800	9.89
92	North Tyneside District (B)	200,800	1,980,800	9.86

Rank	Name	Population	Authority Spend (£)	Spend Per head of Population (£)
93	Sunderland District (B)	275,500	1,980,800	7.19
94	Newcastle upon Tyne District (B)	280,200	1,980,800	7.07
95	Windsor and Maidenhead (B)	144,600	1,956,000	13.53
96	City of Kingston upon Hull (B)	256,400	1,870,000	7.29
97	Bracknell Forest (B)	113,200	1,664,000	14.70
98	Leeds District (B)	751,500	1,646,132	2.19
99	Hartlepool (B)	92,000	1,547,318	16.82
100	Bradford District (B)	522,500	1,502,968	2.88
101	Blackburn with Darwen (B)	147,500	1,452,000	9.84
102	Kirklees District (B)	422,500	1,334,338	3.16
103	Buckinghamshire County	505,300	1,299,818	2.57
104	Stockton-on-Tees (B)	191,600	1,114,500	5.82
105	Halton (B)	125,800	1,040,000	8.27
106	East Riding of Yorkshire	334,200	943,000	2.82
107	Bedford (B)	157,500	899,900	5.71
108	Calderdale District (B)	203,800	807,400	3.96
109	Northamptonshire County	692,000	594,165	0.86
110	Wakefield District (B)	325,800	557,400	1.71
111	Derbyshire County	769,700	525,100	0.68
112	Blackpool (B)	142,100	432,818	3.05
113	North Lincolnshire (B)	167,400	-	-
114	Milton Keynes (B)	248,800	-	-
115	Medway (B)	263,900	-	-
116	Nottinghamshire County	785,800	-	-
117	Norfolk County	857,900	-	-
118	Essex County	1,393,600	-	-

Appendix N – Chi-square Analysis - Survey

Summary of Chi-square Coding

Eight separate chi-square analysis of independence were undertaken to identify whether there was any statistical significance in relation to practitioners' responses to the survey, their level within the authority, their length of time with the LA and their length of time within the industry. The results showed that the null hypothesis was accepted in all tests bar two: preventing climate change and the possibility of reducing emissions by 2050. The results found that senior officers believed that there was a greater chance of success in meeting these targets, although this will be achieved with difficulty.

Intervention	Pearson Chi-Square	Level of Significance
Officer Level		
Congestion	0.833	
Responsibility	0.345	
Transport Solutions	0.651	
Restriction	0.813	
Climate Change	0.739	
Emissions1	0.198	
Emissions2	0.009	99%
Change	0.936	
Length of time in LA		
Congestion	0.574	
Responsibility	0.495	
Transport Solutions	0.809	
Restriction	0.554	
Climate Change	0.592	
Emissions1	0.616	
Emissions2	0.658	
Change	0.280	
Length of time in Industry		
Congestion	0.646	
Responsibility	0.463	
Transport Solutions	0.297	
Restriction	0.080	
Climate Change	0.531	
Emissions1	0.023	97%
Emissions2	0.829	
Change	0.620	

Seniority Level Results

The following set of tables show the SPSS outputs from the chi-square tests undertaken. There are eight separate tables providing a p value for each of the topics in relation whether each officer was either at the officer or senior officer level.

Table 1 - Level of Congestion a problem by seniority							
Original Table					Expected Values		
	Officer Level	Senior Level	TOTAL			Officer Level	Senior Level
Problem	21	9	30		Problem	20.7	9.3
Not a Problem	8	4	12		Not a Problem	8.3	3.7
TOTAL	29	13	42				
					p-value	0.833	

Table 2 - Responsibility for change by seniority							
Original Table					Expected Values		
	Officer Level	Senior Level	TOTAL			Officer Level	Senior Level
LA/Government	18	10	28		LA/Government	19.3	8.7
Individual	11	3	14		Individual	9.7	4.3
TOTAL	29	13	42				
					p-value	0.345	

Table 3 - Solutions for change will only come from transport sources by seniority							
Original Table					Expected Values		
	Officer Level	Senior Level	TOTAL			Officer Level	Senior Level
Yes	22	9	31		Yes	21.4	9.6
No	7	4	11		No	7.6	3.4
TOTAL	29	13	42				
					p-value	0.651	

Table 4 - Solutions may include restricting private motor vehicle use by seniority							
Original Table					Expected Values		
	Officer Level	Senior Level	TOTAL			Officer Level	Senior Level
Restrict	19	9	28		Restrict	19.3	8.7
Do not Restrict	10	4	14		Do not Restrict	9.7	4.3
TOTAL	29	13	42				
					p-value	0.813	

Table 5 - When we'll feel the effects of climate change by seniority							
Original Table					Expected Values		
	Officer Level	Senior Level	TOTAL			Officer Level	Senior Level
We are already feeling them	21	11	32		We are already feeling them	22.1	9.9
In the next 25 years	2	1	3		In the next 25 years	2.1	0.9
In the next 50 years	2	1	3		In the next 50 years	2.1	0.9
Beyond the next 100 years	1	0	1		Beyond the next 100 years	0.7	0.3
Don't Know	3	0	3		Don't Know	2.1	0.9
TOTAL	29	13	42				
					p-value	0.739	

Table 6 - Is it possible to reduce emissions by 2050 by seniority							
Original Table					Expected Values		
	Officer Level	Senior Level	TOTAL			Officer Level	Senior Level
Yes	29	12	41		Yes	28.3	12.7
No	0	1	1		No	0.7	0.3
TOTAL	29	13	42				
					p-value	0.198	

Table 7 - Is it likely will we reduce emissions by seniority							
Original Table					Expected Values		
	Officer Level	Senior Level	TOTAL			Officer Level	Senior Level
Yes	3	6	9		Yes	6.2	2.8
No	26	1	33		No	22.8	10.2
TOTAL	29	13	42				
					p-value	0.009 (99%)	

Table 8 - Will changes will occur to transport planning by seniority							
Original Table					Expected Values		
	Officer Level	Senior Level	TOTAL			Officer Level	Senior Level
Change to occur	16	7	9		Change to occur	15.9	7.1
No real change to occur	13	6	33		No real change to occur	13.1	5.9
TOTAL	29	13	42				
					p-value	0.936	

Duration with current LA Results

The following set of tables show the SPSS outputs from the chi-square tests undertaken. There are eight separate tables providing a p value for each of the topics in relation whether each officer and their length of service with their current LA. In all cases the null hypothesis was accepted.

Table 9 - Level of Congestion a problem by duration with LA									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Problem	15	8	7	30		Problem	14.3	7.9	7.9
Not a Problem	5	3	4	12		Not a Problem	5.7	3.1	3.1
TOTAL	20	11	11	42					
						p-value	0.574		

Table 10 - Responsibility for change by duration with LA									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
LA/ Government	13	6	9	28		LA/ Government	13.4	7.3	7.3
Individual	7	5	2	14		Individual	5.3	3.7	3.7
TOTAL	20	11	11	42					
						p-value	0.495		

Table 11 - Solutions for change will only come from transport sources duration with LA									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Yes	15	7	9	31		Yes	14.8	8.1	8.1
No	5	4	2	11		No	5.2	2.9	2.9
TOTAL	20	11	11	49					
						p-value	0.809		

Table 12 - Solutions may include restricting private motor vehicle use by duration with LA									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Restrict	12	7	9	28		Restrict	13.4	7.3	7.3
Do not Restrict	8	4	2	14		Do not Restrict	6.6	3.7	3.7
TOTAL	20	11	11	42					
						p-value	0.554		

Table 13 - When we'll feel the effects of climate change by duration with LA									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
We are already feeling them	15	9	8	32		We are already feeling them	15.2	8.4	8.4
In the next 25 years	1	2	0	3		In the next 25 years	1.4	0.8	0.8
In the next 50 years	1	0	2	3		In the next 50 years	1.4	0.8	0.8
Beyond the next 100 years	1	0	0	1		Beyond the next 100 years	0.4	0.3	0.3
Don't Know	2	0	1	3		Don't Know	1.4	0.8	0.8
TOTAL	20	11	11	42					
						p-value	0.592		

Table 14 - Is it possible to reduce emissions by 2050 by duration with LA									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Yes	11	7	4	22		Yes	10.5	5.8	5.8
No	9	4	7	20		No	9.5	5.2	5.2
TOTAL	20	11	11	42					
						p-value	0.616		

Table 15 - Is it likely will we reduce emissions by duration with LA									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Yes	3	3	3	9		Yes	3.4	2.4	2.4
No	17	8	8	33		No	3.1	12.6	8.6
TOTAL	20	11	11	42					
						p-value	0.658		

Table 16 - Will changes will occur to transport planning by duration with LA									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Change to occur	12	5	6	23		Change to occur	11.0	6.0	6.0
No real change to occur	8	6	5	19		No real change to occur	9.0	5.0	5.0
TOTAL	20	11	11	42					
						p-value	0.280		

Duration in Industry Results

The following set of tables show the SPSS outputs from the chi-square tests undertaken. There are eight separate tables providing a p value for each of the topics in relation whether each officer and their length of time working in the transport planning sector. In all cases the null hypothesis was accepted.

Table 17 - Level of Congestion a problem in industry									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Problem	6	8	16	30		Problem	5.0	8.6	16.4
Not a Problem	1	4	7	12		Not a Problem	2.0	3.4	6.6
TOTAL	7	12	23	42					
						p-value	0.646		

Table 18 - Responsibility for change by duration in industry									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
LA/ Government	6	7	15	28		LA/ Government	4.7	8.0	15.3
Individual	1	5	8	14		Individual	2.3	4.0	7.7
TOTAL	7	12	23	42					
						p-value	0.463		

Table 19 - Solutions for change will only come from transport sources duration in industry									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Yes	5	7	19	31		Yes	5.2	8.9	17.0
No	2	5	4	11		No	1.8	3.1	6.0
TOTAL	7	12	23	42					
						p-value	0.297		

Table 20 - Solutions may include restricting private motor vehicle use by duration in industry									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Restrict	6	5	17	28		Restrict	4.7	8.0	15.3
Do not Restrict	1	7	6	14		Do not Restrict	2.3	4.0	7.7
TOTAL	7	12	23	42					
						p-value	0.080		

Table 21 - When we'll feel the effects of climate change by duration in industry									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
We are already feeling them	6	8	18	32		We are already feeling them	5.3	9.1	17.5
In the next 25 years	0	2	1	3		In the next 25 years	0.5	0.9	1.6
In the next 50 years	1	0	2	3		In the next 50 years	0.5	0.9	1.6
Beyond the next 100 years	0	1	0	1		Beyond the next 100 years	0.2	0.3	0.5
Don't Know	0	1	2	3		Don't Know	0.5	0.9	1.6
TOTAL	7	11	23	42					
						p-value	0.531		

Table 22 - Is it possible to reduce emissions by 2050 by duration in industry									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Yes	4	10	8	22		Yes	3.7	6.3	12.0
No	3	2	15	20		No	3.3	5.7	11.0
TOTAL	20	11	11	42					
						p-value	0.023 (98%)		

Table 23 - Is it likely will we reduce emissions by duration in industry									
Original Table						Expected Values			
	0 to 5 Years	5 to 10 years	Over 10 years	TOTAL			0 to 5 Years	5 to 10 years	Over 10 years
Yes	2	2	5	9		Yes	1.5	2.6	4.9
No	5	10	18	33		No	5.5	9.4	18.1
TOTAL	7	12	23	42					
						p-value	0. 829		

Table 24 - Will changes will occur to transport planning by duration in industry									
Original Table						**Expected Values**			
	0 to 5 Years	**5 to 10 years**	**Over 10 years**	**TOTAL**			**0 to 5 Years**	**5 to 10 years**	**Over 10 years**
Change to occur	5	6	12	23		**Change to occur**	3.8	6.6	12.6
No real change to occur	2	6	11	19		**No real change to occur**	3.2	5.4	10.4
TOTAL	7	12	23	42					
						p-value	0.620		