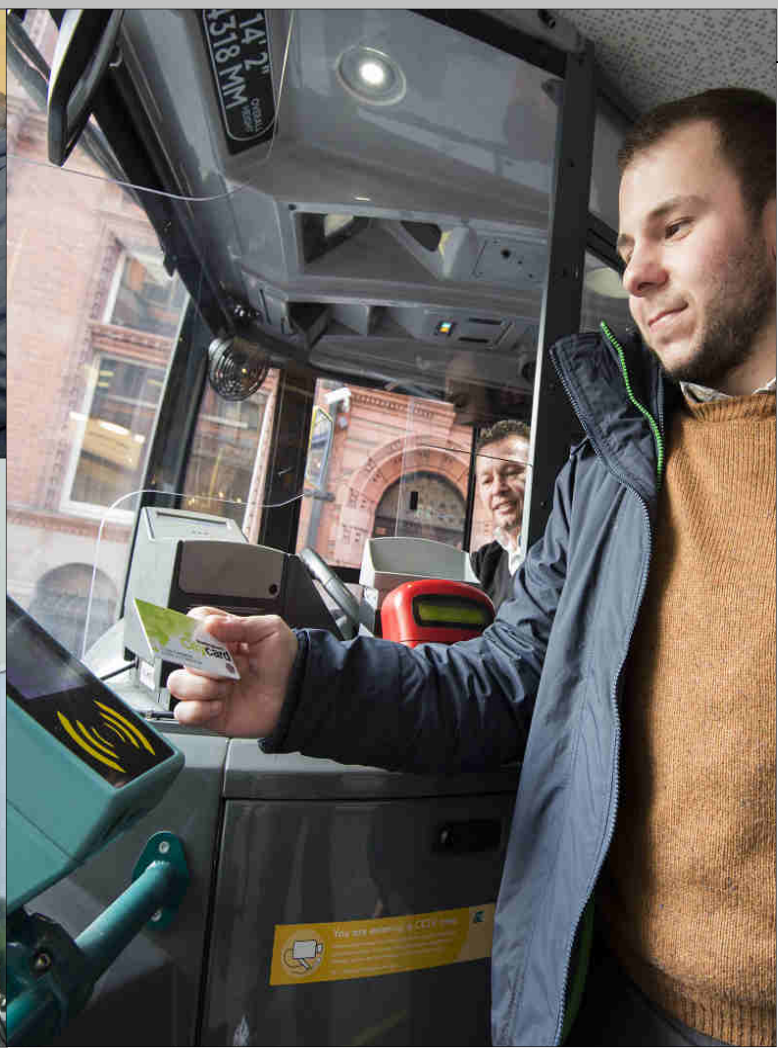
Meta-analysis of Outcomes of Investment in the 12 Local Sustainable Transport Fund Large Projects:

Interim Report



Report to the Department for Transport

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Executive Summary

Background

The Local Sustainable Transport Fund supported investment in 96 local sustainable transport projects between July 2011 and March 2015. Twelve of these were 'Large Projects', defined as projects that received a Department for Transport grant of more than £5 million.

The Fund was designed to support projects that met two core policy objectives: to support the local economy, and to reduce carbon emissions. Four secondary objectives were also identified: to deliver wider social benefits (e.g. accessibility and inclusion); to improve safety; to improve air quality; and to increase physical activity.

All 12 Large Projects were required as part of the LSTF Monitoring and Evaluation Framework to monitor the outcomes of their interventions, and to publish the outcome data in Annual Outcomes Reports. In addition, all LSTF-supported projects, including the 12 Large Projects, were required to report the activities (or outputs) that had been delivered in each year of the programme, through an online Annual Outputs Survey.

This interim meta-analysis of the 12 LSTF Large Projects has been commissioned by the Department for Transport to assess the effect of the LSTF programme and the extent to which it had achieved the high-level objectives that were set for it, at a point roughly two-thirds of the way through the funding period. It draws on the findings set out in Annual Outcomes Reports and Annual Outputs Surveys, and analysis of a range of secondary datasets.

Overall approach

The 12 Large Projects supported by the Local Sustainable Transport Fund had typically spent about half of their total grant award during the period covered by this interim meta-analysis *(S 3.2[1]).* Final outcomes may thus be expected to be significantly different to those reported at this interim stage.

The Large Projects differed in their approaches in terms of the detail, but there were some common themes. Several Large Projects had adopted a 'corridor' approach, in which investment in infrastructure and travel behaviour change measures was concentrated along a limited number of main routes. There had been substantial effort to develop services aimed at job-seekers (especially in CENTRO, Merseyside, Nottingham and TfGM). There had been significant successes in pump-priming new bus services to employment sites (e.g. in BDRS, Hertfordshire, WEST and elsewhere). There was quite intensive support for cycling, with seven Large Projects having implemented many schemes. A number of Large Projects had developed innovative approaches to travel

[1] Throughout the Executive Summary, key findings are cross-referenced to the relevant section *(S)* of the main report, to assist readers wishing for more detail.

behaviour change, and were implementing these on a fairly large scale: for example, workplace personalised travel planning, bus ticket promotions along key corridors, and virtual 'community smarter travel hubs'.

Changes in traffic, bus use and cycling

Evidence from National Road Traffic Estimates shows that for the 10 Large Projects for which data were available, there was a decrease in traffic in 2013 (the most recent year for which figures were available), relative to a 2009-11 baseline. The overall change in these 10 Large Projects was a reduction of -1.06%. A set of national comparator local authorities (all non-Large Project English local authorities outside London) also showed a decrease in traffic, by a slightly smaller amount (-0.75%) *(S 4.3).*The reduction in traffic in the Large Project local authority areas occurred despite increases in population and jobs in most Large Project areas, generally greater than the increases in the national comparator local authorities. However, at this stage it is not possible to say whether, or to what extent, sustainable travel interventions in the Large Project areas may have contributed to the observed traffic reductions.

Across entire Large Project areas, changes in bus patronage were fairly small. It was too early to say whether a range of network-wide improvements (e.g. smart card schemes, bus priority measures etc.) will have an effect on patronage once they are fully implemented. At a finer scale, detailed examination of 19 sets of bus routes that were new or had higher service levels found that in 13 cases, an uplift in patronage was attributable to the LSTF intervention and the patronage benefit was likely to be maintained once funding ceased (in most cases because the new service level had reached commercial viability) *(S 6.6)*.

Five Large Projects had automatic cycle counter data that enabled an assessment of changes in cycling levels during the period of the LSTF programme. All showed cycling levels increasing (using data from sites spread across each Large Project area) between the start of the LSTF programme and 2013/14 or 2014/15. For the three Large Projects where earlier data were available this was a continuation of a previous upward trend *(S 7.5)*. Six of the seven Large Projects that had implemented many cycling interventions showed some indications of increases in cycling since the start of the LSTF programme, measured either by automatic counts, or cordon counts, or using evidence from individual interventions.

Modal shift from travel behaviour change programmes

All the Large Projects delivered a range of travel behaviour change programmes. Workplaces were a significant focus for nine Large Projects, with nearly 1500 businesses receiving some form of support. Household personalised travel planning projects were implemented on a fairly large scale (reaching 10-30,000 households) by four Large Projects, and on a medium-scale (reaching 3-10,000 households) by two. Seven Large Projects delivered large- or medium-scale projects to provide personalised travel

information or incentives to people in other contexts (at workplaces and other locations).

A random effects meta-analysis of changes in car use at 61 workplaces with useable baseline and follow-up employee surveys found that car modal share decreased on average in absolute terms, with a pooled effect size of -2.5 percentage points (95%CI -4.3%, -0.7%), p=0.007 *(S 10.5).* The reduction in car use achieved at the workplaces was comparable to results reported from a previous town-wide engagement programme (in Peterborough). However, it was small compared to previous evidence of the effects that can be achieved under ideal conditions.

Economic effects: support for job-seekers

About 35,000 job-seekers in Large Project areas had received some form of travel support in the period from the start of the LSTF programme to March 2014. This is equivalent to 7% of the number of people in the 12 Large Project areas who were unemployed during 2013/14 *(S 9.2)*. Support included free travel passes; personalised journey plans; loan of a moped; and provision of a bicycle. Surveys suggest that this support enabled job-seekers to make trips that they would not otherwise make to interviews, training and work placements, hence intensifying their job search; that it enabled people to accept job offers that they would not otherwise be able to take up; and that having accepted a job offer, it enabled people to stay in work.

Economic effects: reducing congestion

Few Large Projects had completed significant measures that would be expected to have an effect on congestion for general traffic, although this is likely to change once the programme is complete. Average vehicle speeds in the morning peak showed a similar trend for the Large Projects overall as for the national comparator local authorities, with congestion worsening since 2011/12, mirroring the economic cycle *(S 5.3)*.

Reducing carbon emissions

Five Large Projects had made estimates of the carbon impacts of individual schemes, including car sharing; public transport substituting for car journeys; a workplace challenge; ECO Stars business fleet management; eco-driver training; and the promotion of ultra-low emission vehicles. The schemes for which estimates of carbon impacts had been made represented a small proportion of total LSTF investment, and it would therefore be expected that overall carbon savings (as a result of all LSTF interventions) would be substantially greater. Quoted annual emissions savings were in the order of 0.1 – 0.4kT CO_2 per Large Project, equivalent to between 0.01% and 0.2% of total carbon emissions from transport in the respective local authorities *(S 14.5, S 17.10).* Although these are absolute minimum estimates, the top of this range represents a significant saving over the short timescale concerned. The study team carried out its own estimations of carbon savings from bus service enhancements in BDRS, and to a first order of magnitude, these were consistent with the estimates made by the Large Projects: boosts to bus services to the point of commercial viability were estimated to

have delivered annual ongoing carbon savings of approximately 0.4 kT CO_2e, for about 5% of total LSTF project expenditure *(S 11.5).*

Further work to strengthen the final meta-analysis

In order to provide a good evidence base for the final meta-analysis of the Large Projects, it is recommended that DfT and the Large Projects consider the following approaches:

- In preparation for final Outcomes Reports, undertake further analytical work to estimate 'from the bottom up' (i.e. aggregating the approximate effects from individual interventions) the magnitude of car traffic reduction and carbon savings arising from individual LSTF schemes, and compare this with area-wide changes in car traffic and carbon.
- Make greater use of published DfT statistics for average vehicle speeds on locally-managed 'A' roads to compare recent changes in congestion on individual roads which *have* benefitted from significant traffic management measures, to speeds on roads which have *not* had traffic management measures.
- Undertake follow-up surveys of a sample of job-seekers who have received support, to establish what types of support were most useful; how significant this support was in enabling recipients to obtain or retain a job; why the support was effective; and whether recipients subsequently stayed in employment.
- Consider including three or four in-depth analyses of outcomes of specific types of intervention in final Outcomes Reports, each focussing on a particular area of activity, and describing inputs, outputs, outcomes and future plans in some detail, in order to demonstrate the linkage between what has been done (outputs) and what has happened as a result (outcomes).
- Continuing collaboration between the following groups: DfT; the Large Projects and their consultants; the universities involved in monitoring and evaluation of individual Large Projects and in case studies; and the organisation responsible for delivering the final meta-analysis. This will ensure that the data collection and reporting approaches in the final Outcomes Reports are such as to provide the best possible evidence base for the final meta-analysis.

PART I: CONTEXT, INPUTS AND OUTPUTS

1 Introduction

1.1 Background to the research

The Local Sustainable Transport Fund supported investment in 96 local sustainable transport projects between July 2011 and March 2015. Twelve of these were 'Large Projects', defined as projects that received a Department for Transport grant of more than £5 million. These Large Projects are the focus of this report.

Funding for the Large Projects covered a period of either four or three years. Eight of the Large Projects received 'Key Component' funding during 2011/12 followed by 'Large Project' funding in 2012/13 – 2014/15. Four of the Large Projects did not apply for Key Component funding, and so their grant covered only the period from 2012/13 to 2014/15.

All 12 Large Projects were required to monitor the outcomes of their interventions, and to publish the outcome data in Annual Outcomes Reports. In addition, all LSTF-supported projects, including the 12 Large Projects, were required to report the activities (or outputs) that had been delivered in each year of the programme, through an online Annual Outputs Survey.

This interim meta-analysis of the 12 LSTF Large Projects has been commissioned by the Department for Transport to assess the effect of the LSTF programme and the extent to which it had achieved the high-level objectives that were set for it, at a point roughly two-thirds of the way through the funding period. It draws on the findings set out in the 2013/14 Annual Outcomes Reports; three Annual Outputs Surveys that describe activity during 2011/12, 2012/13 and 2013/14; and analysis of a range of secondary datasets.

It is important to note that the outcomes reported at this stage were expected to be less (potentially considerably less) than the final outcomes of the 12 Large Projects. This is for three reasons. First, some important project outputs were not programmed to be completed until the final year of funding (2014/15), and were not expected to have an effect until completed. Second, some of the data series available to the Large Projects at the time of preparing their 2013/14 Outcomes Reports only covered the period to the end of 2012/13. Third, some of the types of initiatives implemented might be expected to have cumulative and synergistic effects, such that the extent of behaviour change occurring would not necessarily be linear and might in some cases build up over time.

1.2 Objectives of the Local Sustainable Transport Fund

The Local Sustainable Transport Fund supported projects that were designed to meet two core policy objectives[2]:

- To support the local economy and facilitate economic development, for example by reducing congestion, improving the reliability and predictability of journey times, or enhancing access to employment and other essential services
- To reduce carbon emissions, for example by bringing about an increase in the volume and proportion of journeys made by low carbon sustainable modes including walking and cycling.

Four secondary objectives were also identified:

[2] Department for Transport (2011) Local Sustainable Transport Fund – Guidance on the Application Process

- To help to deliver wider social and economic benefits (e.g. accessibility and inclusion) for the community
- To improve safety
- To bring about improvements in air quality and increased compliance with air quality standards, and wider environmental benefits such as noise reduction
- To actively promote increased levels of physical activity and the health benefits this can be expected to deliver.

1.3 Focus of the interim meta-analysis

The interim meta-analysis focussed on eight research questions, as follows:

RQ1: What were the main strands of each Large Project's approach, and how did they relate to the objectives of the Fund? How did the Large Projects try to intervene to achieve these objectives, in terms of expenditure and outputs? How similar or different are the Large Projects in their approaches and outputs?

RQ2: In each Large Project separately, and across the 12 Large Projects as a whole, did traffic volume / levels of car use improve (pre-post comparison)? Can any changes in traffic volume be attributed to LSTF interventions?

RQ3: In each Large Project separately, and across the 12 Large Projects as a whole, did carbon emissions reduce (pre-post comparison)? Can any changes in carbon emissions be attributed to LSTF interventions?

RQ4: In each Large Project separately, and across the 12 Large Projects as a whole, did public transport use increase (pre-post comparison)? Can any changes in public transport use be attributed to LSTF interventions?

RQ5: In each Large Project separately, and across the 12 Large Projects as a whole, did active travel increase (pre-post comparison)? Can any changes in active travel be attributed to LSTF interventions?

RQ6: In each Large Project separately, and across the 12 Large Projects as a whole, what were the economic impacts, particularly in relation to congestion relief and support for job-seekers? Can any economic effects be attributed to LSTF interventions?

RQ7: In each Large Project separately, and across the 12 Large Projects as a whole, did road traffic casualties (KSIs) go down (pre-post comparison)? Can any changes in the number of casualties be attributed to LSTF interventions?

RQ8: What lessons can be learnt for the design and monitoring of future programmes?

1.4 Methodology for the interim meta-analysis

The interim meta-analysis was undertaken in two phases: a short scoping phase between July and September 2014, and a main analytical phase between October 2014 and March 2015.

During the scoping phase, the 2012/13 Outcomes Reports of the 12 Large Projects were reviewed, together with Outcomes Monitoring Plans, Annual Outputs Surveys and other relevant documents. For each Large Project, recommendations were made as to how the forthcoming 2013/14 Outcomes Reports should be modified in order to enable a robust meta-analysis to be carried out. The primary aim in drawing up these recommendations was to ensure, so far as feasible, that the 12 Annual

Outcomes Reports presented data in a way that was consistent and enabled comparison and aggregation of results across Large Projects.

The analytical phase involved the following activities:

- Analysis of findings as reported in the 2013/14 Outcomes Reports, together with other relevant documents including in particular the Annual Outputs Surveys
- Analysis of secondary datasets: the Active People Survey, National Travel Survey, National Road Traffic Estimates, DfT congestion statistics and other relevant datasets
- Several rounds of detailed clarification queries with Large Projects to resolve inconsistencies or points that were not clear from Annual Outcomes Reports
- Obtaining and analysing additional data from the Large Projects, including traffic counts, cycle counts, bus patronage and travel surveys
- Interviews and email contact with three Large Projects to explore the linkages between activities (outputs) and outcomes in relation to specific themes (bus improvements, support for job-seekers, and cycling).

In analysing and comparing findings from Annual Outcomes Reports, we focussed on evidence that related directly to our eight research questions, and on datasets that had been reported in a comparable way by most Large Projects. The 12 Large Projects adopted widely varying approaches to their Outcomes Reports, and we did not attempt to summarise all findings from all 12 reports.

In analysing secondary datasets, we looked both at trends at the programme level (i.e. aggregated across all 12 Large Projects), and trends for each Large Project individually. Each Large Project was represented by those local authorities in which activities had been concentrated. This involved excluding a few local authorities in which only very limited activity took place. The local authorities included in the secondary dataset analysis are listed in Appendix 1.1 at the end of this chapter.

Trends at the programme level were compared with trends for all other English local authorities outside London. This means that our national comparator group includes a mix of local areas that have received LSTF funding as Small Projects and areas that have not received such funding. That is, the comparator group is not a 'no intervention' group, but is probably a 'lower level of intervention' group[3]. We considered whether it was feasible to make comparisons at programme level with a matched set of local authorities, using the National Statistics 2001 Area Classification for Local Authorities, which measures the similarity of pairs of local authorities in terms of a range of demographic, socio-economic, employment and industry characteristics. However, this approach was not used because so many of the 'close match' local authorities had also received LSTF funding as Small Projects.

Three Large Projects (Bournemouth, Hertfordshire and Solent) specified control areas or corridors for the purpose of monitoring the outcomes of their interventions. In all three cases, there are reasons why direct comparison between target and control data is currently problematic, although these issues may be resolved by the final Outcomes Reports.

Both in analysis of the secondary datasets and in analysis of data reported by the Large Projects, we sought to present measures of uncertainty (e.g. confidence intervals) where feasible and to conduct statistical testing where feasible and appropriate. Unfortunately such calculations were often not feasible because we lacked access to raw data. For example, we could calculate confidence intervals

[3] Of course, even local authorities that did not receive LSTF funding are likely to have been carrying out some sustainable transport projects during the period of interest.

when analysing the Active People Survey because we had access to individual-level data, but could not do so for carbon emissions because we only had access to estimated mean values at the local authority level, without any straightforward measure of estimated variance. In other cases, statistical testing was not judged appropriate because of insufficient sample sizes: for example, the number of 'pre-' and 'post-' intervention counts from cycle count readers was far below the required number of 50 or so observations needed to fit time-series models in a robust manner.

Finally, we note that the limited time period available for this interim meta-analysis, and the context in which it was undertaken, mean that we were not able to independently verify all results reported in Annual Outcomes Reports. Where reported results seem clearly not to be credible, we have questioned them with the relevant Large Project, but we have not undertaken an audit of all results.

1.5 Naming convention for Large Projects

Most of the Large Projects were delivered by a formal or informal partnership of a number of local authorities (and, in some cases, Passenger Transport Executives), who in turn contracted specific activities to a very wide range of partner organisations including commercial consultancies, voluntary organisations, and public transport operators. Throughout this report, we refer to 'Large Projects', by which we mean the group of local authorities with budgetary responsibility for delivering the LSTF programme in their area.

When referring to individual Large Projects, we have used either an abbreviated version of the name of the lead local transport authority, or of the LSTF project name. These are based on responses to Questions 2 and 3, respectively, of the most recent (2013/14) Outputs Survey, and are listed in Table 1.1. In three cases (BDRS, Merseyside and Solent), it should be noted that the name of the lead local transport authority has changed since the start of the LSTF programme.

It should also be noted that the Large Project name is inevitably a shortening of the actual areas involved. For example, the Bournemouth Large Project includes the towns (and local authority areas) of Poole and Christchurch (Hampshire) as well as the town of Bournemouth; and the Nottingham Large Project includes the whole Nottingham urban area, parts of which are in the administrative area of Nottinghamshire County Council.

The main activities undertaken by each of the Large Projects are summarised in section 3.7.

Table 1.1: Large Project names, lead local transport authorities, and LSTF project names

Large Project	Lead Local Transport Authority^	LSTF project name*
BDRS	Barnsley, Doncaster, Rotherham and Sheffield Combined Authority (formerly South Yorkshire Integrated Transport Authority)	A Sustainable Journey to Work
Bournemouth	Bournemouth Borough Council	SE Dorset Sustainable Travel Package – the Three Towns Corridor
CENTRO	CENTRO	Smart Network, Smarter Choices
Hertfordshire	Hertfordshire County Council	BigHertsBigIdeas
Merseyside	Liverpool City Region Combined Authority (formerly Merseytravel, Liverpool City Council, St Helens Council, Wirral Council, Sefton Council and Knowsley Council)	Supporting Sustainable Access to Opportunity in Merseyside

Large Project	Lead Local Transport Authority^	LSTF project name*
Nottingham	Nottingham City Council	Nottingham Urban Area LSTF Programme
Reading	Reading Borough Council	Targeting Travel Choice Transitions
Solent	Solent Transport (formerly Transport for South Hampshire & Isle of Wight)	A Better Connected South Hampshire
Surrey	Surrey County Council	Travel SMART
Telford	Telford and Wrekin Council	Telford Future – Local Action for Sustainable Growth
TfGM	Transport for Greater Manchester	Sustainable Travel in Greater Manchester (Large Project); Greater Manchester Commuter Cycle Project (Key Component)
WEST	West of England (Bristol City Council co-ordinating)	West of England Sustainable Travel (WEST)

^ As given in Question 2 of 2013/14 Outputs Survey; * as given in Question 3 of 2013/14 Outputs Survey

1.6 Structure of this report

The report is organised in four sections:

Part I: Context, Inputs and Outputs

Following this introduction, Chapter 2 sets the context for LSTF investment in the 12 Large Projects, briefly describing the geographical areas covered, and changes in population and number of jobs during the period covered by the LSTF programme. Chapter 3 gives an overview of the inputs (expenditure) in each Large Project, and how that was split between different outputs (types of activity). It also reports on the scale of activity in each Large Project, and provides a one-page summary of the approach adopted by each Large Project.

Part II: Evidence on Outcomes

Chapters 4-10 report on analysis of national data sources and evidence from each Large Project, looking in turn at traffic and car use (as a proxy for carbon emissions); congestion (as a measure of economic efficiency); bus use; cycling; walking; support for job-seekers; and modal shift from behaviour change initiatives. In each case, we begin by looking at the extent to which the topic in question has been a major or a minor focus for each Large Project; then report on the main metrics used to monitor outcomes; and briefly review national trends. We then report on 'high-level' changes – that is, at the level of the entire local authority (or group of local authorities); on 'project-level' changes – that is, at the level of the area covered by the Large Project; and on 'intervention-level' changes – that is, for individual schemes or activities delivered by the Large Project. Different metrics and datasets are relevant at each level. Each chapter concludes with a summary table setting out the direction of change since the start of the LSTF programme, and the extent to which any outcomes are clearly attributable to the LSTF investment.

Part III: Relationship between Project Activities and Outcomes

Chapters 11-13 provide in-depth analysis of three specific types of intervention, in three Large Project areas, linking inputs (expenditure), outputs (activities), outcomes, impacts, and future potential. The interventions described are bus service enhancements in BDRS; support for job-seekers in Merseyside; and investment to increase cycling in Nottingham. The purpose of this analysis is to gain greater understanding of the extent to which observed changes in high-level metrics may plausibly be attributable to LSTF project activity.

Part IV: Evidence on Impacts

Chapters 14-16 present analysis of national data sources and evidence from each Large Project in relation to carbon emissions, air quality, and road safety.

Part V: Conclusions

Chapter 17 summarises our key findings at this interim stage, relating them back to the original research questions. It then outlines some lessons and recommendations for the design and monitoring of future sustainable transport investment programmes.

Appendix 1.1: Local authority areas included in analysis of secondary datasets

Large Project	Local authorities	Active People Survey ; Carbon; Injuries; Unemployment	Road Traffic; Congestion
BDRS	Barnsley	Y	Y
	Doncaster	Y	Y
	Rotherham	Y	Y
	Sheffield	Y	Y
Bournemouth	Bournemouth	Y	Y
	Poole	Y	Y
	Christchurch	Y	Excluded*
CENTRO	Wolverhampton	Y	Y
	Walsall	Y	Y
	Sandwell	Y	Y
	Dudley	Y	Y
	Birmingham	Y	Y
	Solihull	Y	Y
	Coventry	Y	Y
Hertfordshire	Watford	Y	Excluded*
	St Albans	Y	
	Dacorum	Y	
Merseyside	Knowsley	Y	Y
	Liverpool	Y	Y
	St Helens	Y	Y
	Sefton	Y	Y
	Wirral	Y	Y
Nottingham	City of Nottingham	Y	Y
	Broxtowe	Y	Excluded*
	Gedling	Y	
	Rushcliffe	Y	
	Erewash	Y	
	Amber Valley	Y	
Reading	Reading	Y	Y
Solent	Portsmouth	Y	Y
	Southampton	Y	Y
	Eastleigh	Y	Excluded*
	Fareham	Y	
	Gosport	Y	
	Havant	Y	
Surrey	Guildford	Y	Excluded*
	Reigate and Banstead	Y	
	Woking	Y	
Telford	Telford & Wrekin	Y	Y
TfGM	Bolton	Y	Y
	Bury	Y	Y
	Manchester	Y	Y
	Oldham	Y	Y
	Rochdale	Y	Y
	Salford	Y	Y
	Stockport	Y	Y
	Tameside	Y	Y
	Trafford	Y	Y
	Wigan	Y	Y
WEST	Bristol	Y	Y
	Bath & NE Somerset	Y	Y
	North Somerset	Y	Y
	South Gloucestershire	Y	Y

District local authorities that were judged to have received a very small proportion of Large Project LSTF investment are not listed here and have been excluded when undertaking analysis of secondary datasets.

* District local authorities were excluded from the analysis where only pooled county-level data were available.

2 Context for LSTF investment

2.1 Geographical areas covered by the Large Projects

The 12 Large Projects varied considerably in their size and circumstances, and included polycentric conurbations made up of a number of local authorities, freestanding towns, and groups of towns.

The geographical areas covered by each of the Large Projects are summarised in Table 2.1. More detail on the geographical areas is given in Chapter 3.

Table 2.1: Summary of geographical areas covered by the Large Projects

Large Project	Geographical area	Type of area*
BDRS	Four broad corridors within the South Yorkshire metropolitan area	P
Bournemouth	Corridor connecting Bournemouth, Poole and Christchurch	G
CENTRO	Ten corridors within the West Midlands metropolitan area	P
Hertfordshire	Three towns of Hemel Hempstead, St Albans and Watford	G
Merseyside	Eight sub-areas within the Merseyside metropolitan area	P
Nottingham	Greater Nottingham built-up area	F
Reading	Reading built-up area	F
Solent	Nine corridors into and near Portsmouth and Southampton	G
Surrey	Three towns of Guildford, Redhill / Reigate and Woking	G
Telford	Town of Telford	F
TfGM	All ten districts of Greater Manchester	P
WEST	Bristol, Bath, Weston-super-Mare and surrounding areas	P

* P = polycentric conurbation made up of a number of local authorities; F = freestanding town; G = groups of towns

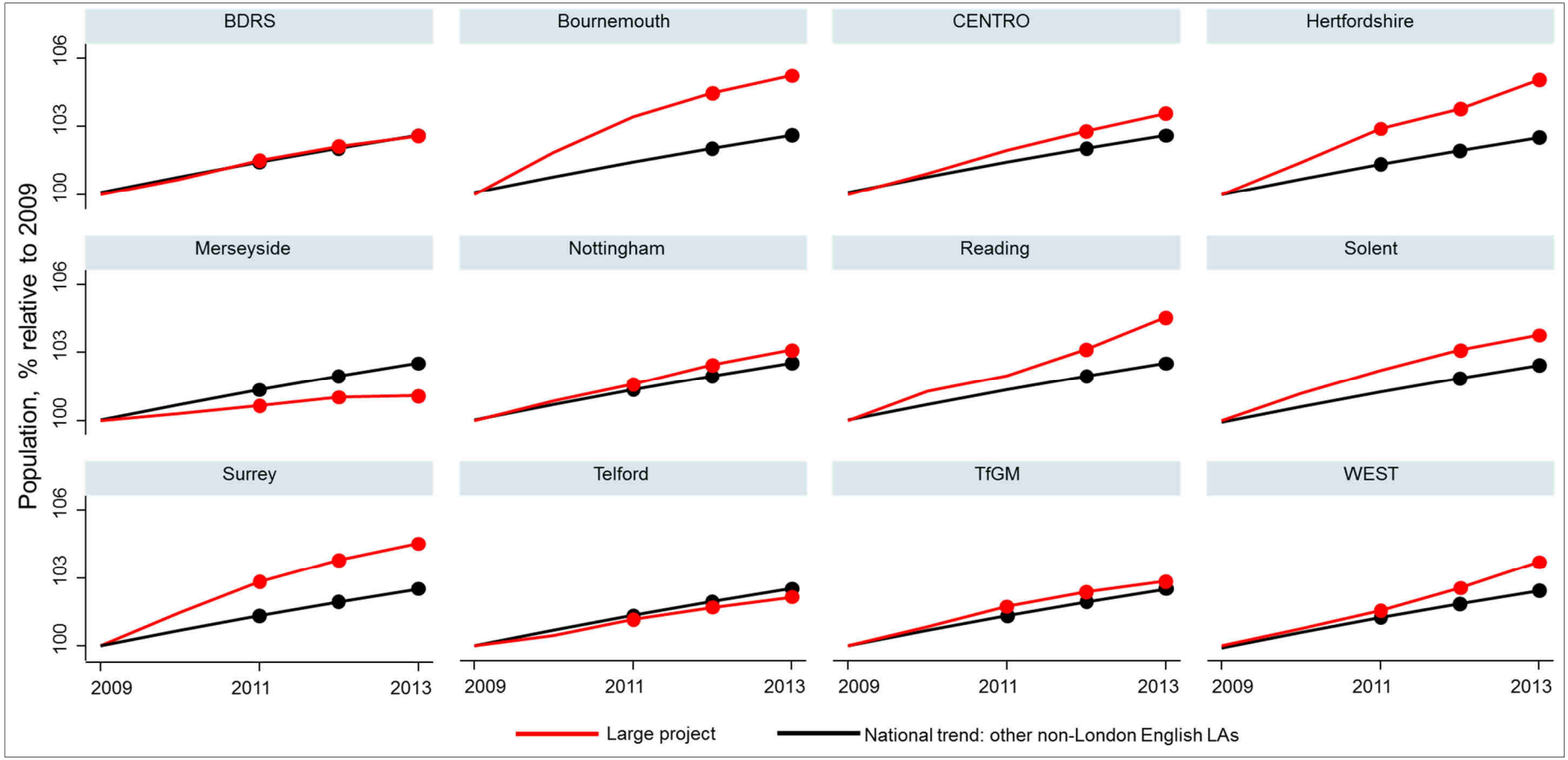
2.2 Population and employment in the Large Projects

Table 2.2 gives figures for the population of the local authority areas covered by the 12 Large Projects, and for the number of jobs in those local authority areas, and shows how these figures have changed since the start of the LSTF programme. Changes in population and employment over the period of the LSTF programme are also shown in Figures 2.1 and 2.2.

All 12 Large Projects were located in areas where total population was increasing. In nine of the Large Projects the rate of population growth was greater than for all other English local authorities outside London, which is our main comparator for this meta-analysis.

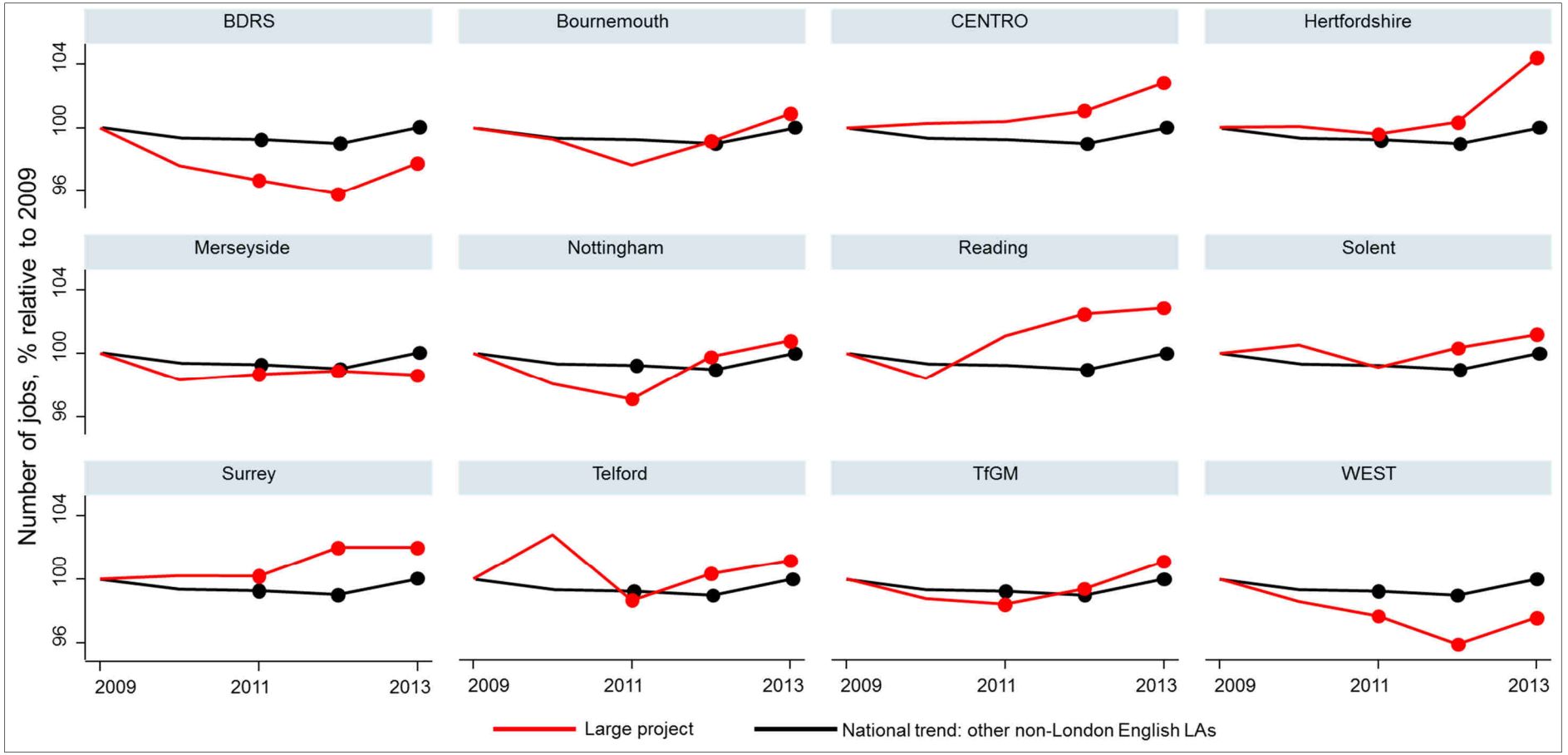
Nine of the Large Projects saw an increase in employment since the start of the LSTF programme, in every case greater than the increase shown by all other English local authorities outside London. Three of the Large Projects (BDRS, Merseyside and WEST) saw little overall change or a small decrease in employment since the start of the programme.

Figure 2.1: Population by year for 12 Large Projects and nationally, relative to 2009



Filled circles show years when Large Projects were receiving funding.

Figure 2.2: Employment by year across 12 Large Projects and nationally, relative to 2009



Filled circles show years when Large Projects were receiving funding.

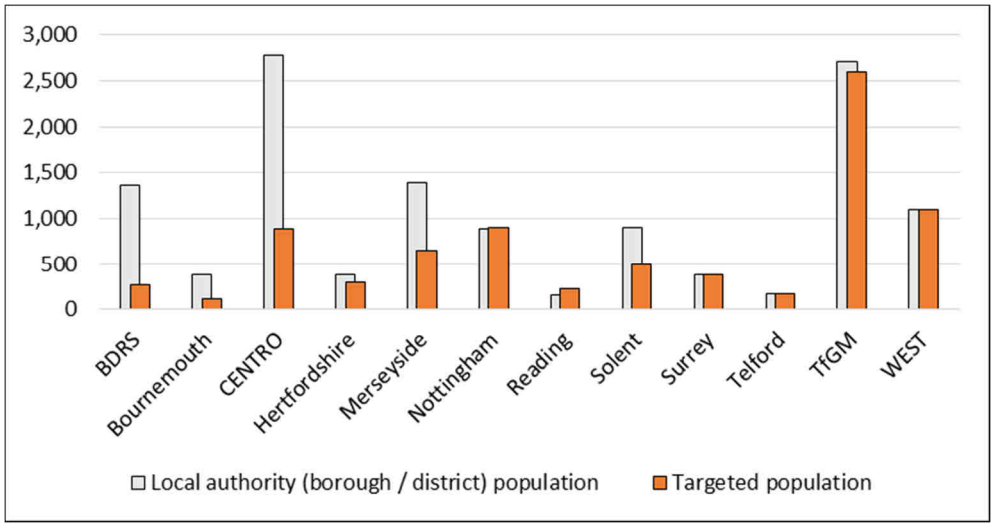
Table 2.2: Population and employment in Large Project boroughs in 2013, and change relative to 2009-2011

	Population		Number of jobs	
	2013 (1000's)	Relative change vs. 2009-2011	2013 (1000's)	Relative change vs. 2009-2011
BDRS	1,358	+1.8%	532	-0.3%
Bournemouth	386	+3.4%	176	+1.9%
Centro	2,783	+2.6%	1,190	+2.6%
Hertfordshire	385	+3.6%	204	+4.5%
Merseyside	1,387	+0.8%	540	-0.4%
Nottingham	886	+2.3%	405	+2.4%
Reading	159	+3.4%	98	+3.0%
Solent	896	+2.6%	391	+1.3%
Surrey	382	+3.1%	189	+1.9%
Telford	168	+1.6%	79	+0.7%
TfGM	2,715	+2.0%	1,208	+2.1%
WEST	1,093	+2.9%	547	-1.2%
Other English LAs excluding London	*32,850*	*+1.8%*	*13,970*	*+0.5%*

Figures are for population and number of jobs in most relevant boroughs / districts, *not* for population and jobs within LSTF target area. LSTF target area is usually smaller but in two cases (Nottingham and Reading) slightly larger. Large Project boroughs / districts included in these totals are listed in Appendix 1.1. Population source: ONS mid-year population estimates. Employment source: Business Register and Employment Survey (BRES).

Figure 2.3 illustrates the range in size of the 12 Large Projects in terms of their borough or district population, and also shows the extent to which the projects were concentrated on just part of that population. For five of the Large Projects the targeted population was substantially smaller than the overall borough or district population. This difference should be kept in mind when interpreting findings from analysis of secondary datasets based on borough or district-level figures.

Figure 2.3: Population of Large Project areas in 2013 (1000's)



Figures for targeted population are from Outcomes Reports, Outputs Surveys, Monitoring Plans, Large Project Initial Proposals or Large Project Business Cases. For Nottingham and Reading, the targeted population is larger than the local authority population because the LSTF project covered the whole urban area, including small parts of Nottinghamshire (for the Nottingham Large Project) and West Berkshire and Wokingham (for the Reading Large Project). For WEST, the targeted population for the first year of funding (Key Component, 2011/12) was the 550,000 people living along 11 Key Commuter Routes, but this was expanded to the whole population of the four local authority areas in subsequent years.

3 Overview of inputs and outputs

3.1 Inputs according to capital or revenue expenditure

Figure 3.1 illustrates how expenditure in the 12 Large Projects changed over the first three years of the programme (2011/12 – 2013/14), and how it was split between capital and revenue schemes. The figures include both the DfT grant and local contribution.

Capital expenditure was generally somewhat more than revenue expenditure, although there are exceptions to this in some places and years. Nevertheless, it is notable that revenue expenditure represented a significant proportion of the total, ranging from 26% (Bournemouth) to 73% (Reading).

Two main patterns are apparent from Figure 3.1. In some cases, both capital and revenue expenditure rose over time (e.g. BDRS, CENTRO, Solent); in others, capital expenditure peaked in 2012/13 and then declined, while revenue expenditure rose steadily (e.g. Nottingham, TfGM, WEST).

3.2 Inputs: proportion of project completed

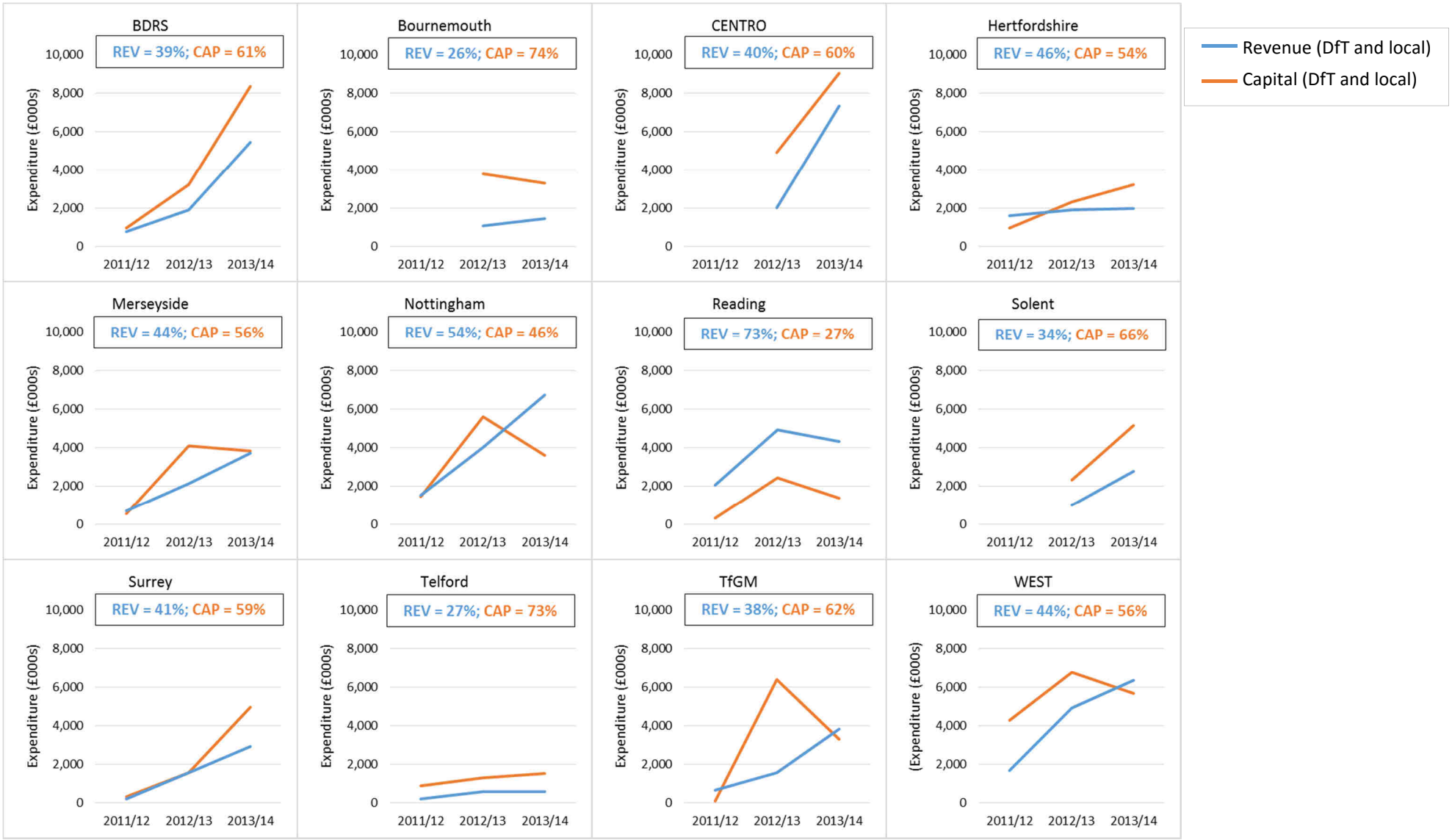
Table 3.1 summarises how far towards 'project completion' each of the Large Projects was by the end of 2013/14, which is the most recent date for which evidence on outputs and outcomes was available for this interim meta-analysis.

Most projects were about 50% complete, although Hertfordshire and Nottingham were three-quarters' complete, and TfGM was only one-quarter complete. There thus appears to be a significant degree of 'back-end loading' in the profiling of expenditure, with a large amount of the total grant likely to be spent in the final year of the project (2014/15). In some cases this reflects the existence of large capital schemes that required a lengthy planning phase incurring relatively little expenditure, with the main 'spend' occurring near the end. An example of this is the Telford Town Centre Transport Scheme, a major public realm and traffic management project, involving redesign of the dual carriageway Box Road around the main Telford shopping centre. There are also some indications from Annual Outputs Surveys of recruitment of teams to deliver behaviour change and other programmes having taken longer than expected, or of procurement for some projects taking longer than expected, so that expenditure had to be re-profiled.

Table 3.1: Progress towards project completion by end 2013/14

Large Project	Proportion of DfT total grant spent	Proportion of DfT revenue allocation spent	Proportion of DfT capital allocation spent
BDRS	54%	54%	55%
Bournemouth	62%	60%	64%
CENTRO	46%	43%	51%
Hertfordshire	77%	82%	71%
Merseyside	48%	44%	52%
Nottingham	70%	63%	82%
Reading	56%	84%	30%
Solent	48%	59%	42%
Surrey	63%	63%	62%
Telford	42%	73%	36%
TfGM	23%	24%	22%
WEST	61%	65%	54%
Unweighted average	*54%*	*60%*	*52%*

Figure 3.1: Inputs: capital and revenue expenditure on LSTF programmes 2011/12 – 2013/14, including DfT grant and local contribution



3.3 Inputs according to project activity

The Large Projects report their expenditure against up to seven 'scheme elements'. Approaches to defining scheme elements vary between the Projects: in some cases they relate to the type of intervention, in some cases to the modes of transport affected, and in other cases to geographical location. This makes it difficult to disaggregate overall expenditure in a consistent way across the 12 Large Projects. However, by examination of the principal activities and achievements in each scheme element, as given in Annual Outputs Surveys, it is possible to subdivide expenditure into the following broad categories:

- CW: cycling and walking infrastructure and services (including cycle / pedestrian routes, crossings and signage, cycle loan schemes, cycle training, 20mph zones[4])
- B: bus infrastructure and services (including bus priority measures, real time information, bus stop upgrades, new bus services)
- TM: traffic management (including changes to road layout or signalling in congestion hotspots, traffic signal control technology, variable message signs aimed at drivers, streetworks management, parking enforcement)
- SC: smarter choice measures (including workplace, school and personalised travel planning, travel awareness campaigns, travel information websites, advice and services for job-seekers)
- O: other measures (including new access roads to development sites, electric charging points, park and ride[5], monitoring, programme management).

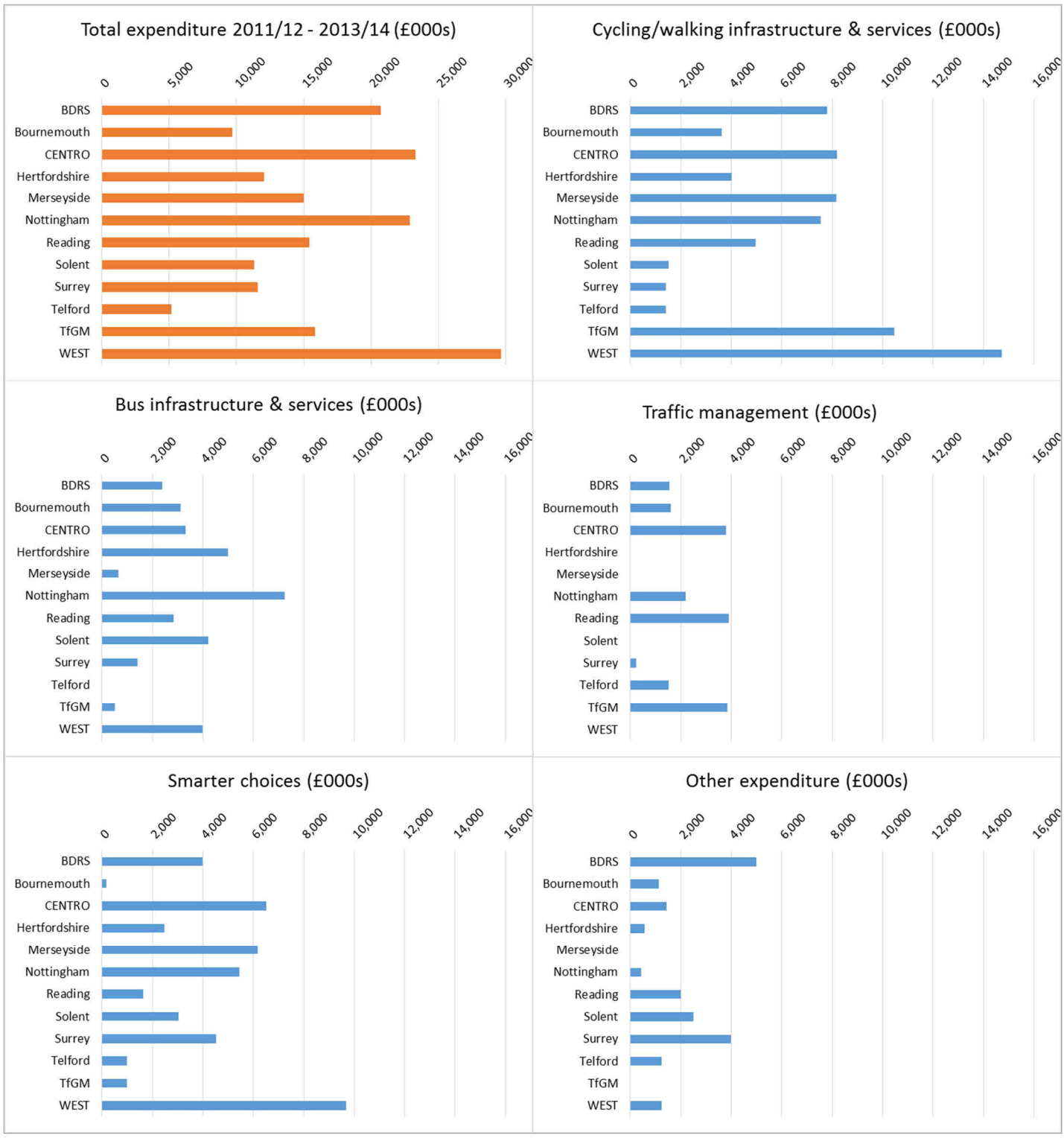
Expenditure figures in each of these categories were estimated from the scheme element financial data provided in Annual Outputs Surveys, and where there were uncertainties because of the way that scheme elements were defined, these were checked with the project manager.

Figure 3.2 shows estimated expenditure in each category (in £000s) for the 12 Large Projects; Figure 3.3 shows the estimated proportions of expenditure in each category; and Figure 3.4 shows the estimated expenditure per head of population in the targeted area.

[4] But note that in some cases, revenue measures related to cycling and walking may be categorised as 'smarter choice measures', because they are grouped by the Large Project in a scheme element with multi-mode smarter choice measures.

[5] Park and ride is considered as a 'bus' measure by some Large Projects.

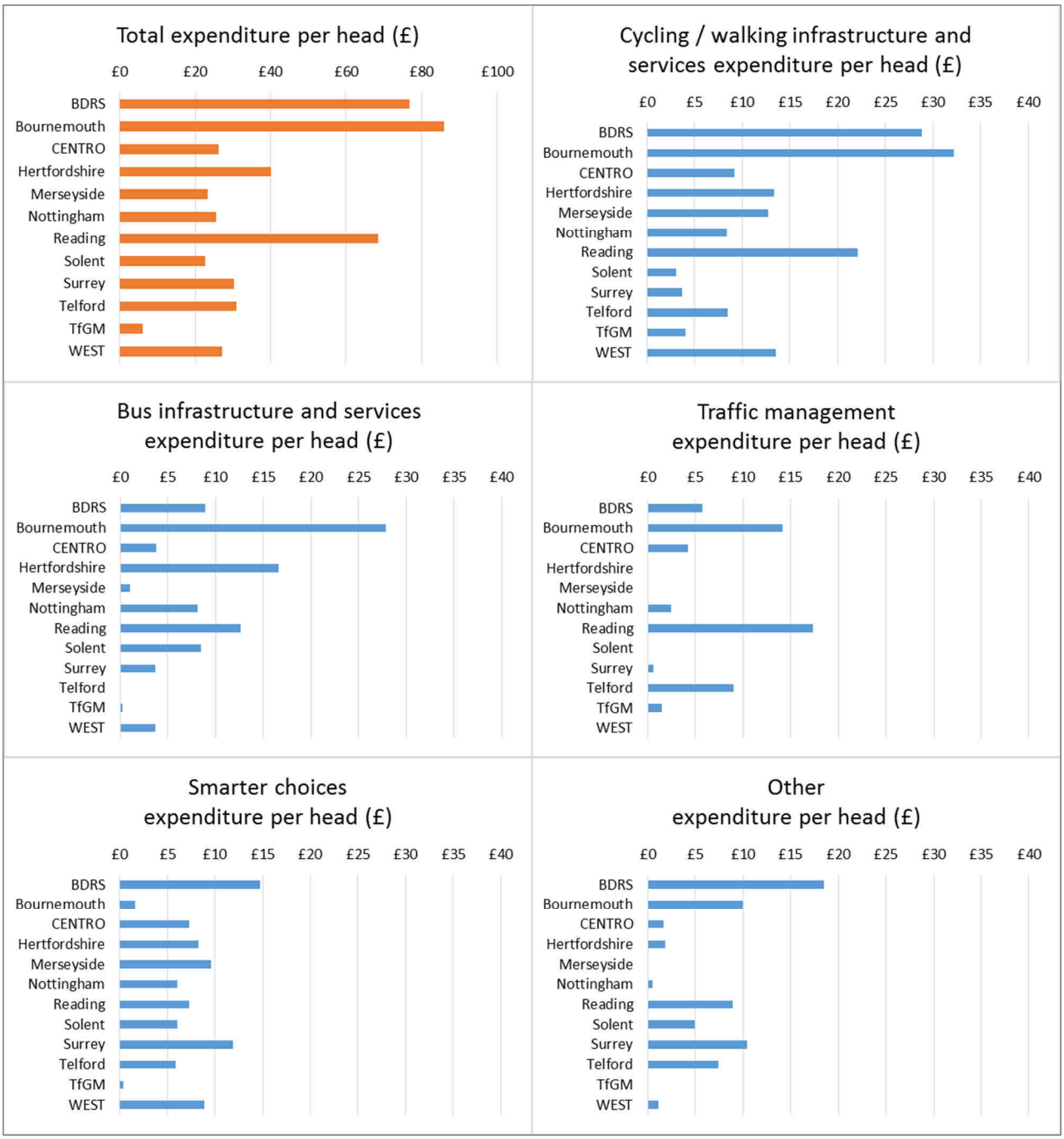
Figure 3.2: Estimated expenditure according to type of activity, including DfT grant and local contribution



'Other' expenditure includes new access roads to development sites, electric charging points, park and ride infrastructure, monitoring and programme management.

Figure 3.3: Estimated expenditure proportions according to type of activity, including DfT grant and local contribution

Figure 3.4: Estimated expenditure per head of population in targeted area (including DfT grant and local contribution), according to type of activity



Note that denominator is the population in the LSTF targeted area, as summarised in Table 3.2 (*not* the population of the relevant boroughs).

From these plots we can see how the Large Projects differ in terms of their emphasis:

- **Cycling and walking** were a significant focus (relative to other categories of expenditure) for all the Large Projects apart from Solent and Surrey; the highest investment in absolute terms was in BDRS, CENTRO, Merseyside, Nottingham, TfGM and WEST; the highest investment per head of population was in BDRS, Bournemouth and Reading.
- **Bus infrastructure and services** were a significant focus for Bournemouth, Hertfordshire, Nottingham and Solent; the highest investment in absolute terms was in Hertfordshire, Nottingham, Solent and WEST; the highest investment per head of population was in Bournemouth, Hertfordshire and Reading.
- **Traffic management** was a significant focus for Reading, Telford and TfGM; the highest investment in absolute terms was in CENTRO, Reading and TfGM; the highest investment per head of population was in Bournemouth and Reading.
- **Smarter choices** was a significant focus for all Large Projects apart from Bournemouth, Reading and TfGM; the highest investment in absolute terms was in CENTRO, Merseyside, Nottingham and WEST; the highest investment per head of population was in BDRS and Surrey.
- There were significant '**other**' items of expenditure in four Large Projects. These included access roads to development sites (BDRS, Surrey); construction of car parks for park and ride (Surrey, Telford); and public realm enhancement at a station (Solent).

Table 3.2 summarises the estimated expenditure figures (absolute amount and per head of population) in each category and overall. From these figures it is apparent that some Large Projects were tightly focussed on a limited geographical population, while others chose to spread their investment more thinly. At the one extreme, with high expenditure per head of population, are BDRS, Bournemouth and Reading. At the other extreme, with low expenditure per head of population, is TfGM.

3.4 Outputs: cycling and walking

The 2013/14 Outputs Surveys asked all LSTF authorities to provide figures for some key outputs from all years of the programme, so as to enable estimates to be made of the overall outputs from the Fund. These do not capture every aspect of the activity undertaken by LSTF projects, but they can be used to give an indication of the intensity of activity in the different categories listed in section 3.3.

For CW (cycling and walking infrastructure and services) the indicators for which data were collected were:

- Number of cycle parking spaces introduced or upgraded
- Distance in km of new / improved on-road cycle lanes, off-road cycle paths, off-road shared pedestrian / cycle routes and pedestrian only routes
- Number of adults taking up various services to encourage cycling or walking: bike maintenance services or classes; cycle training; bike buddy schemes; led walks; led cycle rides; cycle loans; other services.

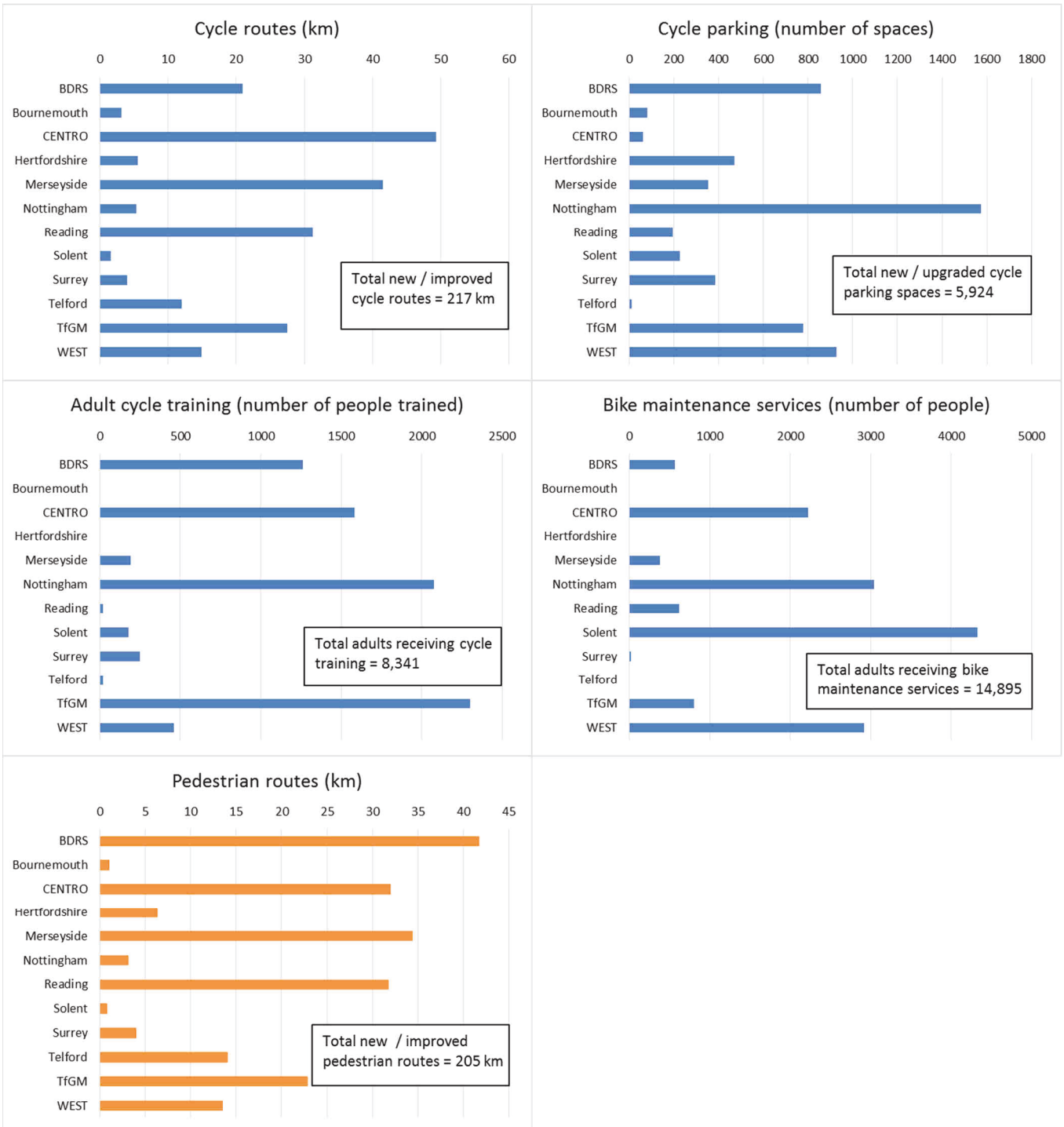
Figure 3.5 summarises selected cycling and walking output indicators for which most Large Projects reported activity. The Large Projects with the most significant cycling-related outputs so far appear to be BDRS, CENTRO, Nottingham, TfGM and WEST (matching fairly well to the Large Projects with high expenditure on cycling and walking).

Table 3.2: Estimated expenditure according to type of activity, including DfT grant and local contribution, 2011/12 – 2013/14

Large Project	Population of target area	Expenditure (£000s)						Expenditure per head (£)					
		CW	B	TM	SC	O	TOTAL	CW	B	TM	SC	O	TOTAL
BDRS	270000	7,794	2,400	1,545	3,982	4,996	20,716	£29	£9	£6	£15	£19	£77
Bournemouth	112500	3,620	3,132	1,595	185	1,121	9,653	£32	£28	£14	£2	£10	£86
CENTRO	892000	8,188	3,323	3,802	6,510	1,444	23,267	£9	£4	£4	£7	£2	£26
Hertfordshire	300000	4,010	4,988	0	2,477	554	12,029	£13	£17	£0	£8	£2	£40
Merseyside	643620	8,169	644	0	6,165	0	14,978	£13	£1	£0	£10	£0	£23
Nottingham	899000	7,551	7,253	2,182	5,434	436	22,856	£8	£8	£2	£6	£0	£25
Reading	225000	4,983	2,831	3,908	1,641	2,009	15,372	£22	£13	£17	£7	£9	£68
Solent	501000	1,515	4,220	0	3,040	2,493	11,268	£3	£8	£0	£6	£5	£22
Surrey	382000	1,412	1,409	221	4,528	3,980	11,550	£4	£4	£1	£12	£10	£30
Telford	167000	1,408	0	1,508	988	1,233	5,137	£8	£0	£9	£6	£7	£31
TfGM	2600000	10,477	502	3,850	983	0	15,812	£4	£0	£1	£0	£0	£6
WEST	1093000	14,729	3,985	0	9,695	1,240	29,649	£13	£4	£0	£9	£1	£27

CW = cycling and walking infrastructure and services; B = bus infrastructure and services; TM = traffic management; SC = smarter choice measures; O = other measures

Figure 3.5: Outputs: cycling and walking infrastructure and services



Note that there is overlap between cycle routes (km) and pedestrian routes (km) as shared cycle / pedestrian routes are included in both.

3.5 Outputs: buses and other public transport

Indicators collected in 2013/14 Output Reports in relation to buses and other public transport were:

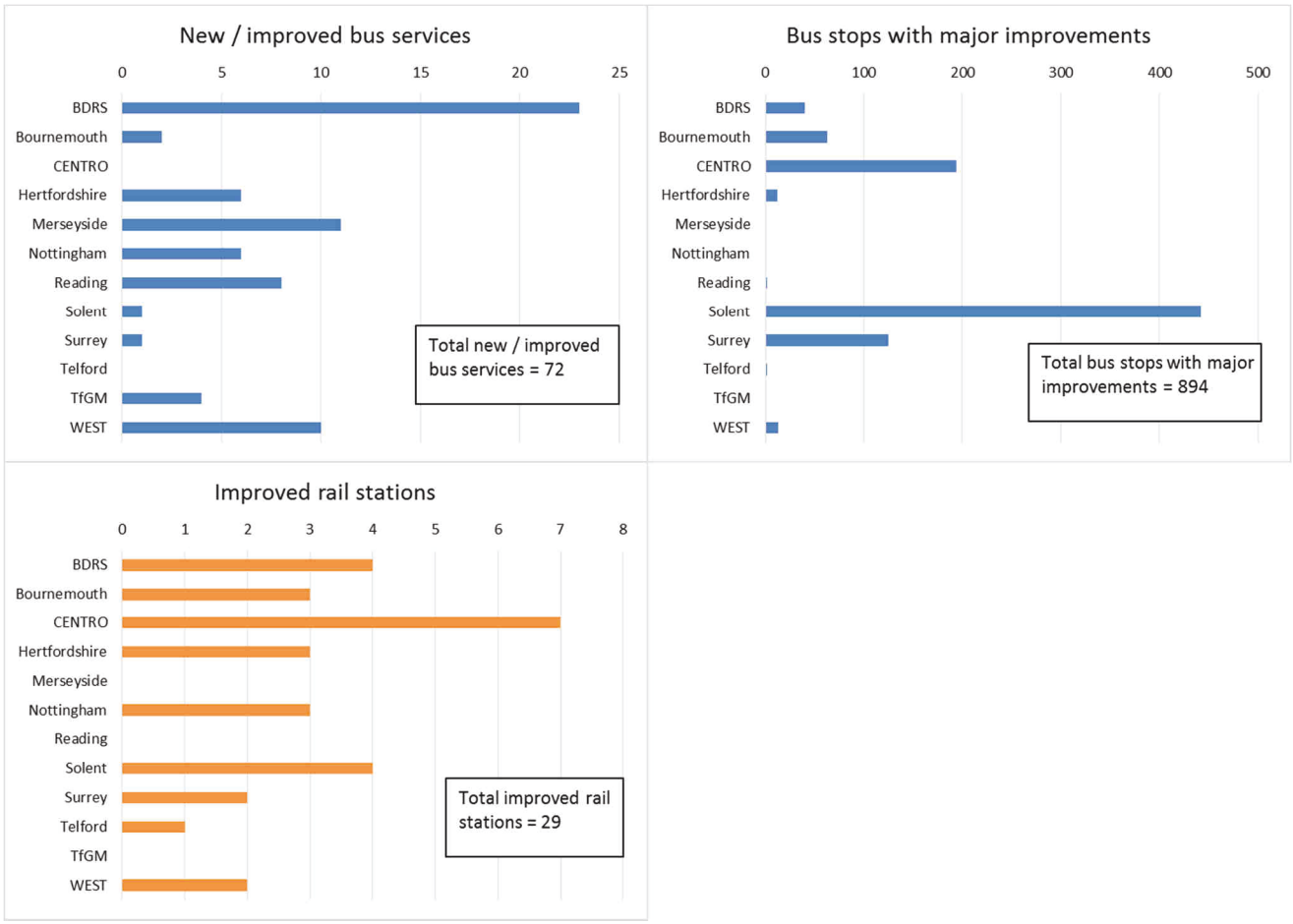
- Number of rail stations with improvements for passengers (e.g. access improvements for pedestrians, cyclists, bus or taxi users; car parking management measures; cycle hire; cycle

parking; improvements to waiting facilities such as lighting, CCTV, shelters and information; or a new station built)

- Number of new or significantly improved bus services (e.g. services with increased frequencies, route extension or vehicle quality improvements)
- Number of bus stops with major improvements (e.g. real time information, raised kerbs or other accessibility improvements, or major upgrade of the waiting environment).

Figure 3.6 summarises these indicators. The Large Projects with the most significant bus outputs so far appear to be BDRS, CENTRO and Solent.

Figure 3.6: Outputs: bus and rail infrastructure and services



3.6 Outputs: smarter choices

Indicators collected in the 2013/14 Output Reports in relation to smarter choice measures were:

- Number of workplaces where new services, facilities or activities have been provided to reduce single-occupancy car use (e.g. discounted public transport tickets for staff; real-time information screens; dedicated bus services for employees; car-share schemes; cycle parking or other sustainable travel facilities; Dr Bike sessions; or sustainable travel challenges)
- Number of schools where new services, facilities or activities have been provided to reduce car use for the 'school run' (e.g. discounted public transport tickets; walking buses; cycle parking; Dr Bike; Bike It; sustainable travel challenges and incentive schemes)
- Number of households that have received personal travel planning information, incentives and advice (PTP)

- Number of adults receiving PTP at workplaces, at stations or via events or stalls elsewhere.

Figure 3.7 summarises these indicators. All Large Projects apart from Bournemouth, Surrey and Telford have delivered smarter choice outputs on a significant scale.

Figure 3.7: Outputs: smarter choice measures

3.7 Qualitative summary of project activities

The remainder of this chapter describes each of the Large Projects in turn, focussing on the main strands of their activity and how these activities relate to the objectives of the Fund. Information on the main activities is principally drawn from responses to the 2013 and 2014 Annual Outputs Surveys, which report schemes and projects that have been delivered during the financial years 2012/13 and 2013/14. Key activities are described in the form used by the Large Projects to report their main scheme elements, except where scheme element names would give a misleading impression of the actual activity.

BDRS

Area covered by the project

The Barnsley, Doncaster, Rotherham and Sheffield (BDRS) Combined Authority Large Project covers the South Yorkshire metropolitan area, which has a total population of 1.3 million. However, within this area, activity is concentrated in four broad corridors, described below, with a combined population of 270,000 people†. The project is being delivered by a partnership of the four local authorities of Barnsley, Doncaster, Rotherham and Sheffield and the South Yorkshire Passenger Transport Executive (SYPTE).

Main strands of activity

BDRS Combined Authority's LSTF activity is taking place in four corridors between Barnsley, Doncaster, Rotherham and Sheffield. The main activities in each corridor are as follows:

- 'Barnsley Accessibility Improvement Corridor' (12km stretch of main road between Barnsley and Doncaster): cycle paths, traffic management measures, and a more frequent 'Job Connector' express bus service to provide better access to out of town employment sites.
- 'Dearne Valley Enterprise Corridor' (area south of Barnsley): cycle routes, bus priority, traffic management, a park and ride service, and a new Job Connector bus service to industrial estates.
- 'Don Valley Enterprise Corridor' (Sheffield, Rotherham, and the area between them): bus priority, traffic management, tram stops, cycle paths and a feeder bus service to a tram stop.
- 'Doncaster Regeneration Corridor' (Doncaster and an area extending about 8km north-west): highway improvements to support regeneration of the Waterfront area and congestion-relief measures.

In addition, the local authorities have developed various interventions intended to encourage sustainable travel, which are described as a 'Business and Employer Sustainability Toolbox'. These include ECO Academy (training driving instructors so that they can teach eco-driving techniques; eco-driver training for company drivers and novice drivers); Busboost (free public transport trial tickets for employees); Walkboost (information and activities to encourage people to walk to work, school and local shops); and Cycleboost (cycle training, cycle maintenance sessions, cycle loan, cycle parking grants for businesses). There is also a Wheels to Work service providing short-term loan of a motor scooter to enable people to get to work, education or training.

How activities relate to objectives of the Fund

The four corridors were chosen on the basis of local need and their high potential for economic growth. The project is seeking to widen access to the labour market through a combination of 'Job Connector' bus services, loan of motor scooters and bicycles, and travel training and free bus tickets for people seeking work. A significant proportion of expenditure is on traffic management measures designed to reduce congestion and improve vehicle flow.

Most of the interventions are designed to encourage modal shift towards lower-carbon modes of travel. The ECO Academy interventions will reduce carbon emissions by teaching eco-driving techniques to new drivers and company drivers.

† BDRS (2014) LSTF Output Survey Q40iv

Bournemouth

Area covered by the project

The Bournemouth 'Three Towns' Large Project is focussed on an east-west 16km transport corridor connecting Poole, Bournemouth and Christchurch. The corridor includes the A35 (an important bus corridor) and the parallel London to Weymouth mainline railway which calls at six stations along this section of its route. The SE Dorset conurbation has a population of almost 450,000, and it is estimated that about a quarter of the total population is within the Large Project area†. The project is being delivered jointly by the three local authorities of Bournemouth Borough Council, Borough of Poole and Dorset County Council.

Main strands of activity

The main activities in the Poole – Bournemouth – Christchurch corridor are as follows*:

- Enhancing low carbon options through bus priority measures at signals and junctions; a bus quality agreement with operators; cycle lanes; cycle parking; signing; pedestrian crossings; electric vehicle charging points
- Managing the corridor more efficiently through traffic signal control improvements; CCTV and number plate recognition technology; and better parking enforcement
- Improving integration through upgrade of bus stops and shelters; a series of bus 'Super Stops'; real time information; signage and minor walk / cycle access improvements to stations; and cycle hire at stations
- Influencing behaviour through travel planning with businesses and schools and at stations
- Public realm improvements including removing street clutter, using high quality materials and installing traffic calming 'gateway treatments'.

How activities relate to objectives of the Fund

Traffic management activities and better alternatives to driving are intended to reduce congestion in the corridor and improve connectivity, which in turn will help to retain and attract higher value, higher wage businesses in an area with a relatively low wage economy. Housing and employment development is planned in the corridor, and without action to smooth traffic flow and shift to other modes, this would place additional pressure on the road network.

The interventions are designed to support a shift towards lower-carbon modes of travel, especially for shorter journeys, by removing both the practical barriers and the perceptual barriers to sustainable travel.

† Bournemouth Borough Council (2011) LSTF Large Project Initial Proposal

* Bournemouth Borough Council (2013) LSTF Outcome Monitoring Report: Baseline Data

CENTRO

Area covered by the project

The CENTRO Large Project is focussed along ten corridors radiating from urban centres in the West Midlands metropolitan area, between Birmingham, Wolverhampton, Walsall, Dudley, Solihull and Coventry. Monitoring of the CENTRO Large Project also includes a corridor in South Coventry where LSTF small project funding was secured for a Cycle Coventry project. Around 892,000 people live within 800m of one of the eleven corridors†. CENTRO is the coordinating authority for the project, with the involvement of Birmingham, Coventry, Dudley, Sandwell, Solihull, Walsall and Wolverhampton councils.

Main strands of activity

The main activities in the corridors are as follows*:

- Infrastructure improvements, including cycle paths and lanes, pedestrian / cycle crossings, footway widening, pavement build-outs at bus stops, bus shelters, traffic signal priority schemes for buses, changes to traffic signals to optimise vehicle flow, pedestrian and cycle access improvements to stations, pedestrian direction signage to metro stops.
- Smarter choice measures including Workwise (providing a free travel pass or cycling support to job-seekers), workplace travel planning, school / college / university travel planning, personalised travel planning, cycle services including bike maintenance and cycle training, station travel planning.
- Technology 'showcase' including real time information at bus stops and roll-out of smart cards.

Most corridors are receiving all three types of intervention. However, three corridors where there have recently been significant infrastructure improvements are mainly receiving smarter choice and technology showcase interventions.

How activities relate to objectives of the Fund

The activities are intended to encourage modal shift to sustainable transport, hence reducing congestion and improving journey time reliability for all road users, and reducing carbon emissions^. By helping the transport network to function more efficiently, the project aims to improve access to employment. This is particularly important for the targeted corridors, because they have lower than average employment rates.

† CENTRO (2013) Smart Network, Smarter Choices Outcome Monitoring Plan

* CENTRO (2013, 2014) LSTF Output Surveys

^ CENTRO (2011) LSTF Large Project Initial Proposal

Hertfordshire

Area covered by the project

The Hertfordshire Large Project covers the three towns of Hemel Hempstead, St Albans and Watford and their travel to work areas. This is an area of about 10 miles east-west by 10 miles north-south, including the whole of the Watford and St Albans districts and large parts of Dacorum and Three Rivers districts. There is a population of about 300,000 people within the project area†.

Main strands of activity

The main activities are as follows*:

- Walking and cycling infrastructure, including a pedestrian / cycle route from a major business park (Maylands) to Hemel Hempstead town centre, public realm enhancements on a 1km route in the business park, completion of a St Albans 'Green Ring' pedestrian / cycle path, a cycle route in Watford, and cycle parking at rail stations and two hospitals.
- Better public transport services, including a new high frequency bus service, new buses for routes between Watford and Hemel Hempstead, real time passenger information, bus stop upgrades in Maylands Business Park, and a Maylands Link dedicated bus service to Hemel Hempstead rail station.
- Independent travel training to enable pupils with special education needs to use public transport, and loan of scooters to help people gain access to work.
- Smarter choice measures, including personalised travel planning in St Albans and Hemel Hempstead, promotion of multi-operator bus tickets, workplace travel planning at Maylands Business Park and elsewhere, school travel planning, and cycle challenges and led cycle rides.
- Technology to improve bus services, including a smart ticketing app for mobile phones and equipment to support real time passenger information.

How activities relate to objectives of the Fund

The activities are intended to encourage modal shift to sustainable transport, hence reducing both congestion and carbon emissions. The Project is particularly focussed on encouraging modal shift for travel to work at major employment sites such as Maylands Business Park, which is next to the M1 and has 700 businesses and 20,000 employees.

Air quality is a significant issue in the Large Project area: there are six Air Quality Management Areas in Watford, three in St Albans, and one in Three Rivers^.

† Hertfordshire CC (2011) LSTF Large Project Initial Proposal
* Hertfordshire CC (2014) LSTF Output Survey
^ Hertfordshire CC (2011) LSTF Large Project Initial Proposal

Merseyside

Area covered by the project

The Liverpool City Region Combined Authority (Merseyside) Large Project includes projects in all five local authority areas (Knowsley, Liverpool City, Sefton, St Helens and Wirral). Activity is focussed on eight sub-areas within these local authorities: Kirkby, North Liverpool, South Liverpool, South Sefton, St Helens, Lea Green, Haydock and East Wirral. The population within the eight targeted areas is 643,620†.

Main strands of activity

The main activities delivered so far are as follows*:

- Working with employers: travel planning support and grants for businesses; personal travel planning and free travel passes for people living along public transport corridors; an 'Employment in the Transport Sector' programme supporting young job-seekers in securing transport-related jobs
- Travel solutions: personalised support to people who find it difficult to access work by public transport, including travel training / journey planning, free one-month travel passes, free bicycles, cycle training, cycle maintenance training, scooter loan, and 'how to get to…' guides for major employment sites
- Sustainable transport infrastructure: cycle and pedestrian paths to and near employment sites, 20mph zones and safe crossings
- Bus services: extensions to hours of operation and route to improve access to key employment sites.

How activities relate to objectives of the Fund

A major focus of the Merseyside project is on increasing the opportunity for people to access employment by broadening travel horizons. This is being achieved through personalised travel support, coupled with a range of services such as cycle training and free travel, particularly aimed at young adults and NEETs. Extensions to bus services to major employment sites, new cycle paths to these sites, and workplace travel planning assistance to employers are also making it easier for people to get to work.

† Liverpool CRCA (2014) LSTF Output Survey

* Merseyside ITA (2013) and Liverpool CRCA (2014) LSTF Output Surveys

Nottingham

Area covered by the project

The Nottingham Urban Area Large Project covers the whole of the Nottingham City Council administrative area and the built up areas of the Nottingham conurbation within the boroughs of Broxtowe, Gedling, Rushcliffe and the Hucknall town part of Ashfield district in Nottinghamshire, and the boroughs of Erewash and Amber Valley in Derbyshire. This area has a population of 899,000†.

Main strands of activity

The main activities are as follows*:

- Smartcard development: the project has developed a smartcard which is accepted on all bus, tram and local train services in the city, enabling unlimited travel for a day or for 1, 3, 6 or 12 months. The same smartcard can also be used to access cycle hire, secure cycle parking, and a range of non-transport services.
- Liveable neighbourhoods and community smarter travel hubs: five virtual 'community hubs' have been established for different areas of the city. These provide discounted travel for people with a new offer of employment; journey planning support; community activities such as led cycle rides and walks; cycle training; cycle maintenance and other services. An area-wide 20mph speed limit is being introduced on residential roads across the city.
- 'Worksmart' business support and low carbon transport network: travel planning with businesses; ECO Stars fleet management and driver efficiency programme; a mobile travel centre 'Infobus' providing personalised journey planning and other services; development of electric bus services linking key employment sites; cycle paths.
- Active travel: cycling promotional events; a 'Ucycle' active travel partnership with FE/HE institutions including a bike loan scheme and cycle parking; cycle training and Bike It support to schools.

How activities relate to objectives of the Fund

The LSTF programme is taking place in the context of a major £750 million transport investment programme in Nottingham, including expansion of the tram network, redevelopment of the station, and improvements to the Link Bus network of services. Resources invested through LSTF are intended to help realise the full potential of the large-scale capital programme, increasing economic competitiveness, creating capacity for growth, and attracting inward investment. At the same time, the programme is designed to make low carbon travel options more attractive, link people to jobs, and support active travel.

† Nottingham City Council (2011) LSTF Large Project Initial Proposal
* Nottingham City Council (2013 and 2014) LSTF Output Surveys

Reading

Area covered by the project

The Reading Large Project covers the whole of the Reading built-up area, including parts of West Berkshire and Wokingham unitary authorities. The total population of the wider urban area is about 225,000†. The project is coordinated by Reading Borough Council with West Berkshire and Wokingham councils.

Main strands of activity

The main activities delivered so far are as follows*:

- Personalised travel planning: offered to households, via workplaces and via roadshows at retail centres, job centre and community events.
- Fares and information for drivers / travellers: fares discounts on selected bus routes; an improved travel information website; changes to traffic signals to optimise vehicle flow; variable message signs to provide information to drivers about congestion, journey times and car park status; development of a journey time monitoring system.
- Public cycle hire: preparation for a scheme launched in June 2014, with 29 docking stations across the urban area.
- Active travel: workplace cycle challenge, community walking challenge, Bike It cycling promotion at primary schools, cycle parking, lighting and signing of pedestrian / cycle routes.
- Park and ride: planning for delivery of several new park and ride / park and rail sites.

How activities relate to objectives of the Fund

Reading has seen strong economic growth and low unemployment in the recent past and planned developments will add about 400,000 additional daily trips to the transport network over the next 15 years^. There is insufficient highway capacity to accommodate significant traffic growth, and limited scope to increase highway capacity. The LSTF programme is intended to encourage more use of sustainable modes of travel, so as to enable local economic growth without unacceptable increases in congestion.

† Reading Borough Council (2011) LSTF Large Project Partnership Business Case

* Reading Borough Council (2013 and 2014) LSTF Output Surveys

^ Reading Borough Council (2011) LSTF Large Project Partnership Business Case

Solent

Area covered by the project

The Solent Transport Large Project is mainly focussed on nine corridors, six of which radiate from Southampton, two from Portsmouth, and one along the Gosport peninsula. Some of the interventions (described below) will also have an effect in the wider South Hampshire area. The population living within postcode sectors likely to be affected by the corridor interventions is 501,000†. The project is being delivered jointly by the three local authorities of Hampshire County Council, Southampton City Council and Portsmouth City Council.

Main strands of activity

The main activities are as follows*:

- Real time information screens and facilities, which have been installed along the nine corridors, in Southampton, and on some bus routes in Portsmouth.
- Legible Cities: pedestrian wayfinding signs installed across Southampton, Portsmouth and six South Hampshire towns.
- Physical infrastructure improvements, mainly on the nine corridors, including bus station and bus stop improvements, bus priority at traffic lights, pedestrian and cycle crossing facilities and cycle paths.
- Preparation for the introduction of a public transport smart card accepted by all bus and ferry operators. This will affect travel both within and outside the nine corridors.
- Behavioural change measures: personal travel planning, commuter challenge, Bike It initiatives with schools, and free public transport for job-seekers.

How activities relate to objectives of the Fund

The South Hampshire economy is less prosperous than the wider south-east. Recent employment growth has tended to be concentrated around the M27 corridor, which limits opportunities for sustainable travel. The LSTF initiatives are intended to improve access by sustainable modes to the main city centres, supporting the creation of new jobs in these locations^.

† Transport for South Hampshire (2013) LSTF Baseline Monitoring and Evaluation Report Table 2
* Transport for South Hampshire (2013) and Solent Transport (2014) LSTF Output Surveys
^ Transport for South Hampshire (2011) LSTF Large Project Initial Proposal

Surrey

Area covered by the project

The Surrey Large Project covers Woking, Guildford and Redhill / Reigate. These three areas have between them a population of 382,000†.

Main strands of activity

The main activities are as follows*:

- Bus priority and corridor improvements: RTPI (real time passenger information) 'back office' systems upgraded; bus priority at traffic signals in Woking; bus stop upgrades on inter-urban routes between Guildford and Woking; bus corridor improvements in all three towns.
- Walking and cycling: three new cycle routes in Woking; 216-space cycle parking hub at Woking railway station.
- Traffic management: Audit of the Urban Traffic Control / traffic signal control system and review of traffic management approach.
- Travel planning: New journey planner / travel information website; development of pedestrian wayfinding signage in the three town centres; cycle training, Go Ride and Bike It projects with schools; cycling festivals in all three towns; business grants scheme and community grants scheme for small-scale sustainable travel infrastructure and projects.
- Large schemes: new park and ride site in west Guildford; new access road to business parks in Woking.

How activities relate to objectives of the Fund

Woking, Guildford and Redhill / Reigate are Surrey's busiest towns and suffer significant congestion, unreliable journey times and severance caused by busy roads, railway lines and rivers which makes it difficult for people to walk or cycle. The projects are intended to reduce town centre congestion, encourage mode shift to buses and cycling, and manage traffic more effectively.

† Surrey County Council (2011) LSTF Large Project Strategic Case lists the populations of the towns i.e. 67,000 (Guildford), 93,100 (Woking), Reigate / Redhill not specified. However, Surrey (2013) LSTF Output Survey quotes higher figures, which are for the relevant boroughs / districts i.e. 140,000 (Guildford), 100,000 (Woking), 140,000 (Reigate / Redhill). Figure quoted here is based on un-rounded 2013 borough / district population estimates for the three areas.

* Surrey County Council (2013 and 2014) LSTF Output Surveys

Telford

Area covered by the project

The Telford Large Project covers the unitary authority of Telford and Wrekin, which has a population of 167,000†. A substantial part of the activity is focussed on a major public realm scheme in the town centre, described below.

Main strands of activity

The main activities are as follows*:

- Telford town centre Box Road scheme: public realm enhancements on one side of the road surrounding the town centre (shared space, 20mph limit); changes to make other sides of the box road two-way for vehicles. This scheme will be completed in 2014/15.
- Telford Central Interchange: improved route from station to town centre, to be delivered in 2014/15.
- Silkin Way multi-user route: re-surfacing and widening of existing off-road cycle path.
- Telford-Newport-Stafford national cycle network route: upgrade of existing off-road cycle path.
- Ironbridge Gorge park and ride: a new car park / park and ride site for visitors to the network of museums in Ironbridge Gorge.
- Travel planning: walking buses at schools, child pedestrian training, car-sharing scheme.

How activities relate to objectives of the Fund

Telford is a sub-regional shopping centre, but its main shopping area was surrounded by a high speed, three lane, one way circulatory system (the Box Road) that acted as a collar preventing expansion. The LSTF project was intended to make the town centre more attractive for shoppers, ensuring that businesses and shops remained viable; and also to facilitate the expansion of the shopping area into a development site on the other side of the Box Road.

† Telford and Wrekin Council (2013) LSTF Outputs Survey

* Telford and Wrekin Council (2013 and 2014) LSTF Output Surveys

TfGM

Area covered by the project

The Transport for Greater Manchester Large Project covers all ten districts of Greater Manchester. This area has a population of almost 2.6 million people†.

Main strands of activity

The main activities are as follows*:

- Local walking and cycling access: better pedestrian access to Metrolink stops; cycle / pedestrian routes to key centres of activity such as town centres and employment sites.
- Travel choices: support for job-seekers, including provision of refurbished bikes, free bus tickets, and personal travel planning; work with businesses including sustainable travel grants, car-sharing scheme, personal travel planning and sustainable travel events at businesses; and residential personal travel planning.
- Traffic management technology: project development work that will ultimately enable better management of traffic signals to optimise vehicle flow; variable message signs to alert drivers to congestion ahead.
- Local Link demand responsive bus services to four employment sites, matching journey needs of shift workers.
- Commuter cycle project: city centre cycle hubs with parking, lockers etc (three out of a planned total of eight completed by 2013/14); adult cycle training; workplace cycle maintenance workshops; work with businesses to promote cycling to employees; cycle challenge.

How activities relate to objectives of the Fund

The project is focussed on commuter trips and support for job-seekers. It aims to make it easier for people to commute into town and city centres by cycling or public transport, hence reducing congestion and carbon. By improving connectivity, it also aims to stimulate economic growth^.

† Transport for Greater Manchester (2011) LSTF Large Project Initial Proposal

* Transport for Greater Manchester (2013 and 2014) LSTF Outputs Survey

^ Transport for Greater Manchester (2011) LSTF Large Project Initial Proposal

WEST

Area covered by the project

The West of England Sustainable Travel (WEST) Large Project covers the city of Bristol plus Bath and NE Somerset, North Somerset and South Gloucestershire Councils. This area has a population of almost 1.1 million people. Projects were particularly focussed on 11 commuter routes, three city / town centres (Bristol, Bath and Weston-super-Mare), three employment clusters (Portbury Docks / Severnside, Bristol Airport and the Bristol North Fringe), four universities and 90 schools.

Main strands of activity

The main activities are as follows*:

- Business engagement: sustainable travel grants, sustainable travel events at workplaces, commuter challenge, cycle loan scheme, 'Go Low' business travel scheme offering businesses use of electric cars and bikes.
- Cycling and walking infrastructure: cycle / pedestrian crossings, cycle / pedestrian routes, lighting of cycle routes, signage, 20mph area-wide schemes, cycle parking.
- Bus service improvements: new or more frequent express / commuter bus services, bus stop improvements, junction treatments to improve bus punctuality.
- Community engagement: sustainable transport community grants programme supporting cycle maintenance, engagement of ethnic minority groups in cycling, all-ability adapted bikes; sustainable travel advice and information via community festivals / events; buggy walking groups.
- Behaviour change at life transitions: personalised journey planning and information packs for residents of new developments; work with universities, including university bus services, bike loan, bike hire scheme, cycle hub; school-based projects including Bike It and cycle training; support for job-seekers including bike and scooter loan.
- Information and marketing: development of next-bus mobile phone app and travel information website; car-share, public transport and cycling promotions.

How activities relate to objectives of the Fund

The primary aim of the WEST project is to reduce road traffic and hence carbon emissions. The project is also intended to improve business efficiency by relieving congestion and increase labour market efficiency by improving access to key employment sites^.

* WEST (2013 and 2014) LSTF Outputs Survey

^ WEST (2011) LSTF Large Project Initial Proposal

PART II: EVIDENCE ON OUTCOMES

4 Traffic and car use

Key points:

All 10 Large Projects for which data were available showed a decrease in traffic in 2013 relative to a 2009-2011 baseline, according to National Road Traffic Estimates (NRTE). The overall change in these ten Large Projects was a reduction of -1.06%. Traffic also decreased in non-Large Project English local authorities outside London over this period, by a slightly smaller amount (-0.75%).

The reduction in traffic in the Large Project local authority areas occurred despite increases in population (nine out of 12 Large Project areas showed a greater rate of population increase than in the national comparator local authorities). It also occurred despite increases in the number of jobs in nine Large Project areas (in every case greater than the increase in jobs in the national comparator local authorities).

Nottingham stands out, with a reduction in traffic of -2.4%, over the same period as an increase in population of +2.3% and an increase in jobs of +2.4%. Also of note are Bournemouth and Reading, with bigger traffic reductions than in other parts of the country despite bigger increases in population and jobs.

Traffic count data at the project level also show declining traffic volumes, consistent with the NRTE evidence, and starting before the beginning of LSTF intervention.

4.1 Overview of objectives targeting traffic

Table 4.1 provides an overview of the objectives listed in the Annual Outcomes Reports that relate to traffic and car use. In most cases, explicit mention of reducing traffic or car use was rare – the only three authorities to mention this were Bournemouth (which had an objective to reduce car trips and total vehicle kilometres); Solent (which aimed to reduce vehicle kilometres) and Nottingham (which was aiming for 'no increase in traffic levels'). Transport for Greater Manchester was intending to use changes in traffic volumes as a proxy measure for changes in carbon dioxide emissions. Most of the other authorities had indirect objectives, relating to reducing congestion (discussed in Chapter 5) and encouraging greater transport efficiency; encouraging modal shift; encouraging active travel; and/or reducing carbon emissions and carbon intensive transport.

4.2 Metrics used to monitor traffic and car use

Traffic flows are usually measured in two ways – either a direct measure of traffic flow (often aggregated from a number of automatic counters), or a measure of vehicle kilometres, calculated from traffic flow and road network data. Data are often drawn from both the Department for Transport's NRTE data collection process, and/or from the authorities' own network(s) of counters. As well as area-wide estimates, Large Projects also often report on data for areas or screenlines that are of particular significance. Large Projects vary as to whether they report 12 hour or 24 hour flows; weekday or 7 day flows; and annual or 'representative month' data. It is common to quote data for all motor traffic, for light vehicles, or for cars only, and the trends are not always the same.

Table 4.1: Summary of objectives relating to traffic or car use

	Summary of traffic/car use objectives*
BDRS	• To facilitate and encourage sustainable commuting
Bournemouth	• Deliver modal shift to low carbon alternatives to the car, particularly for shorter distance commuting and school car trips • Reduce car dependency, with an associated reduction in car trips and total vehicle kilometres
CENTRO	• Facilitate greater network efficiency within the LSTF corridors • Increase active travel (with separate objectives given for short trips by residents; for trips to secondary schools and further education colleges; and for journeys to workplaces)
Hertfordshire	• To ensure the area is an exemplar in reducing carbon emissions from transport • To ensure businesses can access the labour force, suppliers and customers by sustainable means
Merseyside	• Improve the efficiency of the transport system • Achieve an overall reduction in carbon emissions
Nottingham	[Objectives are accompanied by specific targets to:] • Increase sustainable travel modal share by 10% from 2011/12 levels by 2014/15 • No increase in traffic levels contributing to a reduction in carbon emissions from transport by 10% over three years by 2014/15
Reading	• Reduce carbon emissions by bringing about an increase in the volume and proportion of journeys made by lower carbon, more sustainable means of travelling including walking and cycling
Solent	• Enhance business performance, particularly at the international gateways, by increasing the efficiency of the transport network and managing congestion. • Improve sustainable access linking people to jobs and key facilities in our cities and towns. • Reduce emissions (particularly carbon) from the transport sector by reducing highway vehicle kilometres. • Improve levels of physical activity, health and wellbeing through increased active travel.
Surrey	• To provide an integrated transport system that protects the environment, keeps people healthy and provides for lower carbon transport choices
Telford	• [To reduce] carbon emissions through a 10% modal shift to sustainable modes, making walking and cycling more attractive to improve personal health
TfGM	• Reduction in CO_2 emissions, with traffic volumes as a proxy • A focus on promoting low carbon commuting options
WEST	• Improved sustainable transport links / access for employment, training, retail, education and leisure • Increased physical activity and improved health through greater use of walking/cycling for local journeys • Increased use of sustainable transport among students and reduced congestion in adjacent points in the network

* Excluding those relating to congestion, which are given in Chapter 5.

In terms of car use, it is relatively common for Large Projects to report on the mode share of travel inbound to particular urban centres – nine Large Projects did so. Again, Large Projects vary as to whether they report on the share for cars; private vehicles; light vehicles; and whether motorbikes are included or excluded. They also vary as to whether they undertake vehicle occupancy surveys in association with vehicle counts, which determines whether their mode share figures reflect vehicle split or person split.

A variety of other types of survey are also undertaken on modal split – usually either general household surveys, or surveys associated with personalised travel planning, workplace or school travel activity.

4.3 National data and high level outcomes for traffic and car use

There are two sources of available data about changes in car use and traffic levels at the national level – the National Travel Survey, and the National Road Traffic Estimates[6]. National trends are given in Figures 4.1 and 4.2, whilst data for individual Large Projects is given in Figure 4.3. Both datasets are only available to 2013.

In terms of trends, both data sets show a substantial reduction in car use between 2005-2007 and 2009, associated with the recession. Since then, the broad trend is one of stability. Since 2011, NTS data show little change in car driver trips, distance or mode share nationally. NRTE data show traffic as fairly stable since 2011 in local authorities outside the Large Projects; but a dip in traffic between 2012 and 2013 in the Large Project local authorities. Looking at the individual Large Project graphs (Figure 4.3), this overall trend in the Large Project areas is due to a drop in traffic levels between 2012 and 2013 in five areas (Bournemouth, CENTRO, Nottingham, Solent and TfGM), whilst other Large Projects appear to follow the national trend. (Individual data are not presented for Hertfordshire and Surrey, since they contain a mix of Large Project and non-Large Project areas.)

Table 4.2 shows the change in traffic levels that has occurred between a 2009-11 baseline and 2013, for both the individual Large Project areas and all other areas in England (excluding London). The information is presented graphically in Figure 4.4. Nationally, over that period, there was a small decrease in traffic (-0.75%), whilst the overall change in the 10 Large Projects was a reduction of -1.06%. The difference in value between the average Large Projects value, and the value for other authorities in England (excluding London) is not statistically significant (p=0.21). However this analysis is not well powered because the sample size is only 121 local authorities, and the absence of a significant difference is therefore not particularly meaningful.

For seven of the 10 Large Project areas for which there are available data, the decline in traffic has been greater than the national change – with the difference being particularly marked for Bournemouth and Reading, and even more so for Nottingham, which is in the 12th percentile in the country – i.e. for all local authorities in England (excluding London), Nottingham is in the top 12%, in terms of the level of traffic reduction that it has experienced during that period.

It should also be noted that different Large Projects have been dealing with different levels of population and employment growth. Table 4.3 provides summary statistics, with colour coding added to indicate relatively high or low values. It is notable that different areas are dealing with different situations. For example, Reading and Hertfordshire have been dealing with particularly high levels of growth, whilst Merseyside has been dealing with relatively low population growth and employment decline.

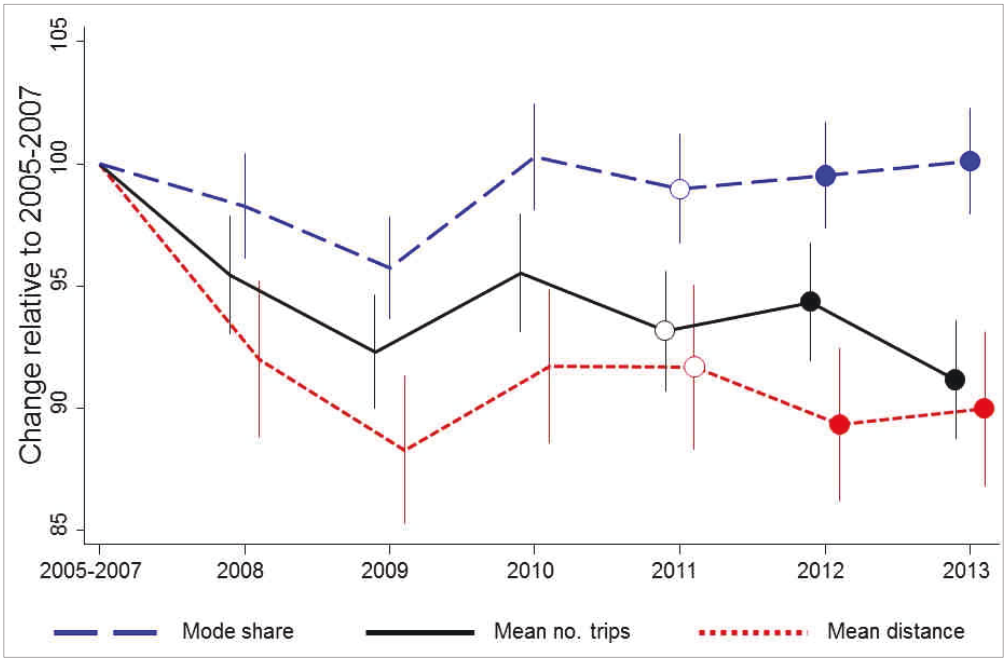
In particular, the relationship between population, employment and traffic growth is relevant (with the relationship between two of these variables illustrated in Figure 4.5). This illustrates that:

- A number of the Large Projects – in particular Bournemouth, Nottingham and Reading – have achieved an above average reduction in traffic over a period when they have also experienced an above average increase in jobs and population. These places appear to be doing better than other urban areas at reducing traffic, despite their increase in size and economic activity.

[6] https://www.gov.uk/government/statistical-data-sets/tra89-traffic-by-local-authority

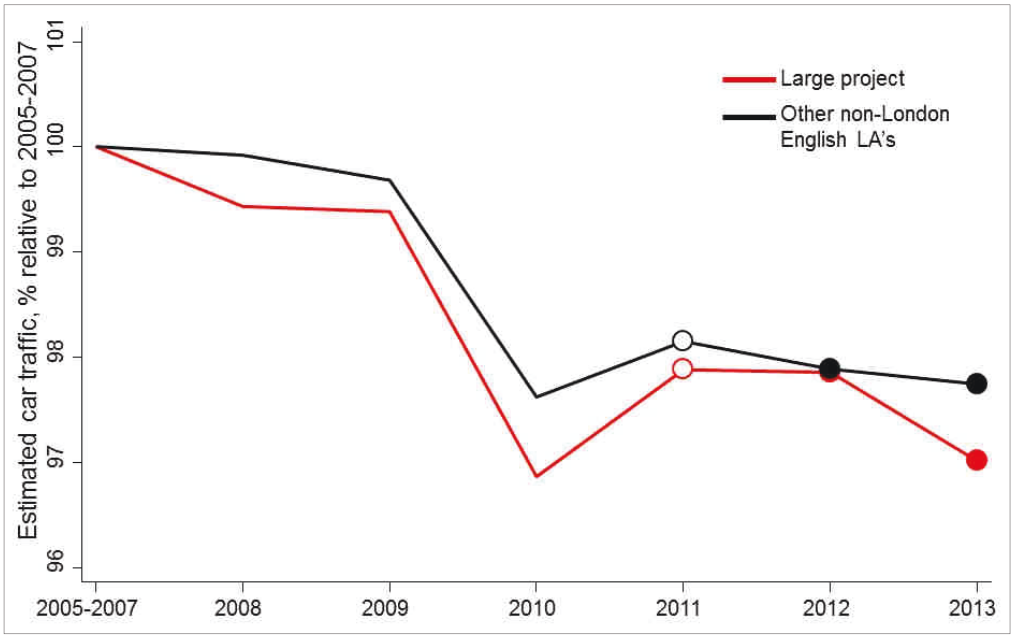
- Some other Large Projects – e.g. CENTRO, Solent and WEST – show a reduction in traffic which is similar to that in other areas of England, but in the context of above average increases in jobs, or population, or both.
- Only one Large Project, Merseyside, shows less growth in jobs and population than in other areas of England, and here the reduction in traffic is (as might be expected) also greater than the average.

Figure 4.1: Average car driver travel in urban areas in England excluding London, for people of all ages (National Travel Survey)



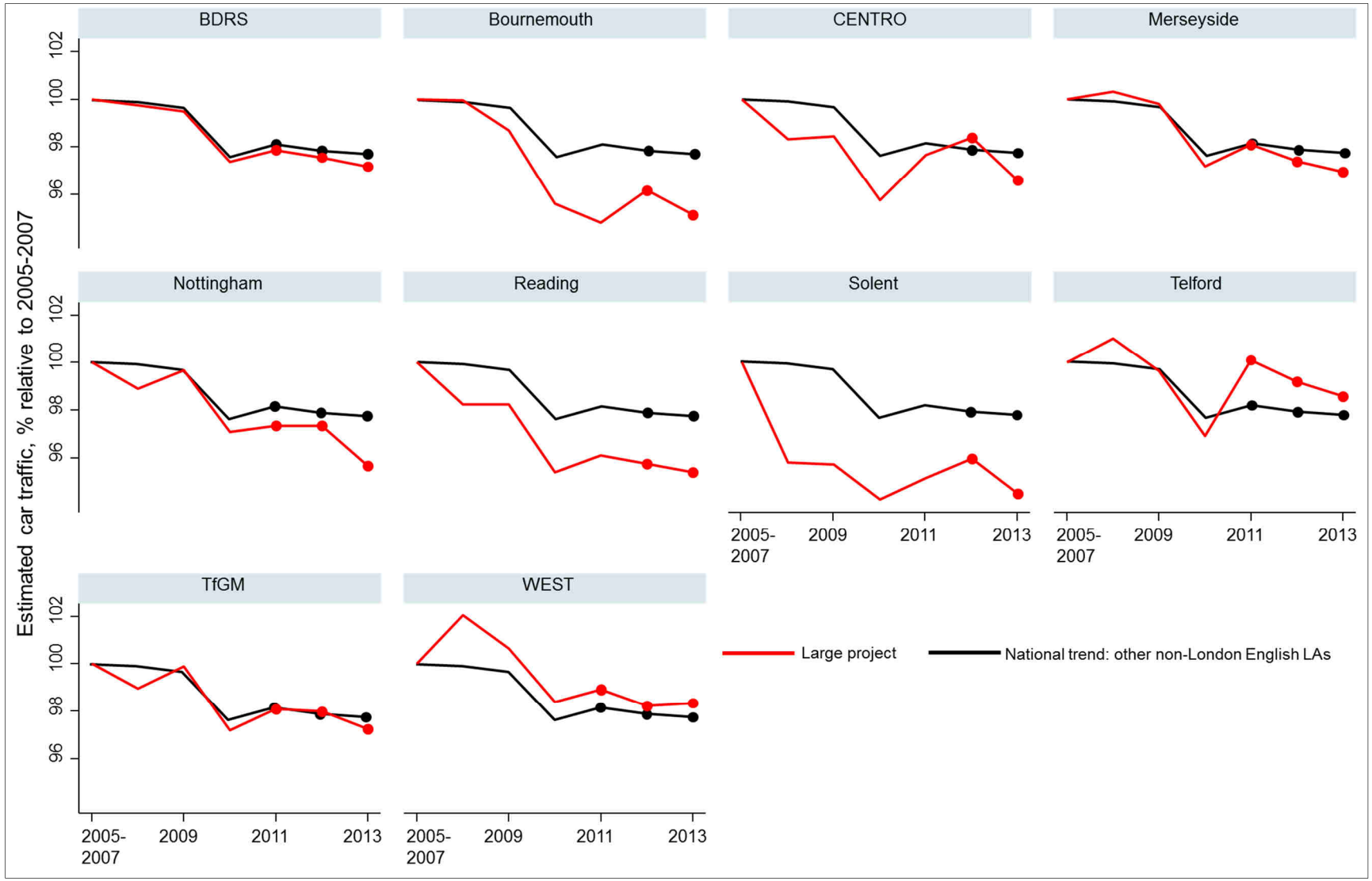
Open circles show years when some Large Projects were receiving funding; filled circles show years when all Large Projects were receiving funding. 2013 point estimates derived from data provided by DfT; 2013 confidence intervals are approximate, based on the assumption that uncertainty around the estimates in 2013 is the same as in 2012.

Figure 4.2: Estimated road traffic at the grouped local authority level (NRTE)



Open circles show years when some Large Projects were receiving funding; filled circles show years when all Large Projects were receiving funding. Note: Non-London English local authorities exclude Hampshire, Hertfordshire, Nottinghamshire and Surrey, as these include some Large Project local authorities and some non-Large Project local authorities.

Figure 4.3: Estimated road traffic, relative to 2005-2007, by Large Project, according to National Road Traffic Estimates



Filled circles show years when Large Projects were receiving funding.

Table 4.2: NRTE data on traffic in Large Project areas, and change relative to 2009-2011 baseline

	% change between 2009-2011 baseline, and 2013	Average percentile of change (range)*, relative to all non-London local authorities
BDRS	-1.09%	39 (13 - 89)
Bournemouth	-1.27%	38 (17 - 58)
CENTRO	-0.71%	54 (26 - 88)
Hertfordshire	Data not available	Data not available
Merseyside	-1.44%	41 (6 - 90)
Nottingham	-2.40%	12
Reading	-1.22%	41
Solent	-0.57%	58 (52 - 64)
Surrey	Data not available	Data not available
Telford	-0.31%	66
TfGM	-1.16%	39 (10 - 95)
WEST	-1.00%	49 (29 - 69)
Non-Large Project England excl London	-0.75%	Not applicable

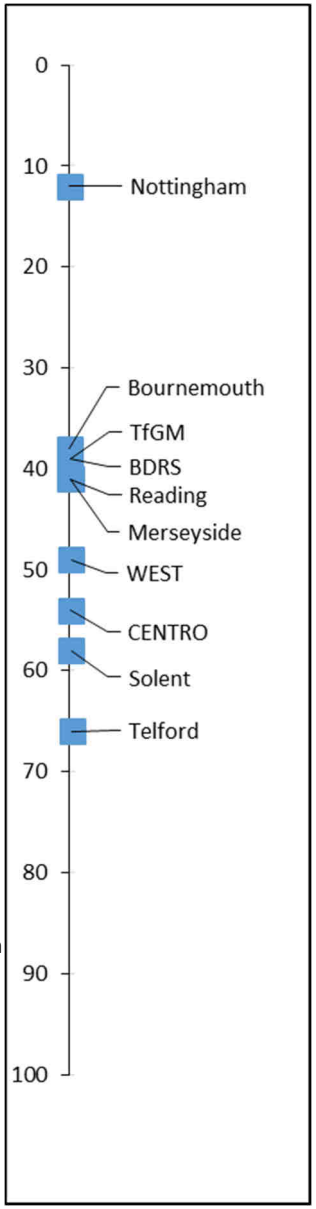
* Range only presented if there was more than one local authority included in the Large Project area. Authorities ranked such that the lowest percentile authority experienced the greatest decrease in traffic, whilst the highest percentile authority experienced the greatest increase.

Table 4.3: Population and employment in Large Project local authority areas in 2013, and change relative to 2010

	Population (number of people)		Employment (number of jobs)	
	2013 (1000's)	**Relative change vs. 2009-2011**	**2013 (1000's)**	**Relative change vs. 2010**
BDRS	1,358	1.8%	532	-0.3%
Bournemouth	386	3.4%	176	1.9%
CENTRO	2,783	2.6%	1,190	2.6%
Hertfordshire	385	3.6%	204	4.5%
Merseyside	1,387	0.8%	540	-0.4%
Nottingham	886	2.3%	405	2.4%
Reading	159	3.4%	98	3.0%
Solent	896	2.6%	391	1.3%
Surrey	382	3.1%	189	1.9%
Telford	168	1.6%	79	0.7%
TfGM	2,715	2.0%	1,208	2.1%
WEST	1,093	2.9%	547	-1.2%
Non-Large Project England excl London	32,850	1.8%	13,970	0.5%

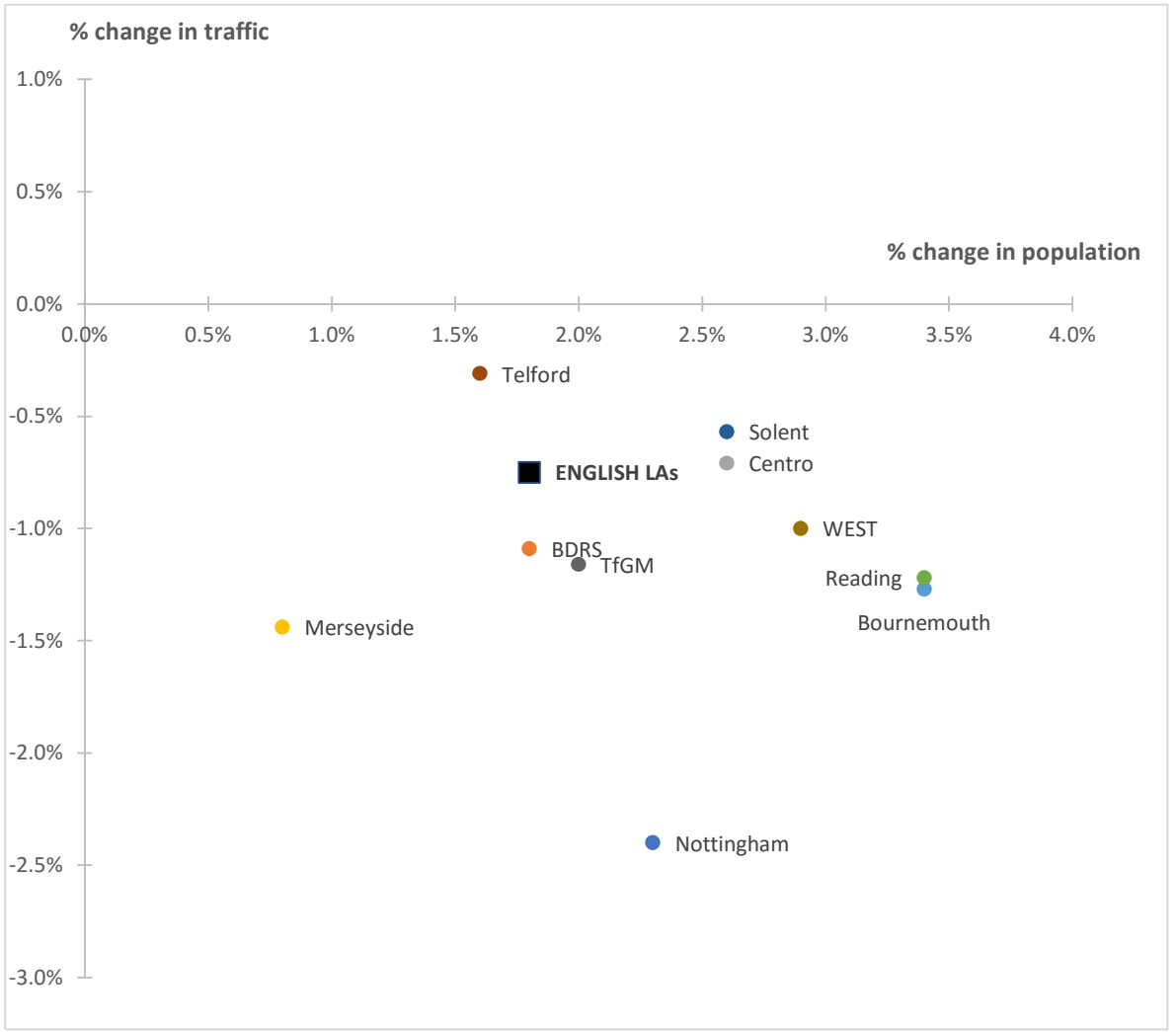
Red indicates growth of 3%+; orange indicates growth of 2%+; blue indicates reduction.
Population source: ONS mid-year population estimates.
Employment source: The Business Register and Employment Survey (BRES), which "collects employment information from businesses across the whole of the UK economy for each site that they operate" and which is ONS's "recommended source of information on employment by detailed geography". 'Employment' here is the total of all employees and plus all proprietors.

Figure 4.4: Changes in traffic in the Large Project areas relative to the range of national change (data from Table 4.2)



Note – The chart shows that if all non-London local authorities in England were ranked in order of their % change in traffic between 2009-11 and 2013, Nottingham would be in the 12th percentile (i.e. in the top 12% of local authorities), while WEST would be in the 49th percentile, and Telford would be in the 66th percentile.

Figure 4.5: Relationship between the change in population and the change in traffic



4.4 Project level outcomes for traffic

Seven Large Projects have project-level data for traffic, as shown in Table 4.4, Figure 4.6, and Table 4.6. For Bournemouth, two data series are presented, because they are both given in the report.

For most of the trends shown in Figure 4.6, traffic levels in 2013 are either below the 2009-2011 baseline, or fell between 2012 and 2013. The only location where this is not the case is Reading, where the overall trend has been a reduction in traffic levels from 2007 to 2012, but with an increase in 2013.

In addition, there are three locations where screenlines or cordon counts indicate reductions in traffic in a particular part of the Large Project area which are greater than those for the whole Large Project area – specifically for Nottingham City, central Reading and from the east side of Southampton, as shown in Table 4.5 and Figure 4.7.

Data for Hertfordshire are not provided in the tables and graphs due to some issues, as mentioned in Table 4.6.

There are three Large Projects where traffic levels along a corridor have been measured in relation to a control corridor, as follows:

- Bournemouth's results for the LSTF corridor (from nearly 50 sites) are compared to results from four sites on a control corridor. Comparing 2013 AADT flows with a 2010-12 baseline, flows on the LSTF corridor reduced by 0.4%, whilst flows on the control corridor reduced by 4%[7]. However, the small number of sites on the control corridor make it vulnerable to fluctuation. The control corridor was chosen as it was one of the few locations where few schemes were to be implemented.

- For Solent, data along a control corridor in Fareham is presented. Whilst traffic flow along the three LSTF corridors has fallen by 0.5% compared to the 2009-2011 baseline, traffic has risen on the control corridor by 2%. Differences in trend are particularly notable between 2012 and 2013, where AADT flows have fallen on all three sets of LSTF corridors, but risen on the control corridor. The control corridor in Fareham was chosen because the authority was not doing any physical improvements or direct engagement with schools, colleges or businesses in the area. Based on initial results from personalised journey planning surveys, and consideration of evidence from the sub-regional traffic model, LSTF project officers feel that at least some of the difference between trends in the control corridor and trends on the target corridor may be attributable to LSTF work, although final analysis is awaited before conclusions can be drawn with confidence.

- Hertfordshire has collected data for the three LSTF areas, and two control areas. For both vehicle flows and traffic kilometres, the trends in the LSTF areas seem to be better than in the control area (i.e. greater traffic reduction, or less traffic growth). However, it should be noted that 10 sites in the control area were not operational during 2013, and, on initial examination, there appear to be some internal contradictions in the data which it was not possible to resolve for this study.

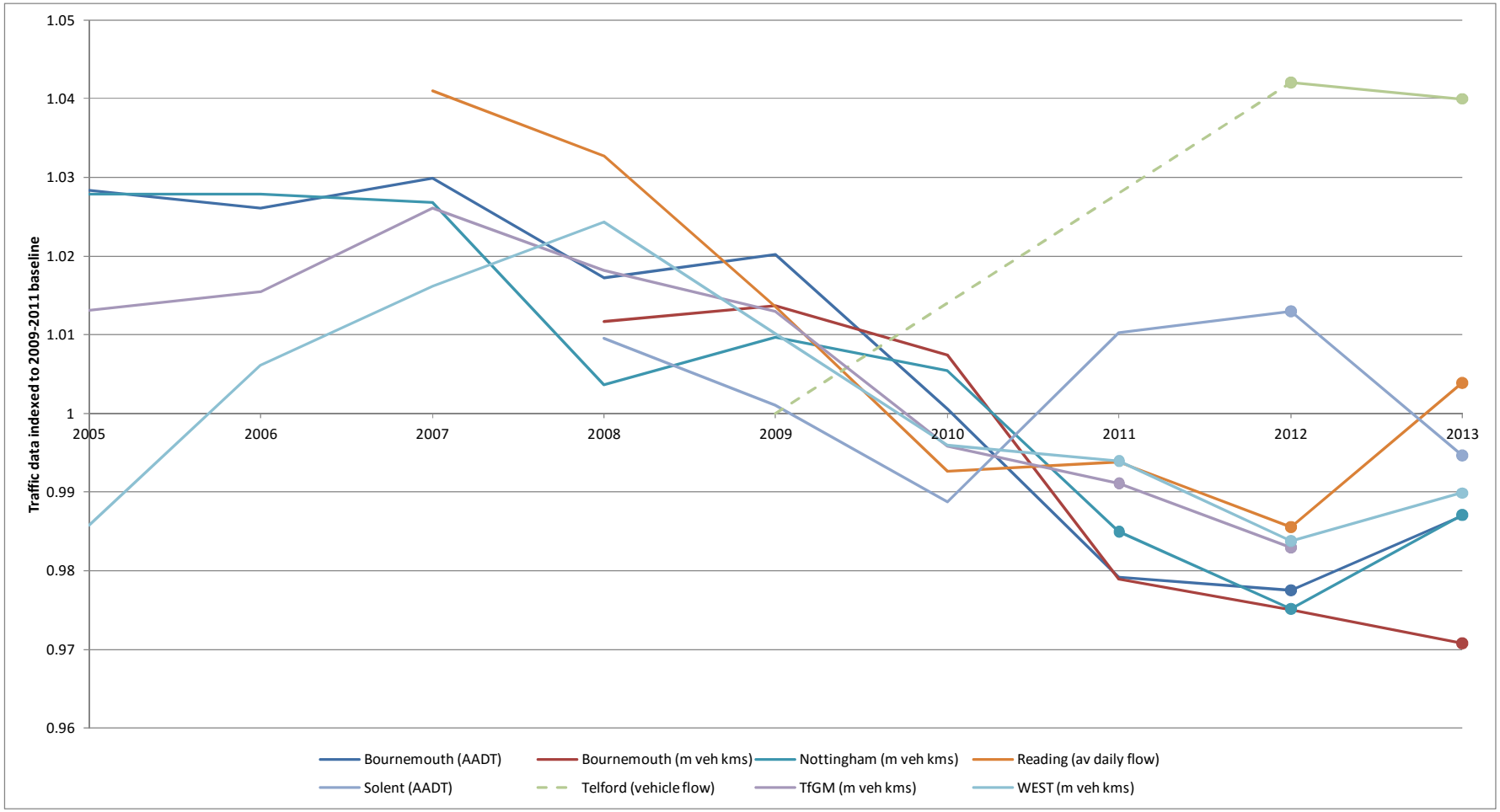
[7] From the data provided, it is not possible to recalculate the control corridor data to compare 2013 flows with a 2009-2011 baseline.

Table 4.4: Traffic data from 2005 for seven Large Projects

	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change between 2009-2011 average and 2013
Bournemouth (AADT)	678,250	676,800	679,300	670,950	672,900	659,900	645,850	644,700	651,000	-1.3
Bournemouth (m veh kms)				251.335	251.829	250.287	243.197	242.245	241.176	-2.9
Nottingham (m veh kms)	2,921	2,921	2,918	2,852	2,869	2,857	2,799	2,771	2,805	-1.3
Reading (av daily flow)			428,489	425,077	417,205	408,569	409,074	405,661	413,229	0.4
Solent (AADT)				78,194	77,528	76,578	78,242	78,453	77,033	-0.5
Telford (vehicle flow)					50,150			52,258	52,155	4.0
TfGM (m veh kms)	13,113	13,144	13,282	13,180	13,112	12,891	12,829	12,723		
WEST (m veh kms)	48.7	49.7	50.2	50.6	49.9	49.2	49.1	48.6	48.9	-1.0

Details about these data are given in Table 4.6. Data are for the full Large Project areas – for example, Nottingham's figure is the figure for Greater Nottingham.

Figure 4.6: Trends in traffic at project level, as reported by seven Large Projects

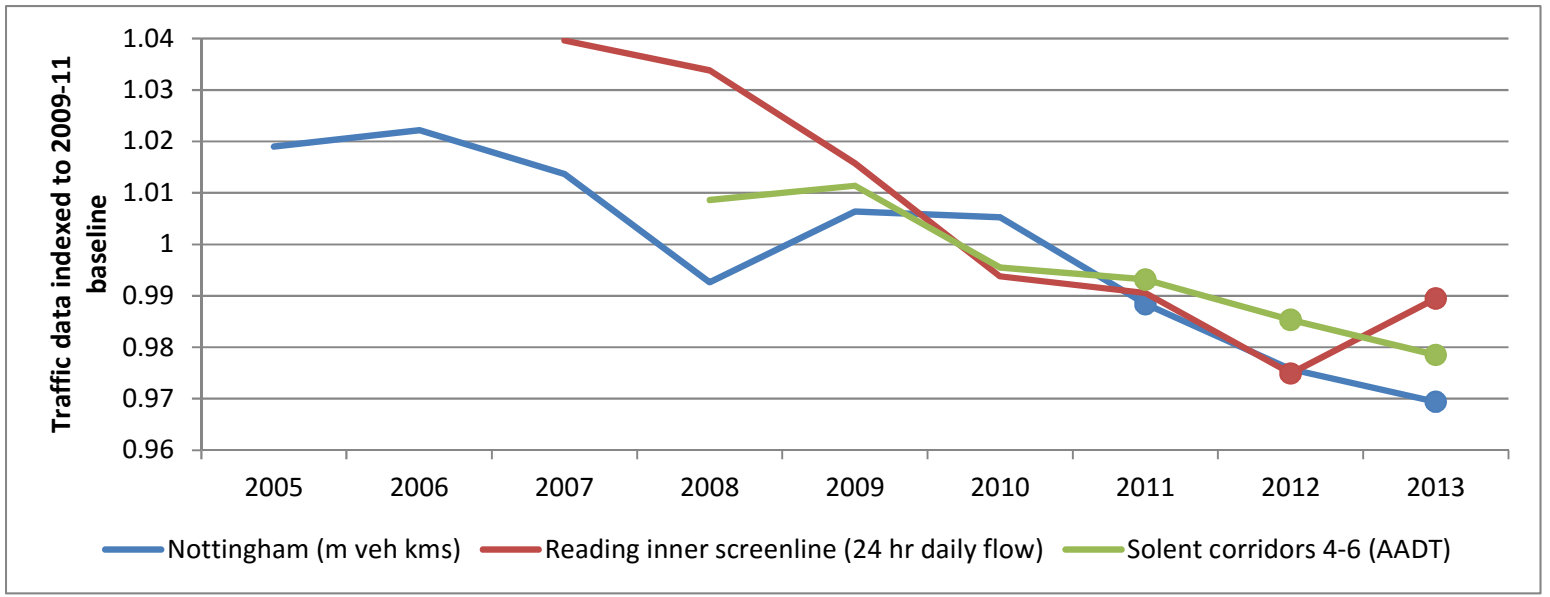


Filled circles show years when Large Projects were receiving funding

Table 4.5: Traffic data for selected areas of three Large Projects

	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change between 2009-2011 average and 2013
Nottingham City (m veh kms)	966	969	961	941	954	953	937	925	919	-3.1%
Reading inner screenline (24 hr daily flow)			227,185	225,899	221,953	217,168	216,447	213,043	216,221	-1.1%
Solent corridors 4-6 (AADT)				17,946	17,995	17,713	17,671	17,532	17,411	2.1%

Figure 4.7: Trends in traffic for selected areas of three Large Projects



Filled circles show years when Large Projects were receiving funding

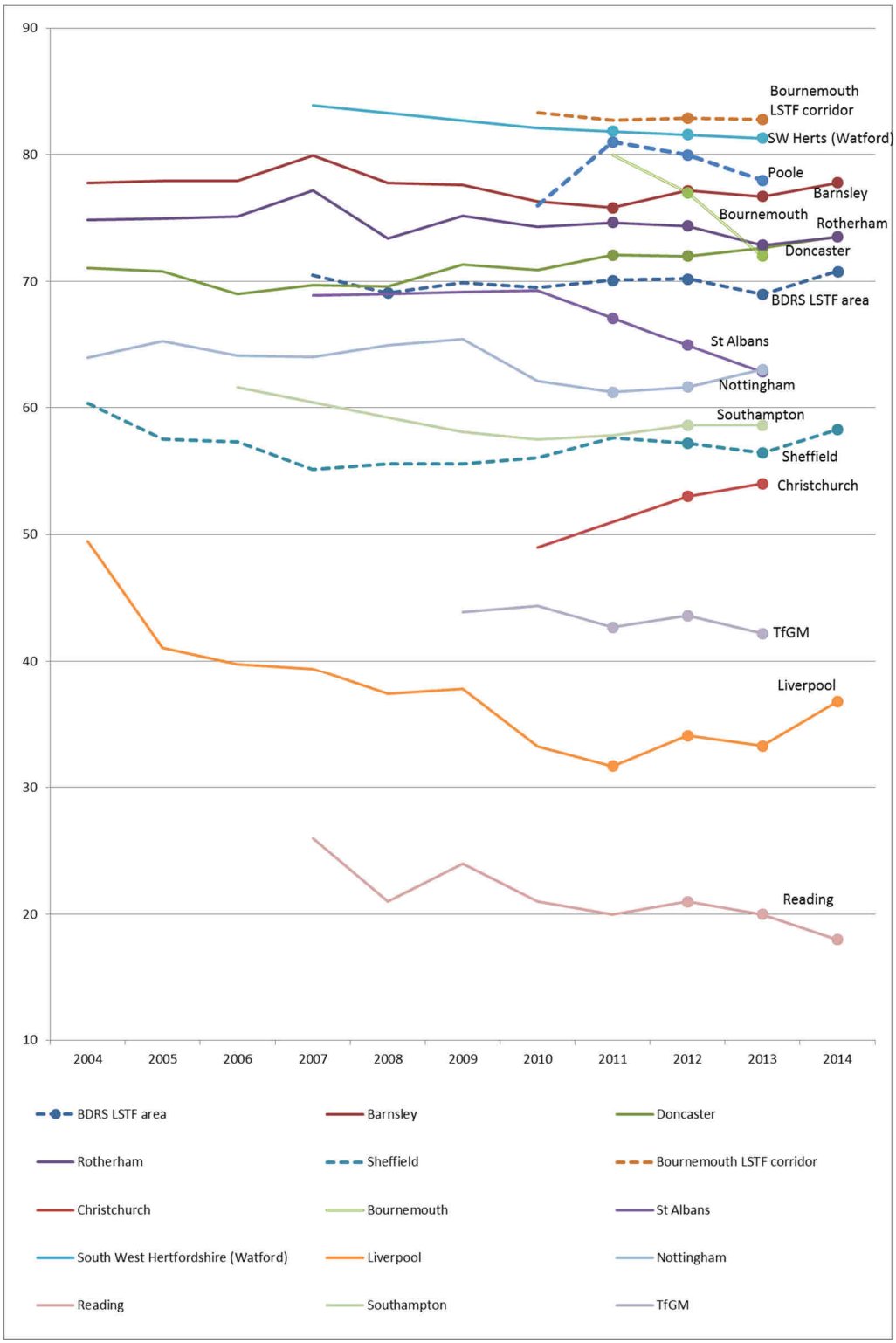
Table 4.6: Notes on traffic data

Large Project	Notes
BDRS	Traffic data are not reported.
Bournemouth	24 hour annual average daily traffic flows from 50 ATCs are reported, including several sites on a control corridor. Data for a subgroup of those sites are available from 2000 onwards. In addition, an estimate of total vehicle kilometres on the corridor is given. It should be noted that the vehicle kilometre figures are not for a calendar year. The 2008 figure is for the period September 2006 to January 2008. The other figures are from September of the preceding year, through to August of the year where they are recorded.
CENTRO	Baseline data only available.
Hertfordshire	In the 2013/14 Outcomes Report, changes in Average Annual Weekday Daily (AAWD) traffic flows are given for a number of vehicle count sites located across the Large Project area, on the basis of 16 hour (6am-10pm) 5 day a week flow. Data has been provided for those vehicle count sites located within the 3 LSTF towns. Similar data have been collected for two control towns. In addition, vehicle kilometrage data are collected for all A, B and C classified roads in the relevant areas. However, further investigation of the underlying data has suggested some potential contradictions, which could not be resolved in this study.
Merseyside	Traffic flows were not measured, as modal shift was the only traffic-related objective of the programme.
Nottingham	Area wide traffic mileages (in million vehicle kms) are reported, both for Greater Nottingham, and for Nottingham, from 2003 to 2013.
Reading	24 hour October term-time weekday traffic flows are reported from 20 sites, between 2007 and 2013, grouped into 4 screenlines, comprising an inner and outer cordon.
Solent	Data from existing ATCs and DfT estimated flow data on major routes have been used to generate estimates of average annual daily two-way flows between 2008 and 2013, on three sets of corridors.
Surrey	12 hour and AM peak two-way weekday traffic-flow data in March is available for a number of sites between 2008 and 2014. However, our project team's attempt to generate a traffic series from the 9 sites which have consistent 12 hour data over the period produced a relatively fluctuating sequence, which could not be reliably interpreted.
Telford	Various data are presented in Telford's report. 24 hour 5 day two-way traffic flows into and out of the Box Road from 2009, 2012 and 2013 are presented on the graph, since these most closely relate to the area affected by LSTF activities. (Figures for 2010 and 2011 have been interpolated.) Data from inner and outer cordon counts are difficult to interpret, given missing values from certain sites at certain times. Inbound and outbound trends, and trends at different corners of the Box Road are different to the overall trend.
TfGM	Area wide traffic mileages, in million vehicle kms, are reported for all motor vehicles and all roads, or subsets of vehicle types and road types, for the period 1993 to 2012. Data for all motor vehicles and all road types is given on the graph.
WEST	NRTE data for the four areas are presented for all motor vehicle kms, car vehicle kms, and motor vehicle kms not on trunk roads. All motor vehicle kms are presented on the graph for consistency with other data sources. Data for a variety of different screenlines are also given, and were initially examined, but it was unclear what conclusions should be drawn from this.

4.5 Project level outcomes for mode share

Nine Large Projects calculate mode share data for travel into relevant urban centres in their LSTF area. Data for 14 locations (either representing whole or partial LSTF areas) are shown in Figure 4.8, Table 4.7, and Table 4.8. Data for Bournemouth, Reading and St Albans (Hertfordshire) all show a non-trivial decrease in the share of travel done by car and/or light vehicle. Data for Bournemouth also appears to show important differences in trends in different parts of the LSTF area.

Figure 4.8: Trends in car / light vehicle modal share in different locations



Filled circles show years when Large Projects were receiving funding.

Table 4.7: Car or light vehicle mode share at particular locations

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	% change between the most recent year and a 2009-2011 average
BDRS LSTF area				**70.5**	**69.1**	**69.9**	**69.5**	**70.1**	**70.2**	**69**	**70.8**	**+1.4**
Barnsley	77.8	77.9	78.0	80.0	77.8	77.6	76.3	75.8	77.2	76.7	77.8	+1.6
Doncaster	71.1	70.8	69.0	69.7	69.6	71.3	70.9	72.1	72.0	72.6	73.6	+3.0
Rotherham	74.9	75.0	75.1	77.2	73.4	75.2	74.3	74.7	74.4	72.9	73.5	-1.6
Sheffield	60.3	57.5	57.3	55.1	55.5	55.6	56.1	57.6	57.2	56.4	58.2	+3.2
Bournemouth LSTF corridor							**83.3**	**82.7**	**82.9**	**82.8**		**-0.2**
Poole							76	81	80	78		-0.6
Christchurch							49	51	53	54		+8.0
Bournemouth								80	77	72		-10.0
Hertfordshire												
St Albans				68.9	69.0	69.2	69.3	67.1	64.9	62.8		-8.3
SW Hertfordshire (Watford)				83.9	83.3	82.7	82.1	81.8	81.6	81.3		-1.1
Merseyside												
Liverpool	49.5	41.1	39.8	39.4	37.4	37.8	33.2	31.7	34.1	33.3	36.8	+7.5
Nottingham												
Nottingham inner area	63.9	65.2	64.1	64	64.9	65.4	62.1	61.2	61.6	63		+0.2
Reading												
Reading town centre				26	21	24	21	20	21	20	18	-7.7
Solent												
Southampton			61.6	60.4	59.2	58.1	57.5	57.8	58.6	58.6		+1.4
TfGM						**43.9**	**44.4**	**42.7**	**43.6**	**42.2**		**-3.4**

Note: Figures in bold in grey shaded cells indicate where data are reported to be representative of the whole Large Project area. Figures not in bold, in white cells, indicate where data are for part of the Large Project area. Figures in red are interpolated. Basis for mode share calculations differs between Large Projects – details of how figures are calculated for each Large Project are given in Table 4.8.

Table 4.8: Notes on modal share data

Large Project	Notes
BDRS	BDRS presents data on light vehicle (car/LGV/motorcycle) mode share to urban centres in the Large Project area, based on data from four areas. Data are based on vehicle occupancy counts, not just vehicle counts.
Bournemouth	Bournemouth provides a measure of car mode share along the corridor and, separately, for each of the three main towns in the project area – Poole, Christchurch and Bournemouth. The corridor data are from 12 hour manual vehicle counts at 53 sites undertaken during a neutral month (April/May/June/September/October). The town centre counts are based on people movements into the town centres between 7am and 10am.
Hertfordshire	Hertfordshire's 'triennial Travelwise cordon count' provides a measure of the proportion of car occupants travelling inbound to St Albans, and SW Hertfordshire (Watford), based on one day neutral-day counts.
Merseyside	Indicator 03 gives a measure of the private vehicle AM peak mode share from cordon surveys undertaken around Liverpool. Mode share is based on counts of vehicle occupants (not just vehicles).
Nottingham	For an inner area traffic cordon, Nottingham provides a measure of the car/motorcycle mode share, compared to the public transport mode share, based on people numbers (not just vehicle numbers).
Reading	Reading provides a measure of the car/motorcycle mode share at a cordon around the town centre, based on 12 hour counts conducted on a neutral weekday in May. (Car occupancy is not measured.)
Solent	Solent provides the light vehicle share entering Southampton, based on vehicle occupancies (not just vehicles). Data given are a 3 year rolling average – the LSTF project team feel that an annual figure would not be reliable given natural fluctuation (although equally, the three year average makes it harder to detect any immediate impacts of the work)
TfGM	TfGM provides cordon count data, averaged from 10 locations. 2008 and 2014 figures were provided but have been excluded from this analysis since they only represent a subsample of the areas surveyed in other years. Average values are weighted by the size of the 10 locations surveyed. Modal share is generated from a combination of vehicle and people counts (but private vehicle occupancies are not measured). The measure given in the table is the modal share for cars.

4.6 Conclusions on outcomes related to traffic and car use

Table 4.9 provides an overview of evidence relating to traffic and car use. In most cases (excluding Merseyside and Telford), the indications are broadly positive, in terms of traffic reduction or a reducing car modal share. (Data for Surrey are not available.) However, changes are relatively small, trends are not always consistent, and the relationship to control data is not always straightforward.

It is not possible to say to what extent the observed recent reductions in traffic may be attributable specifically to LSTF interventions. All the Large Projects have undertaken a very wide range of initiatives, both before and during the period in question, that might be expected to influence traffic volumes, and it was not possible for this meta-analysis to gather full data on these wider initiatives. However, given the contrasting trends shown by traffic as compared to population and jobs, it is clear that the fall in traffic is not due to reduced activity.

Table 4.9: Overview of outcomes related to traffic and car use

Large Project	Over-view	Summary of change since start of LSTF project~	Attributable to LSTF?
BDRS	🟧	Cordon counts at urban centres indicate that although a falling proportion of movements were made by car/van/motorcycle between 2012 and 2013, this trend reversed in 2014.	-
Bourne-mouth	🟩	NRTE data, AADT and vehicle kilometres and modal share cordon counts all indicate positive trends, in terms of reducing car use or traffic, albeit that reported changes are small, and that data for a small number of sites on a control corridor show a greater reduction in traffic there. Separate mode share figures for Bournemouth, Christchurch and Poole suggest the significant reduction in car use has been in Bournemouth.	-
CENTRO	⬜	No overview data available about traffic or car use.	-
Hertford-shire	⬜	Changes in the volume of traffic in the LSTF area are unclear, but trends appear to be more positive than those that have occurred in the control areas. However, there are some issues with the data.	-
	🟩	Mode share surveys for St Albans and Watford appear to show a reducing car mode share.	-
Merseyside	🟥	Private vehicle mode share in Liverpool increased between 2013 and 2014	-
Notting-ham	🟩	Both the NRTE data and the data for Nottingham City show a relatively substantial reduction in traffic volumes. The data for Greater Nottingham also shows a small reduction in traffic volume (compared to 2009-2011 baseline), whilst the car mode share at the inner cordon shows a small increase	-
Reading	🟩	Data from NRTE and from Reading inner cordon both show a reduction in traffic over time. Similarly, the Reading cordon count suggests that car movements are a reducing proportion of all movements into the central area. However, the trends at the outer Reading screenlines are less promising, and there was a general increase in traffic between 2012 and 2013. It should be noted that Reading has achieved a long term reduction in traffic, and that it has a very low modal share of car movements into its central area, compared with cordon counts in other locations.	-
Solent	🟩	The general trend for traffic in Solent appears to be broadly stable, albeit with a reduction in traffic on the east side of Southampton and with decreases in traffic flow on all three sets of corridors between 2012 and 2013, whilst data on a control corridor showed a traffic increase. Modal share data for Southampton is currently difficult to interpret given that it represents a three-year rolling average.	-
Surrey	⬜	No data presented to enable an analysis of traffic or mode share. Although traffic counts are given, there is no analysis.	-
Telford	🟧	Traffic data for Telford is inconclusive. There is some indication that traffic has redistributed between the corners of the Box Road, but not much evidence of change in overall traffic volumes.	-
TfGM	🟩	Both NRTE data and TfGM data suggest a small decline in traffic volumes.	-
	⬜	The cordon mode share data shows a fairly stable trend, though with a decline from a 2009-11 baseline, and between 2012 and 2013.	-
WEST	⬜	NRTE data shows a small reduction in traffic between 2009-11 and 2013, though not between 2012 and 2013.	-

🟥 **increase** in traffic or car use; 🟧 **no change** in traffic or car use; 🟩 **decrease** in traffic or car use; ⬜ **insufficient data** to assess changes in traffic or car use.

~ Different Large Projects treat different time periods as 'baseline'. Changes summarised here are since 2011/12 for Large Projects that received Key Component funding (BDRS, Hertfordshire, Merseyside, Nottingham, Surrey, Telford, TfGM and WEST), and since 2012/13 for Large Projects that did not receive Key Component funding (Bournemouth, CENTRO, Reading, Solent).

5 Economy: congestion

Key points:

At this interim stage, interventions specifically targeted at reducing congestion have not been fully implemented. There have however been some modest interventions aimed at improving bus reliability at specific locations.

In general, congestion in the Large Project areas appears to have worsened a little, probably as a result of the economic upturn since 2011.

There are some indications of improvements in bus punctuality in the four Large Projects that have monitored this, although it is too early to say whether the improvements are attributable to the LSTF interventions.

5.1 Overview of objectives and outputs targeting congestion

Nine Large Projects explicitly identified congestion relief as one of the objectives of their project (the exceptions being Merseyside, Nottingham and Telford). These are summarised in Table 5.1.

In the period covered by the most recent Outputs Surveys and Outcomes Reports, seven Large Projects had completed or substantially delivered LSTF interventions that were intended to improve traffic management and reduce congestion. However, of these:

- One (Bournemouth) involved a large number of road and junction infrastructure alterations in the year to July 2014. Although in the medium-term these might be expected to reduce congestion, it is possible that in the short-term the road-works might make congestion worse.
- Three (BDRS, Surrey and TfGM) mainly involved preparatory work to improve the ability of the local authorities to monitor journey times and congestion, enabling more effective traffic management when the work is completed. No effect would be expected at this stage, as none of the projects were fully operational at the time of the latest Outputs and Outcomes Reports.
- Three (CENTRO, Reading and WEST) involved modest targeted measures. In the case of CENTRO and WEST, these were mainly aimed at improving bus reliability at specific locations rather than at changing general traffic flow. In Reading, the measures were variable message signs designed to improve information for drivers about congestion they might face ahead.

Nottingham noted that two major infrastructure projects (NET Phase 2 tram works and a ring road major scheme, not funded by LSTF) had resulted in significant short-term disruption during 2013/14, which had the effect of *increasing* congestion in the short term.

Other interventions aimed at reducing traffic in general (rather than specifically targeted at congested routes) may also have the effect of reducing congestion, although the scale of the effect at this interim stage would probably be small.

Table 5.1 gives more detail on the interventions that had been implemented by the time of the latest Outputs Surveys and Outcomes Reports.

Table 5.1: Summary of congestion-relief objectives and interventions

	Congestion objective?	Summary of congestion-relief objectives	Congestion-relief interventions completed?	Completed congestion-relief interventions
BDRS	Yes	Help businesses through reducing congestion and encouraging more reliable journey times	Some	Preparatory work on intelligent transport system (SYITS); design of infrastructure schemes to improve bus reliability at hotspots. Unlikely to have effect yet as not completed
Bournemouth	Yes	Reduce delays to buses and improve bus journey time, punctuality and reliability. Reduce congestion and variability in journey times to smooth traffic flows	Many	Substantial number of road / junction layout / signal alterations, bus priority measures, cycle facilities and parking restrictions
CENTRO	Yes	Facilitate greater network efficiency in LSTF corridors; reduce congestion at locations targeted for infrastructure improvements; improve journey times / reliability on bus routes in LSTF corridors	Some	Interventions mainly aimed at improving bus reliability at specific locations rather than improving general traffic flow
Hertfordshire	Yes	Ensure economic, environmental and social costs of congestion are reduced	No	-
Merseyside	No	-	No	-
Nottingham	No	-	No	-
Reading	Yes	Reduce congestion; improve reliability and predictability of journey times	Some	Variable message signs installed, giving information to drivers about congestion
Solent	Yes	Enhance business performance, particularly at international gateways, by increasing the efficiency of the transport network and managing congestion	No	-
Surrey	Yes	Tackle congestion by improving journey time reliability and information; widen options to avoid congestion by promoting working from home and travel outside peak hours	Some	Onslow P&R (west Guildford) opened November 2013; used by 5000 passengers per month. Traffic management / UTC measures for Guildford and Woking in progress, not yet complete
Telford	No	-	No	-
TfGM	Yes	Targeting congestion for carbon and business efficiency	Some	Preparatory work to track journey times and congestion, enabling more effective traffic management: no effect to be expected at this stage
WEST	Yes	Tackle congestion to get business & economy moving	Some	Interventions mainly aimed at improving bus reliability at specific locations rather than improving general traffic flow

5.2 Metrics used to monitor congestion

Changes in congestion in the Large Project areas are reported here using four datasets:

- At the *local authority level*, DfT publishes statistics for average vehicle speeds during the weekday morning peak on locally-managed 'A' roads. These provide a high-level measure of overall change in congestion across the Large Project local authority areas. They are reported in section 5.3.
- At a *project* level, most Large Project Outcomes Reports include data on average vehicle speed in the morning peak on roads in their targeted area. This metric was reported in nine Large Project Outcomes Reports in 2013/14. However, in all but two cases, the most recent data was for 2012/13 i.e. only covering the early stages of the LSTF programme. There was some variation in the time periods used (8-9 am or 7-10 am); which days of the week were included (usually weekdays, but sometimes excluding Mondays and Fridays and sometimes excluding school holidays); and which times of year (mostly unspecified, but some specified as being for certain months only). Data are reported in section 5.4.
- Also at a *project* level, we used DfT statistics for average vehicle speeds for individual locally-managed 'A' roads[8]. These include more recent data than was available in Outcomes Reports, covering the period up to September 2014. This analysis was only undertaken for the four Large Projects which were targeted on specific corridors. Data are reported in section 5.5.
- Four Large Project Outcomes Reports included data on the proportion of buses operating on time. For two of the Large Projects, these data were reported at a network-wide level, while for two other Large Projects data were reported at a corridor or route level. Data are reported in section 5.6.

Various other metrics for congestion were reported in a few Outcomes Reports. Bournemouth reported journey time variability in the morning peak; CENTRO, Merseyside, Solent and Surrey reported average delay, but using non-comparable metrics; Reading and Telford reported journey times for routes or 'runs' of unspecified length; and Solent reported the number and length of links with more than 30 seconds delay. None of these measures were reported in a comparable manner or by enough Large Projects to be useful for meta-analysis.

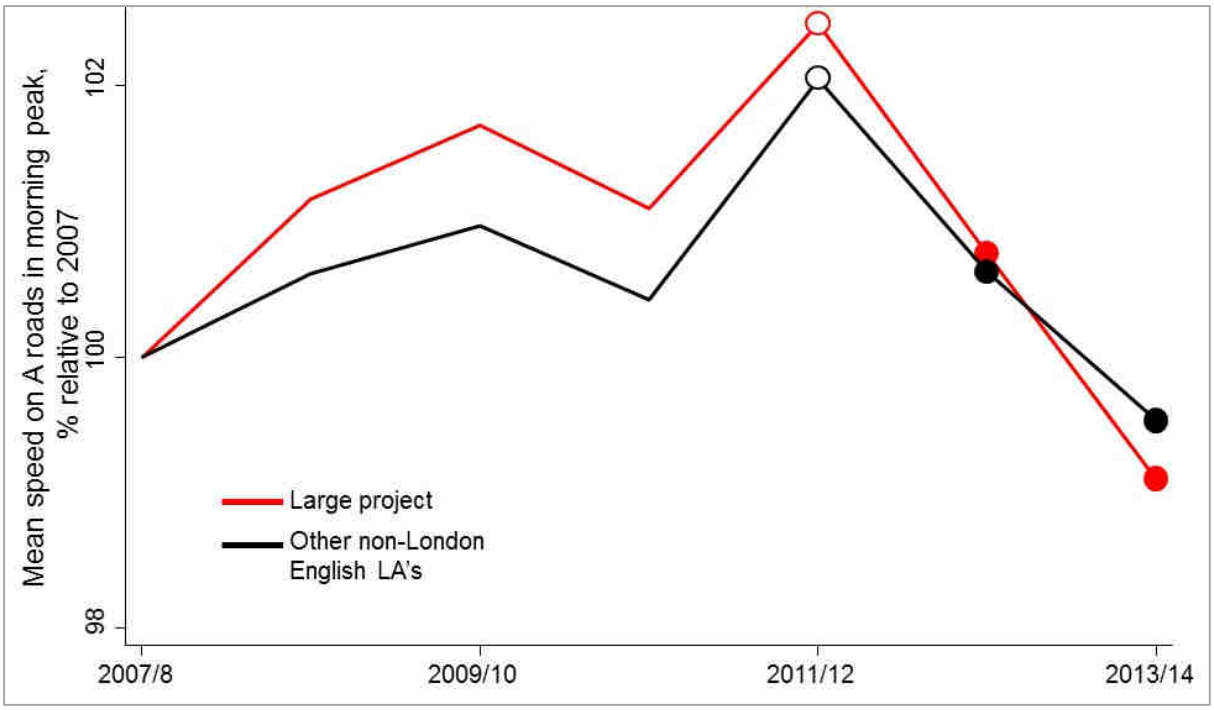
5.3 High-level outcomes of congestion-relief interventions

At this stage in the programme, congestion has not shown any improvement at the local authority level across the 12 Large Projects as a whole. Figure 5.1 shows how average vehicle speeds have changed over time (from 2007/08 to 2013/14) across all Large Projects combined, and for other non-London English local authorities, using data published by DfT. Since 2011/12, average vehicle speeds in the 12 Large Projects have fallen (i.e. congestion has worsened). The trend is similar in other non-London English local authorities. This is as expected, given that the DfT statistics for the Large Projects at the local authority level include many more roads than are targeted by LSTF activity[9], and given the early stage of implementation of congestion-relief measures reported in section 5.1. The trends in the Large Projects and in other local authorities reflect the economic cycle (for example, national unemployment trends peaked in October 2011 and then started to fall).

[8] These statistics (CGN0209) are currently 'badged' as 'Experimental' and are undergoing evaluation.

[9] For example, for BDRS, statistics at the local authority level incorporate data from 49 individual 'A' roads (in both directions), of which only eight roads are in the corridors that are the focus of the BDRS Large Project.

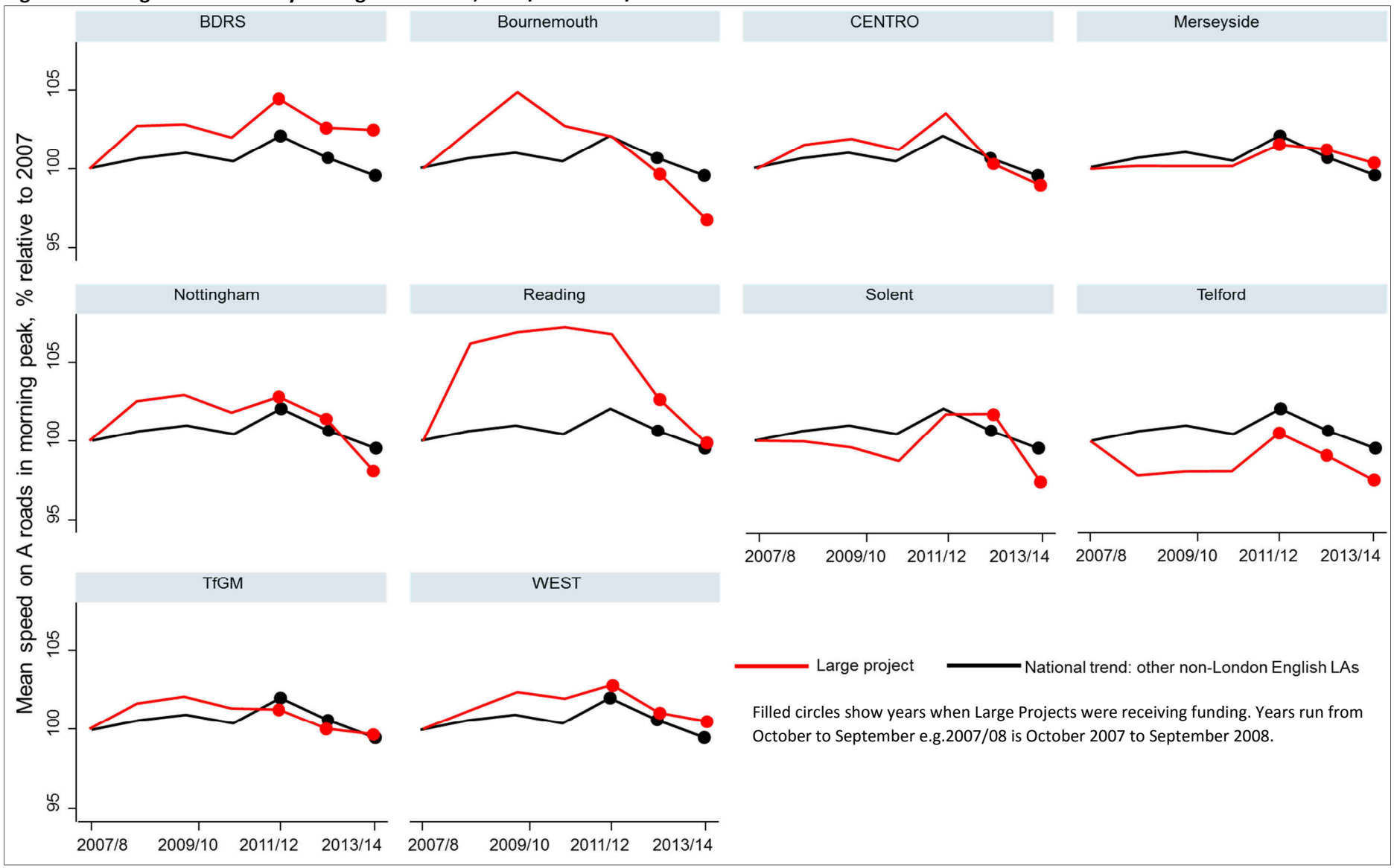
Figure 5.1: Average vehicle speeds on locally-managed 'A' roads, 2007/08 – 2013/14 (all Large Projects combined) from DfT statistics



Open circles show years when some Large Projects were receiving funding; filled circles show years when all Large Projects were receiving funding. Years run from October to September e.g.2007/08 is October 2007 to September 2008.

Figure 5.2 shows change in average vehicle speeds at the local authority level for each Large Project, and for non-LSTF local authorities excluding London. All the Large Projects show a fall in average vehicle speeds, as do non-LSTF local authorities outside London. As before, this seems likely to be related to the economic cycle.

Figure 5.2: Congestion on locally-managed 'A' roads, 2007/08 – 2013/14



5.4 Project-level outcomes: average vehicle speeds from Outcomes Reports

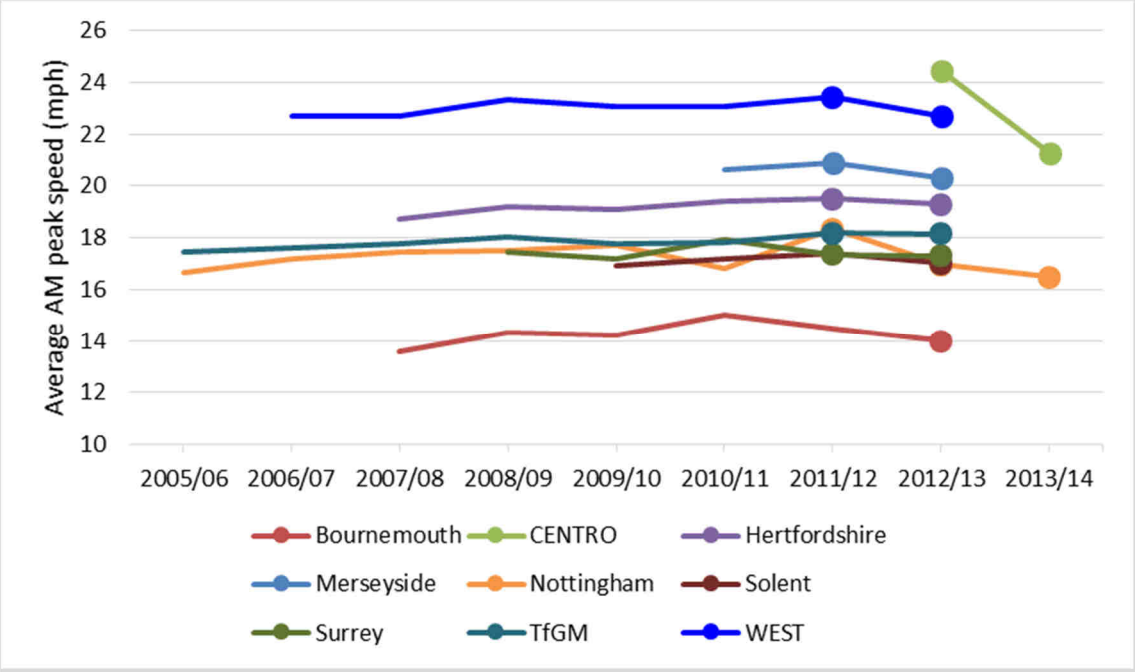
Figure 5.3 shows average vehicle speeds as reported in 2013/14 Outcomes Reports, for the nine Large Projects that included this metric. Data are summarised in Table 5.2. Data are generally for selected roads that are the target of LSTF activity, although in three cases (Merseyside, TfGM and WEST) they are for the entire project area.

For two Large Projects (Bournemouth and Solent), these data only cover a pre-implementation period up to the first year after the start of LSTF funding (2012/13)[10].

For six Large Projects (CENTRO, Hertfordshire, Merseyside, Surrey, TfGM and WEST), data are reported for one additional year. For one Large Project (Nottingham), data are reported for two additional years. None of these show any increase in average vehicle speeds (i.e. any improvement in this measure of congestion). In the case of CENTRO, Merseyside, Nottingham and WEST, congestion appears to have become worse according to this measure.

This should not be surprising at this interim stage of the project. Referring back to Table 5.1, initiatives so far undertaken by CENTRO and WEST have mainly been aimed at improving bus reliability rather than reducing general traffic congestion. Merseyside and Nottingham did not have an explicit objective to reduce congestion, and had not implemented measures specifically intended to reduce congestion as part of their programmes.

Figure 5.3: Average vehicle speeds during the morning peak period on LSTF-targeted roads



Data are from 2013/14 Outcome Reports; see notes to Table 5.2 for further details. Filled circles show years when Large Projects were receiving funding.

[10] Bournemouth and Solent did not receive Key Component funding, so their LSTF projects began in June 2012.

Table 5.2: Average vehicle speeds (mph) during the morning peak period on LSTF-targeted roads, from Outcomes Reports

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	Location of speed measurement
BDRS										
Bournemouth			13.6	14.3	14.2	15.0	14.5	14.0		LSTF targeted corridor
CENTRO								24.5	21.2	10 LSTF targeted corridors
Hertfordshire			18.7	19.2	19.1	19.4	19.5	19.3		Hemel H'stead, St Albans & Watford
Merseyside						20.6	20.9	20.3		Merseyside strategic transport network
Nottingham	16.7	17.2	17.4	17.5	17.7	16.8	18.3	16.9	16.5	16 radial routes & 1 orbital route
Reading										
Solent					16.9	17.2	17.4	17.0		9 LSTF targeted corridors
Surrey				17.5	17.2	17.9	17.3	17.3		9 routes in Guildford & Woking
Telford										
TfGM	17.4	17.6	17.8	18.1	17.8	17.8	18.2	18.2		G. Manchester: all A & B roads
WEST		22.7	22.7	23.3	23.1	23.1	23.4	22.7		All 4 local authority areas

Highlighted grey cells are for years of LSTF funding, including Key Component funding in 2011/12 where applicable.

BDRS: No data reported.

Bournemouth: Weekday morning peak, 8-9am, single 'Three Towns' corridor. Not clear how calculated: either weighted according to traffic volumes on 10 route sections, or taken as overall figure for whole 'Three Towns' corridor. Figure for earliest year is reported in Outcomes Report as for '2006-08'.

CENTRO: Our unweighted average of reported average speeds in the morning peak on 10 corridors targeted by project. Figures are for September 2012-March 2013 and September 2013-March 2014, morning peak (presumably weekday, but not specified; time period not specified). Outcomes Report states that Corridor 7 has seen the largest decrease in average speeds and that this may be because of roadworks for walking and cycling improvements that were undertaken there in 2013/14. If Corridor 7 is excluded, the average speeds are 23.0 mph in 2012/13 and 20.3 mph in 2013/14.

Hertfordshire: Figures are for weekday morning peak, 7-10am, on 'Key Routes' (not further specified) in Hemel Hempstead, St. Albans and Watford.

Merseyside: Figures are for weekday term-time morning peak, 8-9am; for period 1 September - 31 August in each year; supplied as addendum to 2013/14 Annual Outcomes Report.

Nottingham: Figures are for weekday morning peak, 7-10am. Reported for 'calendar' rather than accounting years (so 2005/06 data is for 2005).

Reading: Journey time data are reported for six radial routes, but route length not given and so average speeds cannot be calculated. *Solent:* Flow-weighted average for roads within 9 corridors targeted by project. Figures are for weekday term-time morning peak, 8-9am.

Surrey: Our unweighted average of figures for 9 routes (6 in Guildford and 3 in Woking). Figures are from September to September in each year, morning peak 7-10am on Tuesday-Thursday in term-time.

Telford: Journey time data reported for five overlapping routes around town centre, but route length not given and so average speeds cannot be calculated.

TfGM: Figures are for A and B roads in Greater Manchester, morning peak (7-10am). Probably weekdays excluding school and bank holidays, for period 1 September - 31 August in each year.

WEST: Our unweighted average of figures reported for the four local authority areas of BANES, Bristol, South Gloucestershire and North Somerset. Morning peak, presumably weekday, but not specified; time period not specified.

5.5 Project-level outcomes: average vehicle speeds from DfT statistics

For the four Large Projects that had a focus on specific, named corridors, we extracted data for 'A' roads that were wholly within these corridors from the DfT experimental statistics for average vehicle speeds on individual locally-managed 'A' roads[11].

The DfT dataset is derived from the same source as the data reported by the Large Projects (Trafficmaster), but is more useful because it includes more recent figures, up to September 2014. It also has the advantage of consistency, in that all figures are for the same morning peak period of 7-10 am. Its disadvantage is that it may exclude some roads that lie within the LSTF target corridors (which may have been included in the analysis in the Outcomes Reports).

Figure 5.4 shows average vehicle speeds for relevant 'A' roads in grey, with an unweighted average for these roads in red. Roads on a non-LSTF comparator corridor are shown as dotted lines. Figure 5.5 shows the unweighted averages for each Large Project indexed to 2007/08, the same baseline period as in Figure 5.2. Table 5.3 summarises the average vehicle speeds for the selected groups of roads in 2013/14, indexed to 2007/08, and compares these to the average speeds for all locally-managed 'A' roads in the local authority areas concerned.

Table 5.3: Average speed for locally-managed 'A' roads in morning peak in 2013/14, relative to 2007/08

	Local authority level	Roads on targeted corridors
BDRS	102%	98%*
Bournemouth	97%	95%~
CENTRO	99%	99%
Solent	97%	100%

Figures at local authority level are same as used to generate Figure 5.2, and are based on flow-weighted averages on all locally-managed 'A' roads in the relevant local authority areas. Figures for roads on targeted corridors are based on *unweighted* averages for 'A' roads in the targeted corridors, but since the pattern for most roads in the targeted corridors is similar, the introduced error is likely to be small.

* Indexed average speed for BDRS targeted corridors is strongly affected by one road (Sheffield A6109) which shows a substantial fall in speeds since 2007/08. If this road is excluded, the indexed average speed in 2013/14 relative to 2007/08 is 100% i.e. no overall change.

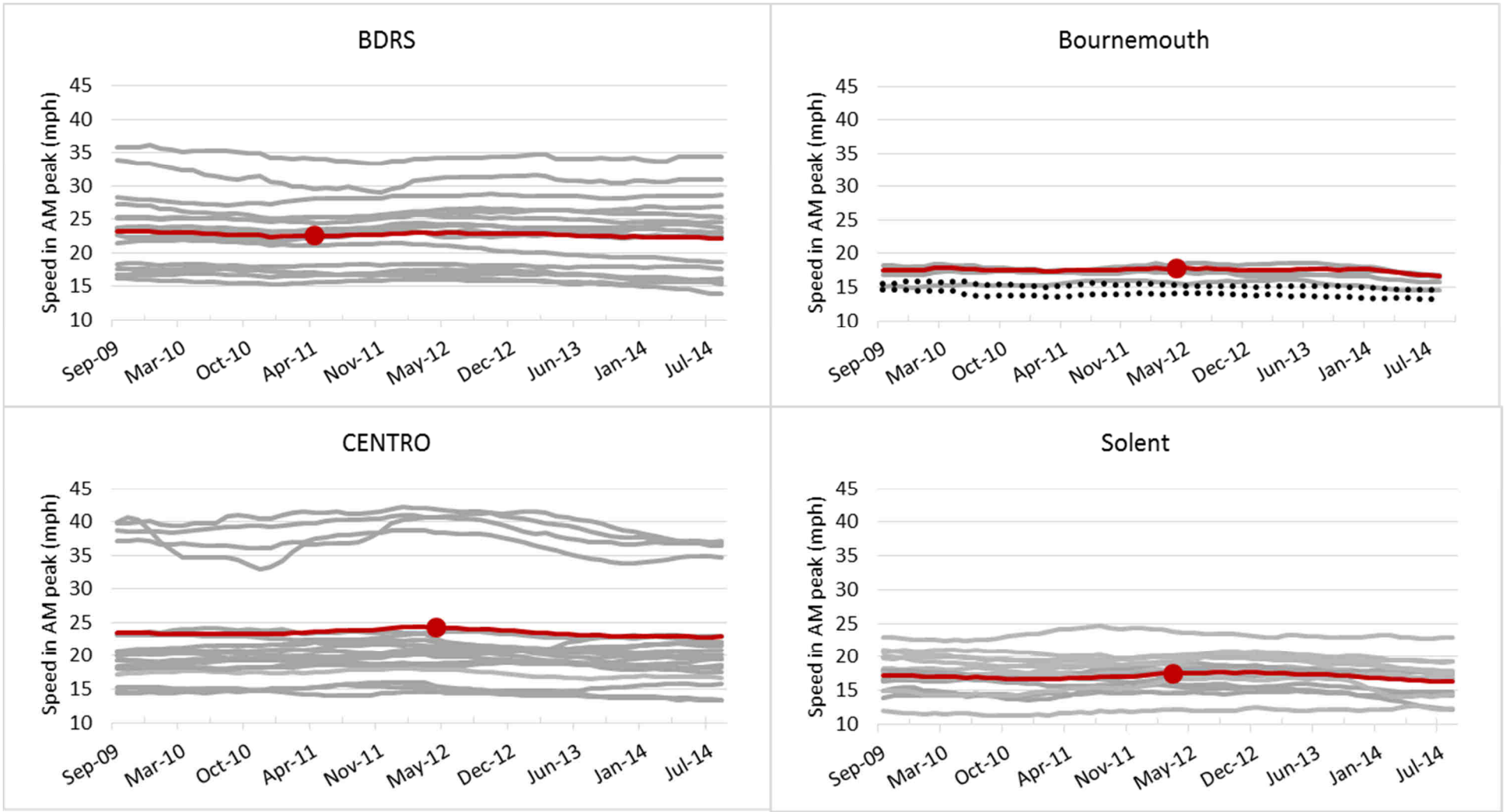
~ Indexed average speed in 2013/14 relative to 2007/08 on the Bournemouth A3049, which was identified as a non-intervention 'control' corridor, is 96%.

The general picture from Figure 5.4 is of little change in average vehicle speeds since the start of the Large Projects, but with a few individual exceptions where speeds have tended to fall (i.e. congestion has tended to worsen). Figure 5.5 and Table 5.3 suggest that the unweighted average speeds in corridors targeted by the Large Projects have tended to fall slightly, relative to 2007/08 and also since the start of the LSTF project. The slight decline in speeds on targeted corridors relative to 2007/08 is fairly similar to the pattern at the local authority level, and in the case of Bournemouth, is also similar to the pattern on the A3049, which was identified by the Large Project as a non-intervention 'control' corridor.

It is worth noting that interpretation of speed data for corridors targeted by LSTF investment is not straightforward, given that their selection for investment is likely to have been influenced by expected future trends in usage.

[11] 'A' roads that extended significantly beyond the LSTF area were excluded – for example, certain 'A' roads in Hampshire that lie partly within and partly outside the Solent targeted corridors.

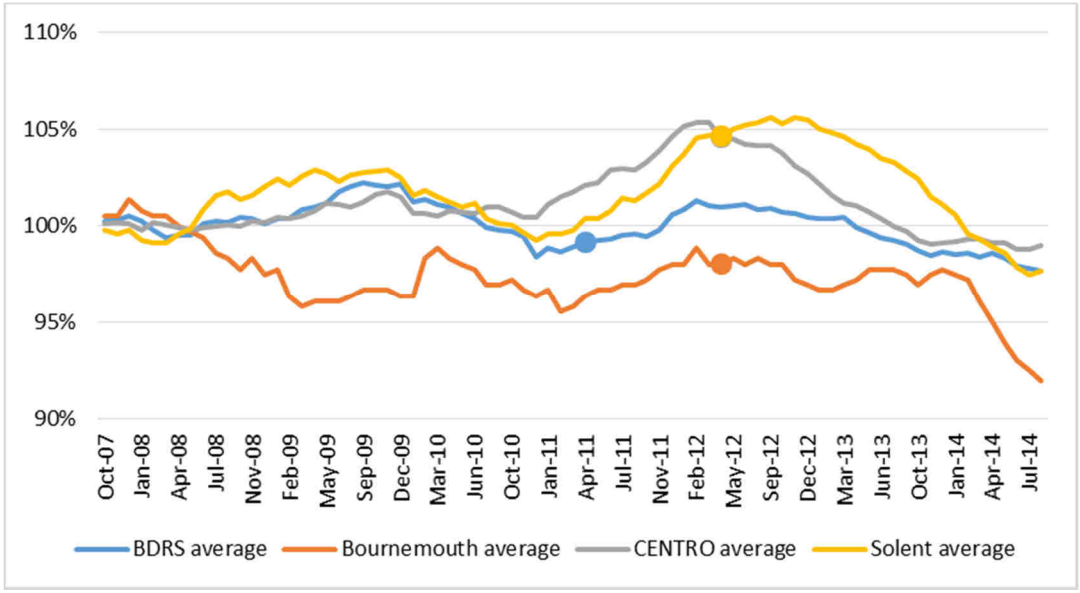
Figure 5.4: Average vehicle speeds on specific 'A' roads, from DfT experimental statistics



See next page for explanatory notes.

Notes to Figure 5.4
Data are from DfT experimental statistics for locally managed 'A' roads, for 7-10am excluding school holidays and month of August.
Grey lines are for individual 'A' roads and are simple annual averages based on flow-weighted monthly estimates, covering the period from year-ending September 2009 to year-ending September 2014.
Red line is unweighted average for 'A' roads listed below (but with any roads with incomplete data series excluded).
Dotted lines for Bournemouth are non-LSTF comparator corridor.
Filled circles show start of LSTF Key Component funding in 2011/12 (BDRS) and start of Large Project funding in 2012/13 (Bournemouth, CENTRO and Solent).
'A' roads used are as follows:
BDRS: Barnsley A628 E-bound and W-bound; A635 E-bound and W-bound. Doncaster A635 E-bound and W-bound; A638 N-bound and S-bound. Rotherham A633 N-bound and S-bound. Sheffield A61 N-bound and S-bound; A6109 N-bound and S-bound; A6178 N-bound and S-bound.
Bournemouth: Bournemouth A35 E-bound and W-bound; A3049 E-bound and W-bound (non-LSTF comparator corridor). Poole A35 E-bound and W-bound.
CENTRO: Birmingham A34 N-bound and S-bound; A38 N-bound and S-bound; A441 N-bound and S-bound; A45 E-bound and W-bound. Dudley A459 N-bound and S-bound. Sandwell A457 E-bound and W-bound. Solihull A45 E-bound and W-bound; A452 N-bound and S-bound. Wolverhampton A4123 N-bound and S-bound; A459 N-bound and S-bound.
Solent: Portsmouth A2030 N-bound and S-bound; A3 N-bound and S-bound. Southampton A27 E-bound and W-bound; A3024 E-bound and W-bound; A3057 N-bound and S-bound; A33 E-bound and W-bound; A334 E-bound and W-bound; A335 N-bound and S-bound.

Figure 5.5: Unweighted average vehicle speeds for selected 'A' roads in four Large Project areas, indexed to 2007/08



Data are from DfT experimental statistics for locally managed 'A' roads, for 7-10am excluding school holidays and month of August. 'BDRS average' is for 14 of 16 road sections in Figure 5.4, excluding two with no data at start of time series; 'Bournemouth average' is for two of four road sections in Figure 5.4, excluding two with no data at start of time series; 'CENTRO average' is for 18 of 20 road sections in Figure 5.4, excluding two with no data at start of time series; 'Solent average' is for 13 of 16 road sections in Figure 5.4, excluding three with no data at start of time series. Data indexed relative to average for Oct 2007- Sept 2008 i.e. same indexing period as used for Figure 5.2. Filled circles show start of LSTF Key Component funding in 2011/12 (BDRS) and start of Large Project funding in 2012/13 (Bournemouth, CENTRO and Solent).

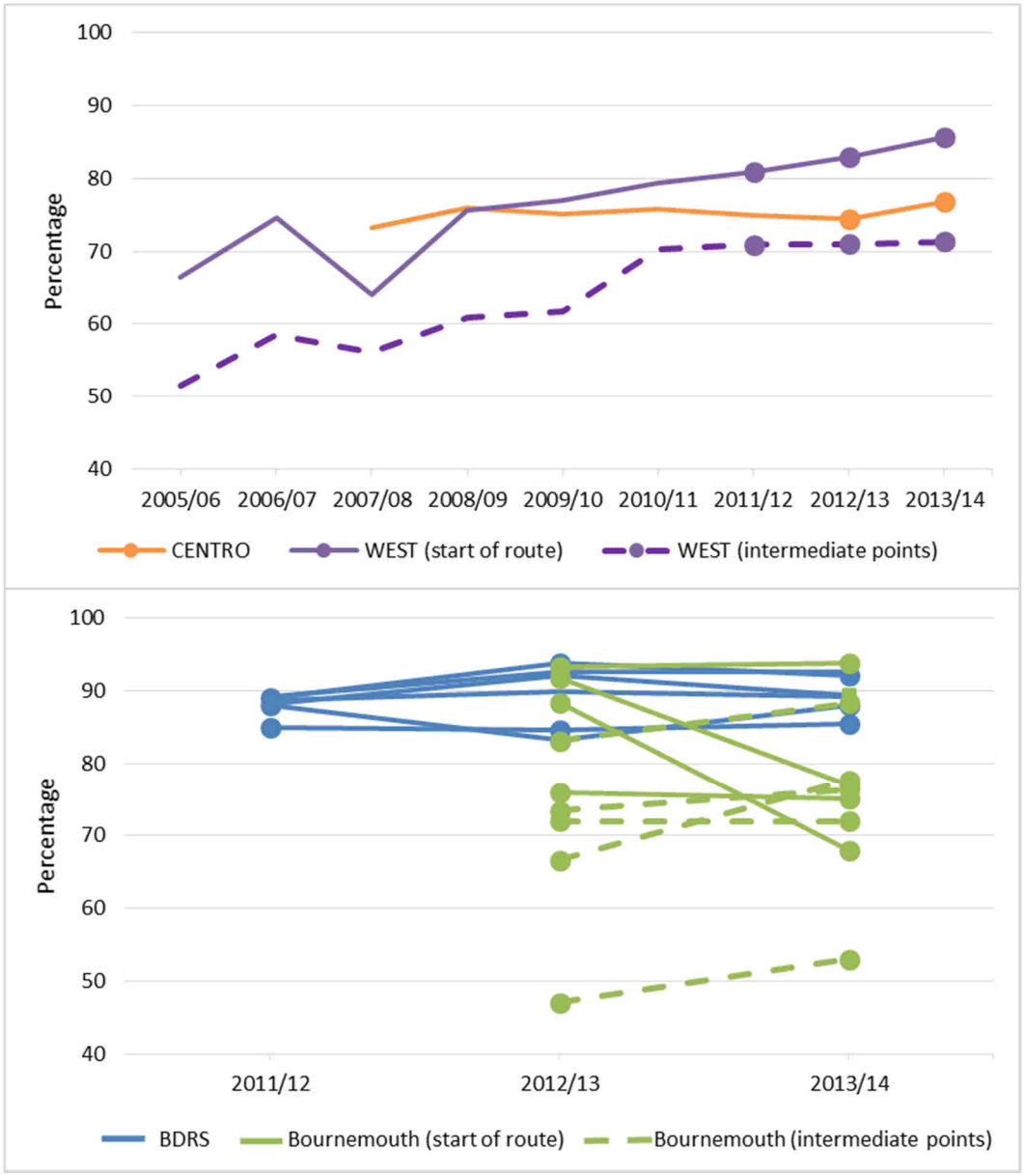
5.6 Project-level outcomes: proportion of buses operating on time

Figure 5.6 shows data for the proportion of buses operating on time, for the four Large Projects that reported this metric in their 2013/14 Outcome Reports. Data are summarised in Table 5.4. Data for CENTRO and WEST were reported in the form of a time-series for all buses across the entire network over a period of 7-9 years. Data for BDRS were reported for buses operating on the four targeted

corridors (in two cases, split into two sub-corridors), giving a total of six routes, for three years. Data for Bournemouth were reported for a series of 'timing points' along the Three Towns corridor, for two years. Two of the Large Projects provided separate data for the proportion of buses departing from the start of a route on time and the proportion of buses on time at intermediate points, and these are shown separately in Figure 5.6.

Improvements in bus punctuality could be the result of a range of types of intervention, including general improvements in traffic flow; introduction of bus priority measures at key congestion hot-spots; and adjustment of bus schedules by operators as a result of information gained from real-time data about the location of delays.

Figure 5.6: Proportion of buses operating on time



Data are from 2013/14 Outcome Reports. Filled circles show years when Large Projects were receiving funding.

Table 5.4: Proportion of buses running on time (%)

		2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Network-level changes in bus punctuality										
CENTRO				73	76	75	76	75	74	77
WEST (start of route)		67	75	64	76	77	79	81	83	86
WEST (intermediate points)		52	59	56	61	62	70	71	71	71
Corridor and route-level changes in bus punctuality										
BDRS	BARN1 corridor							89	93	93
	DEAR1 corridor							89	90	89
	DONV1 corridor							88	92	89
	DONV2 corridor (Woodhouse-Sheffield)								89	94
	DONC1 corridor A638N							88	83	88
	DONC1 corridor A630							85	85	86
Bournemouth	Poole Bus Station (start of route)								93	94
	Gervis Place (start of route)								88	68
	Boscombe Bus Station (start of route)								92	77
	Somerford (start of route)								76	75
	Ashley Road (intermediate point)								67	78
	Boscombe Bus Station (intermediate point)								73	76
	Jumpers Common (intermediate point)								72	72
	Christchurch High Street (intermediate point)								83	88
	Somerford (intermediate point)								47	53

Highlighted grey cells are for years of LSTF funding, including Key Component funding in 2011/12 where applicable.

BDRS: Data are the percentage of buses running between -1 and +5 minutes from scheduled departure times along the targeted corridors. *Bournemouth:* Data are percentage of buses running between -1 and +5 minutes from scheduled departure times, for a series of timing points along the targeted corridor. *CENTRO:* Data are percentage of buses running on time (not defined further) across the whole CENTRO bus network. *WEST:* Data are percentage of buses starting or running on time (not defined further) across the whole area network.

The overall picture is that all four Large Projects show some modest improvements in bus punctuality, although it is not clear to what extent these may be attributable to LSTF interventions[12]. Specifically:

- BDRS shows a small increase in bus punctuality in four out of the six corridors or sub-corridors. It is not clear from the 2013/14 Outcome Report whether these changes are related to specific hot-spot schemes to improve bus punctuality within these corridors, but this seems unlikely since work on hot-spot schemes is ongoing. The Outcome Report suggests more significant punctuality improvements would not be expected until 2014/15.
- Bournemouth shows an increase in bus punctuality at five out of nine timing points along the 'Three Towns' corridor. These changes follow the implementation of a large number of network improvement schemes, of which perhaps about six schemes would be anticipated to provide bus punctuality benefits.
- CENTRO shows an increase in network-wide bus punctuality in 2013/14. This is accompanied by a reduction in excess wait times, from 1.2 minutes in the previous three years to 1.1 minutes in 2013/14. These changes follow the implementation of some LSTF schemes aimed at improving bus reliability at specific locations, and so it is plausible that punctuality might be expected to increase. However, it is not clear whether network-wide punctuality improvements can be attributed solely to LSTF interventions, or whether (as perhaps seems more likely) they are related to a wider range of schemes of which the LSTF schemes form just one part.
- WEST shows a continuation of a previous trend of improving network-wide bus punctuality, at least for the 'start of route' data. This follows the implementation of some LSTF schemes aimed at improving bus punctuality at specific locations. As with CENTRO, it is not clear to what extent the improvements in punctuality may be related to a wider range of bus infrastructure improvement schemes of which the LSTF schemes form just one part.

5.7 Conclusions on outcomes related to congestion

Table 5.5 summarises the findings related to congestion. At this interim stage, it is too early to say whether the Large Projects have improved congestion – in some cases because schemes intended to achieve this have not yet been completed, and in other cases because monitoring data are not yet available for a post-implementation period.

The exceptions to this are three Large Projects (Bournemouth, CENTRO and WEST) where there are some limited signs that bus punctuality may be improving. In all three cases, schemes intended to improve bus punctuality have been implemented and limited monitoring data are available for the post-implementation period, showing modest improvements. However, in the case of CENTRO and WEST, the reported data are at the network level, and it is not known whether there have been other bus infrastructure schemes elsewhere that could be the cause of the punctuality improvements.

It is also worth noting that in Bournemouth a substantial number of schemes that might be expected to improve traffic flow have been implemented, but average vehicle speeds in the targeted corridor have slightly fallen (i.e. congestion has worsened). This is based on DfT statistics for locally-managed 'A' roads. Bournemouth has implemented schemes intended to improve bus reliability, general traffic flow, and conditions for cyclists and pedestrians along its targeted corridor, and it is possible that what is being seen is a temporary effect during the period of roadworks.

[12] Sample size (number of buses) is not given in any of the Outcome Reports, so it is also not possible to test whether the improvements in punctuality are statistically significant.

Table 5.5: Overview of outcomes related to congestion

Large Project	Over-view	Summary of change since start of LSTF project~	Attributable to LSTF?
BDRS	☐	Little change in average vehicle speeds (from DfT data)	-
	☐	Small increase in bus punctuality in 4 out of 6 corridors or sub-corridors; unlikely to be attributable to LSTF at this stage	-
Bournemouth	■	Slight decrease in average vehicle speeds (from DfT data): possibly a short-term effect of roadworks related to a large number of road / junction infrastructure alterations	-
	■	However, bus punctuality improving at 5 out of 9 timing points	Some^
CENTRO	☐	Slight decrease in average vehicle speeds (from Outcomes Report and DfT data)	-
	■	Bus punctuality showing network-wide improvements: possibly partly as a result of LSTF schemes	Some+
Hertfordshire	☐	Outcomes Report suggests little change in average vehicle speeds across whole LSTF area, but data for journey times in each town (Hemel Hempstead, St Albans and Watford) suggest average vehicle speeds increasing in Hemel Hempstead	-
	☐	No evidence on bus punctuality	-
Merseyside	☐	Slight decrease in average vehicle speeds (from Outcomes Report)	-
Nottingham	☐	Slight decrease in average vehicle speeds (from Outcomes Report)	-
	☐	No evidence on bus punctuality	-
Reading	☐	Journey time data for six radial routes are reported, but only for dates before scheme implementation (October 2011 and 2012)	-
Solent	☐	Slight decrease in average vehicle speeds (from DfT data)	-
	☐	No evidence on bus punctuality	-
Surrey	☐	Little change in average vehicle speeds on roads in target area of Guildford and Woking (from Outcomes Report)	-
	☐	No evidence on bus punctuality	-
Telford	☐	Journey time data for five routes around the Telford city centre Box Road are reported, but only for dates before the completion of changes to the Box Road	-
	☐	No evidence on bus punctuality	-
TfGM	☐	Little change in average vehicle speeds across whole LSTF area (from Outcomes Report)	-
	☐	No evidence on bus punctuality	-
WEST	☐	Slight decrease in average vehicle speeds (from Outcomes Report)	-
	■	Bus punctuality showing network-wide improvements: possibly partly as a result of LSTF schemes	Some+

■ **decrease** in average vehicle speeds / bus punctuality; ■ **no change** in average vehicle speeds / bus punctuality; ■ **increase** in average vehicle speeds / bus punctuality; ■ **insufficient data** to assess average vehicle speeds / bus punctuality; ☐ **too few schemes completed** to be expected to affect congestion.

'Overview' only shows direction of change if significant schemes that might be expected to have an effect on congestion have been completed.

~ Different Large Projects treat different time periods as 'baseline'. Changes summarised here are since 2011/12 for Large Projects that received Key Component funding (BDRS, Hertfordshire, Merseyside, Nottingham, Surrey, Telford, TfGM and WEST), and since 2012/13 for Large Projects that did not receive Key Component funding (Bournemouth, CENTRO, Reading, Solent).

^ Improvements in bus punctuality along Bournemouth 'Three Towns' corridor follow implementation of a large number of network improvement schemes.

+ Network-wide improvements in bus punctuality in CENTRO and WEST may in part be due to LSTF schemes at specific locations, but it is not clear whether other (non-LSTF) interventions may also have contributed to the improvements in punctuality at the network level.

6 Bus patronage

Key points:

Bus patronage changes across entire Large Project areas since the start of the LSTF programme are small. Nearly all Large Projects show a small rise in patronage for the last reported year, but this cannot confidently be attributed to the LSTF interventions.

On a finer-grained scale, some sharper changes in bus patronage are evident. For 13 (out of 19) sets of routes that are new or have higher service levels, patronage increase has been sufficiently clear that it can be confidently attributed to the LSTF intervention and it appears that the patronage benefit will be maintained (in most cases because the new service level has reached commercial viability). A further route shows marked patronage increase but this cannot be attributed to the LSTF intervention. Only five routes showed insufficient uplift in patronage for the new service level to be commercially viable beyond the end of the LSTF funding period.

6.1 Overview of objectives and outputs intended to increase bus use

Eleven of the 12 Large Projects have adopted objectives and targets to increase bus use, or have project strands directly concerning buses that imply this intention (Telford, a project based on achieving a large shared-use town centre space, being the exception). Table 6.1 summarises bus-related project objectives and interventions.

Several sub-groups of projects are evident:

- **Projects that have directly funded increases in bus services on specific routes** are likely to see quick indications of uptake by passengers, so some patronage uplift on such routes should be evident at this interim stage. BDRS, Bournemouth, Hertfordshire, Merseyside, Surrey, TfGM and WEST are in this situation.
- **Projects with plans for network-level improvements** generally have to contend with extended lead times and are unlikely to have reached a stage where results can be expected. In particular, new smart card schemes intended for CENTRO, Hertfordshire, Solent and TfGM have yet to come into operation (and Reading smart card scheme has been abandoned due to operator opposition).
- **Projects that are improving bus priority measures, waiting facilities and real time passenger information** are generally mid-way through their work to put these measures in place. Furthermore, these types of initiatives are likely to require time to be reflected in higher bus use. The scale of these interventions and the degree of concentration on particular routes or corridors also varies widely. In addition, it is relevant that programmes of investment of this type may precipitate investment in new buses by commercial operators, for example as part of quality bus partnership agreements, which may help generate higher patronage more rapidly, particularly when marketed. Bournemouth's Outcomes Report notes this situation but it may also apply elsewhere. Taking these factors together, it generally does not seem reasonable to expect interventions of this type to have resulted in discernible patronage increases at this interim stage, except where works are well-advanced, concentrated in key corridors and supported by operator investment (which is not necessarily reported). From the information available it appears that these circumstances might apply to Bournemouth, Solent and WEST.

Table 6.1: Summary of bus patronage objectives and interventions

	Bus patronage objective?	Summary of bus patronage objectives	Bus interventions completed?	Completed bus-related interventions^ (by latest Outcome and Output Reports)
BDRS	Yes	Target to stop patronage decline for the whole area and targets to increase patronage on particular routes. (S74, X19, A1 and ASOS 'Jobconnector' buses, route 52, Parkgate/Dearne corridor, and a bus mode share target for Doncaster 'waterfront'.)	Some	Higher service frequencies on X19, A1 and ASOS 'Jobconnector' buses, but S74 discontinued. Measures that may alleviate bus delays partially complete on Parkgate/Dearne corridor but delayed on route 52. Waterfront changes complete. 7000 free bus tickets given to employees via 'Busboost'.
Bournemouth	Yes	Project objectives are to increase bus punctuality/ reliability/attractiveness and bus patronage is listed as a core outcome indicator.	Some	Additional Sunday buses on routes M1/2 and a new Sunday Bournemouth - Poole service, X1. New bus lane on Poole Road. 51 new buses bought by operators. New bus facility at the hospital and 63 bus stops upgraded including lower-step bus access but bus shelter improvement programme delayed. Parking enforcement measures to help bus flow partially implemented. Real time information improvements delayed. Bus operator agreement and coordinated cross-operator timetable still under negotiation. Smart joint operator ticket due autumn 2014.
CENTRO	Yes	Objective to increase public transport patronage within the LSTF corridors.	Some	194 bus stops improved with build outs or real time information. Some bus priority measures. Some corridor-specific bus marketing. Smart card scheme delayed.
Hertfordshire	Yes	Objective to increase use of public transport.	Some	New bus routes ML1/2, with associated bus stop infrastructure. Watford route 10 improved, with new buses bought by operator. Smart ticketing pilot phase only.
Merseyside	Yes	Improvement to bus services is a discrete project strand. Increase in patronage on targeted routes is listed as an indicator.	Some	11 'new or improved' bus services (not all identified). No indication that plans for real time information at employment sites or a new bus control centre for Liverpool have been implemented.
Nottingham	No	Overall target for 10% increase in mode share of sustainable travel; bus patronage not separated.	Some	Multi-operator 'Kangaroo' season tickets (smartcards). Five 'Community Smarter Travel Hubs'. Smart card retail network development still at pilot stage.
Reading	Yes	Target to raise bus trips by 7200 per day.	Some	Fare discounts on several selected routes for periods of some months. Smart ticketing dropped, partly because bus companies oppose multi-operator ticketing.

	Bus patronage objective?	Summary of bus patronage objectives	Bus interventions completed?	Completed bus-related interventions^ (by latest Outcome and Output Reports)
Solent	Yes	Modelled forecasts expect the LSTF interventions to result in significant increase in public transport patronage.	Some	Bus station improvements and new bus stops on some corridors. Over 300 real time information screens installed. Smart ticketing not yet implemented.
Surrey	Yes	Increasing public transport use for trips to work is identified as a 'second order outcome'. Specific targets for Onslow Park & Ride and patronage on key corridors.	Some	Bus stop improvements between Guildford and Woking. Onslow P&R (west Guildford) opened November 2013. Real time passenger information upgrades not yet in place.
Telford	No	A target for 10% shift to sustainable modes but no bus-specific objective or target.	No	-
TfGM	Yes	Target for 8% increase in bus travel. Project strand devoted to demand-responsive community transport for access to work.	Some	Four 'Local Link' demand-responsive bus services. Smart ticketing for buses and bus priority traffic management systems not yet implemented.
WEST	Yes	A general aim to encourage modal shift on important corridors. Bus patronage listed as an indicator for LSTF (and the joint local transport plan) and projected target levels shown.	Some	New and enhanced services on specific routes. Interventions to improve bus reliability. Bus stop improvements. Real time information improvements.

^ Bus-specific schemes only: activities such as personal travel planning that promote multiple sustainable modes including bus use are only listed if promoting bus use appears to have been emphasised.

6.2 Metrics used to monitor bus patronage

Where bus operators' data from electronic ticket machines is available, this forms the most reliable dataset. Commercial confidentiality can cause this data to be withheld unless it covers many routes and multiple corridors, although sensitivities vary significantly between operators and locations. All the reported data for area-wide patronage across the Large Project areas appears to come from this source. Even this data may be subject to system errors on occasion, and this appears to have been an issue for the main operator in the WEST Large Project area in 2012/13.

If operator data is unavailable, Large Projects have to resort to other, less precise, methods to estimate bus use. Surveys and cordon counts are less reliable because they can only cover limited time periods and it is not possible to exactly replicate conditions from one count to the next. This applies to the Reading town centre count of bus boardings and alightings.

Another estimation method is used by Surrey to estimate Onslow Park and Ride use; this appears to be based on numbers of parked cars.

In other cases, for example the figures for annual passenger numbers at bus stations in the Telford area, the way that data has been collected is unclear.

Ideally, patronage data should be considered over a number of years so that deviation from trend can be observed, with a sufficiently small reporting interval that the response (if any) close to the time of the intervention might be evident. This is particularly valuable for detecting and attributing the effect of interventions on individual routes and corridors, for which interventions may have a rapid and sharp influence.

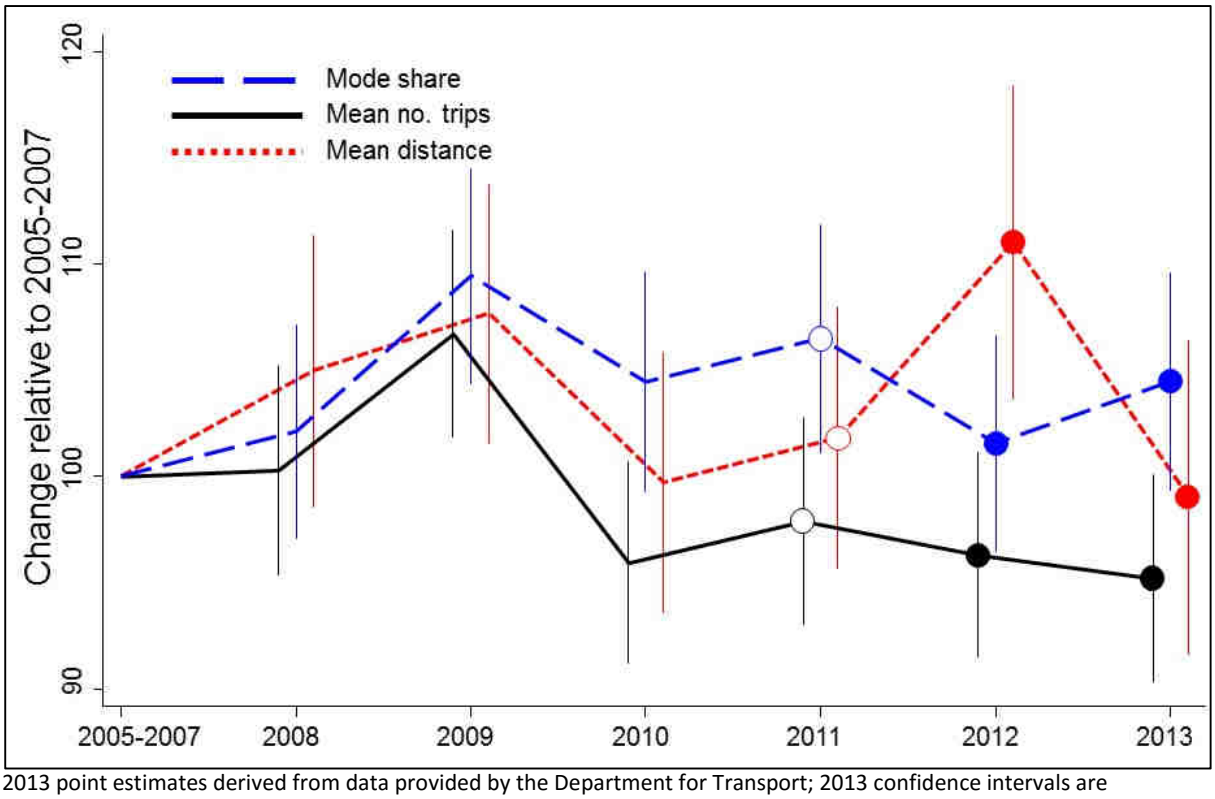
In practice, Outcomes Reports have presented data at the route or corridor level with many different metrics (daily averages, weekly averages, monthly averages, annual averages, rolling averages) over periods of time that vary from a single post-intervention patronage figure to three years' data spanning the intervention. For the purposes of this report, numbers are converted to equivalent annual averages to provide comparable data for all Large Projects.

6.3 National bus patronage patterns

National trends for *per capita* bus mileage and for numbers of bus trips *per capita* are shown in Figure 6.1, which is based on National Travel Survey data for weekly bus use in urban areas excluding London. It should be noted that the patronage metric for the National Travel Survey differs from the patronage data from the Large Projects in that it observes bus travel *per capita* rather than total bus use.

The number of trips (black line in Figure 6.1) is the metric most closely comparable to the patronage (trip) data gathered from Large Projects. This curve shows a peak in 2009, declining to a low point immediately thereafter. For the period of the LSTF programme the number of weekly trips is relatively stable, with a slight decline from 2011 to 2013, the last year in which National Travel Survey data is available. However, the change within this period is small and is within the range of statistically likely year-on-year variation for the National Travel Survey sample size.

Figure 6.1: Bus travel in urban areas of England, excluding London, people of all ages (from National Travel Survey data)



2013 point estimates derived from data provided by the Department for Transport; 2013 confidence intervals are approximate, based on the assumption that uncertainty around the estimates in 2013 is the same as in 2012

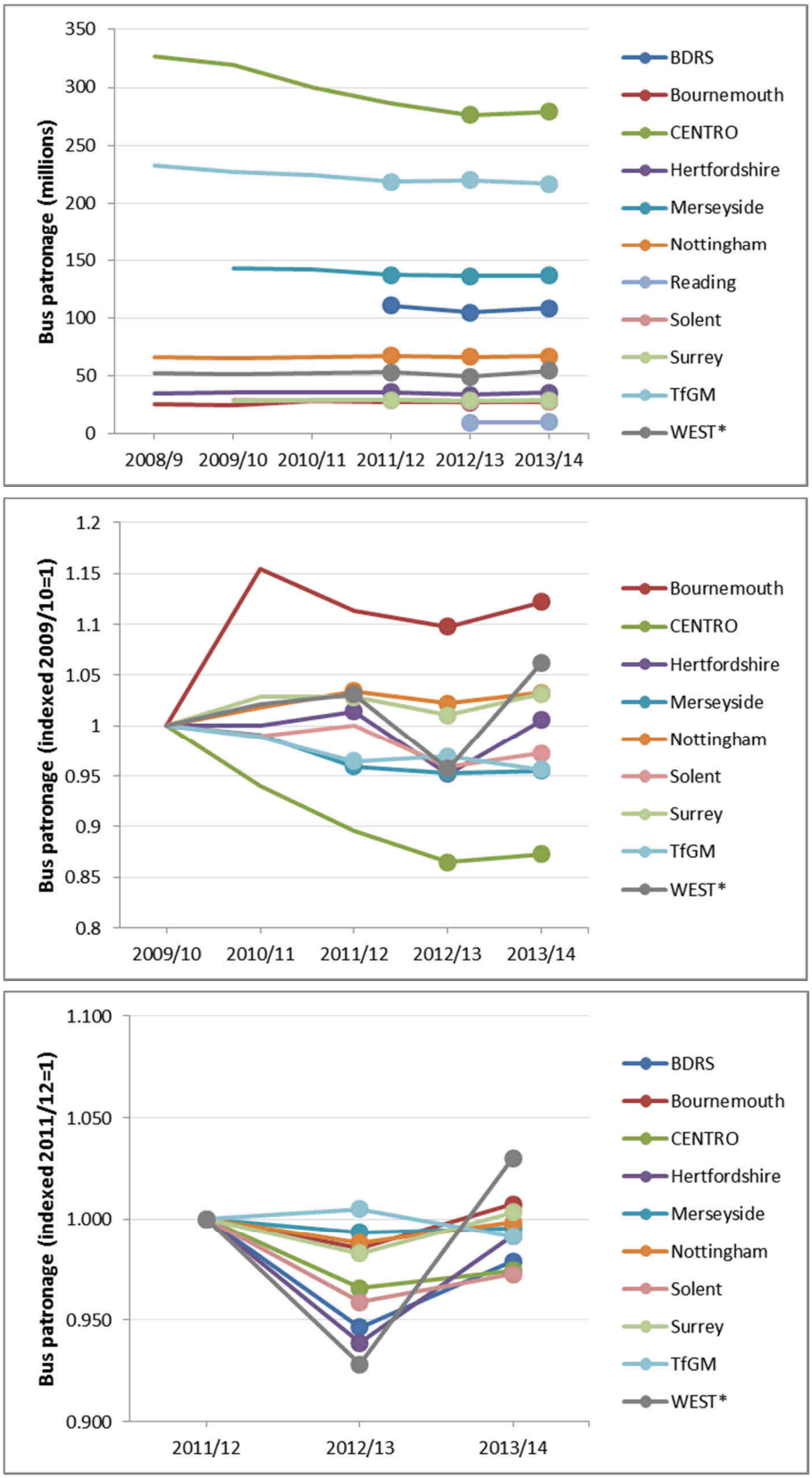
6.4 Area-wide bus patronage data for Large Projects

At the level of the whole project area, Annual Outcomes Reports contain useable annual bus patronage data for ten of the twelve Large Projects. Telford Outcomes report does not include area-wide data. Solent Outcomes Report includes data for past years up to the baseline year, but not for the present year 2013/14.

The length of the time-series where data has been presented varies from three to six years or more. The following analysis considers data back to financial year 2008/9, prior to which the effect of introduction of free travel for older people is liable to have been a strong factor in some areas.

Area-wide annual patronage trends are shown graphically in Figure 6.2, in millions of trips per year, and indexed to financial years 2009/10 and 2011/12 (source data tabulated in Tables 6.2 and 6.3).

Figure 6.2: Bus patronage trends in the Large Project areas



Filled circles show years when Large Projects were receiving funding. The trend line for Solent in the top graph is obscured by that for Surrey, to which it is very close numerically.
*WEST patronage for 2012/13 may be significantly under-reported for its main bus operator.

Table 6.2: Area-wide bus patronage (millions of trips per year)

Millions	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14	Area considered	Notes
BDRS				110.9	104.9	108.5	All S. Yorkshire	
Bournemouth	25.8	24.6	28.4	27.4	27.0	27.6	Poole & Bournemouth	
CENTRO	326.7	319.5	300.2	286.1	276.3	278.8	All CENTRO area	Tram not included
Hertfordshire	35.1	35.4	35.4	35.9	33.7	35.6	All Hertfordshire	
Merseyside		142.9	141.6	137.1	136.2	136.5	All Merseyside	
Nottingham	66.1	65.0	66.2	67.2	66.4	67.1	Greater Nottingham	Tram not included
Reading					9.8	10.2	'Premier' routes only	Generated as 260 x weekday average
Solent		29.1	28.8	29.1	27.9	28.3	Southampton & Portsmouth	
Surrey		28.2	29.0	29.0	28.5	29.1	All Surrey	
Telford								No area-wide figures provided
TfGM	233.0	226.6	224.0	218.6	219.7	216.7	Greater Manchester	Tram not included
WEST	52.6	51.4	52.5	53.0	49.2*	54.6	West of England sub-region	2012/13 may be under-reported

Table 6.3: Area-wide bus patronage indexed to 2009/10 and 2011/12

	Indexed 2009/10	2009/10	2010/11	2011/12	2012/13	2013/14	*Indexed 2011/12*	2011/12	2012/13	2013/14
BDRS								1	0.946	0.979
Bournemouth		1	1.15	1.11	1.10	1.12		1	0.985	1.007
CENTRO		1	0.94	0.90	0.86	0.87		1	0.966	0.974
Hertfordshire		1	1.00	1.01	0.95	1.01		1	0.939	0.992
Merseyside		1	0.99	0.96	0.95	0.96		1	0.993	0.996
Nottingham		1	1.02	1.03	1.02	1.03		1	0.988	0.999
Solent		1	0.99	1.00	0.96	0.97		1	0.959	0.973
Surrey		1	1.03	1.03	1.01	1.03		1	0.983	1.003
TfGM		1	0.99	0.96	0.97	0.96		1	1.005	0.991
WEST		1	1.02	1.03	0.96*	1.06		1	0.928*	1.030

Grey-shaded cells indicate years during which projects have been receiving LSTF funding. Projects funded in 2011/12 were Key Component precursors to Large Projects.

* One of the bus operators in the WEST area suspects that its 2012/13 patronage was significantly under-reported.

In absolute terms the bus use in the largest conurbations dwarfs the other areas[13]. The most striking feature is the extent of the decline in bus use in the CENTRO area across the six years considered. This decline is mirrored, but to a lesser degree, in Greater Manchester and Merseyside[14]. The scale that accommodates CENTRO's 279 million trips does not allow comparison of trends with the smaller projects, for which purpose it is more helpful to use graphs based on indexed data.

Viewed on an indexed basis since 2009/10, the picture varies considerably between the Large Project areas that have reported data over this period[15]. The decline in bus use in the CENTRO area is shown to be greatest as a proportion of total bus use as well as in absolute terms. Decline in Greater Manchester and Merseyside in indexed terms is very similar. Bournemouth and Nottingham clearly show a different trend to these larger cities, with a rise over the five years considered, as does Surrey.

The erratic appearance of the WEST patronage trend may be due to a data collection problem experienced by its main bus operator, which suspects that its patronage for 2012/13 is significantly under-reported. It is likely that without this anomaly the trend for WEST would appear similar to that for Nottingham. WEST is the only Large Project that shows a notable area-wide rise over the period of the LSTF. Although the WEST Large Project may have significantly contributed to this rise, it cannot be entirely attributed to the LSTF programme because Bristol had a multi-year investment programme in bus priority measures and bus infrastructure over four years to 2012, presently has a Better Bus Area project, and has seen significant investment in new buses by commercial bus companies (in part due to the public investment programme). In this context it is probably significant to note that, if the anomalous year 2012/13 is excluded, the rise over the LSTF period is in line with the long-term rising patronage trend for the WEST area since 2009/10.

Viewed on an indexed basis since 2011/12, the picture is strikingly similar for nine of the ten Large Projects for which data are available: a fall from 2011/12 to 2012/13 followed by a rise to 2013/14. Only TfGM shows a different trend (a mirror image). The similarity of the pattern across the bulk of Large Projects points towards the possible influence of a common external (exogenous) factor. However, the National Travel Survey dataset (graphed in Figure 6.1) appears to show a continuing downward trend in other urban areas of England outside London. All of the changes in question are very small, but the difference between the NTS data and the Large Project pattern suggests that an effect from LSTF intervention cannot be ruled out.

6.5 Corridor or sub-regional bus patronage data for Large Projects

A number of Large Projects have focused their interventions on defined corridors or towns. In theory this should provide a higher likelihood of detecting and attributing uplift in bus patronage. In practice, this level of analysis is not possible from the data provided in the interim Annual Outcomes Reports. The reasons are listed below by project.

- **BDRS:** 'Corridors' are rather broad areas. Bus data is not presented at this level.
- **Bournemouth:** Focused on a single corridor. But bus operators refuse to provide data at this level.

[13] In the case of Reading this disparity is exaggerated because patronage data in the Outcomes Report is only presented numerically for the network of 'Premier' routes and is only given as weekday averages, so minimal annual totals have been generated through multiplying by the number of weekdays in a year (52 x 5 = 260).
[14] BDRS has also seen longer term patronage decline but the reported data series is too short to show this.
[15] Solent report patronage prior to 2009/10 but indicate a discontinuity in the data when the collection methodology in Southampton was significantly changed prior to that year, so earlier numbers are disregarded.

- **CENTRO:** Collecting corridor-specific data, but not intending to present it until the final Outcomes Report.
- **Solent:** Multiple corridors, grouped for analysis. But 2013 data anomalies are unresolved.
- **WEST:** Corridor-based approach, but data is not presented at this level.

Three further Large Projects are collecting data that has potential to show patronage trend changes at a sub-regional level.

Merseyside is collecting data for the bus routes that are part of its Quality Bus Partnership. This data is not based on actual ticket numbers but comprises 'modelled figures based on weighted results from Merseytravel reimbursement surveys and route scheduled mileage'. Even so, data is only provided in an indexed form (stated to be for reasons of commercial confidentiality). Just two years are presented, so it is not possible to say whether there is a deviation from the long-term trend on this set of routes. However, it can be seen that patronage on these routes (which account for 30% of patronage on commercial bus routes in Merseyside) has risen faster than that across Merseyside as a whole. The Quality Bus Partnership routes saw an increase in patronage of 4% from 2012/13 to 2013/14, whereas area-wide patronage rose 0.2% in the same period. The 2013/14 Outcomes Report indicates that personal travel planning was anticipated to have an impact on the Quality Bus Partnership routes. However, these routes have also been beneficiaries of Better Bus Area funding during the same period, so it is not possible to say how much (if any) of the rise might be attributable to LSTF interventions.

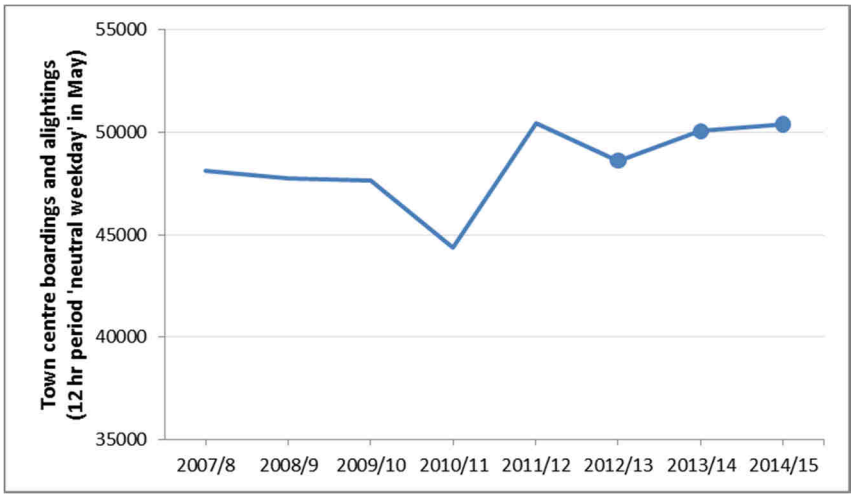
Reading runs an annual 12-hour count of bus use within a town-centre cordon, choosing a 'neutral week day' in May. In practice this appears a rather similar measure to the passenger numbers recorded on the 'Premier' route network (which was reported in the area-wide section above, although it is only a partial measure of area-wide patronage)[16]. The cordon count data does however, provide an extra data point in 2014.

The cordon count data plotted in Figure 6.3 (source data tabulated in Table 6.4) confirm the patronage rise the area-wide 'Premier' route patronage data showed for 2012/13 to 2013/14, and show that the rise has continued into 2014/15 to approach its previous high in 2011/12. This continuing rise is also shown in further area-wide 'Premier' route ticket data that are available for the first part of 2014/15. The time lag in availability of National Travel Survey data precludes determination of whether this trend[17] simply reflects a national trend or might be due to local factors, such as LSTF intervention. It can be noted, however, that Reading did not receive Better Bus Area funding, so it can be said that the rise is not due to interventions arising from that programme.

[16] The town centre count for a 12 hour weekday in 2013/14 was 50,061, for which year the average weekday patronage on 'Premier' routes was 39,240.

[17] Fitting a Poisson model, there is strong probability ($p<0.001$) that both the 2013/14 and 2014/15 cordon count numbers are higher than the 2009/10-2011/12 average. However, if large yearly variability is ignored, these data points can also be interpreted as showing no deviation above a long-term rising trend, indicating that the rise in recent years might be due to continuation of other underlying factors rather than LSTF.

Figure 6.3: Reading town centre bus boardings and alightings



Filled circles show years when Reading Large Project was receiving LSTF funding

Table 6.4: Reading town centre bus boardings / alightings (12 hour count 'neutral weekday' in May)

	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Reading	48,114	47,785	47,679	44,361	50,474	48,630	50,061	50,411

Grey-shaded cells indicate years when Reading Large Project was receiving LSTF funding

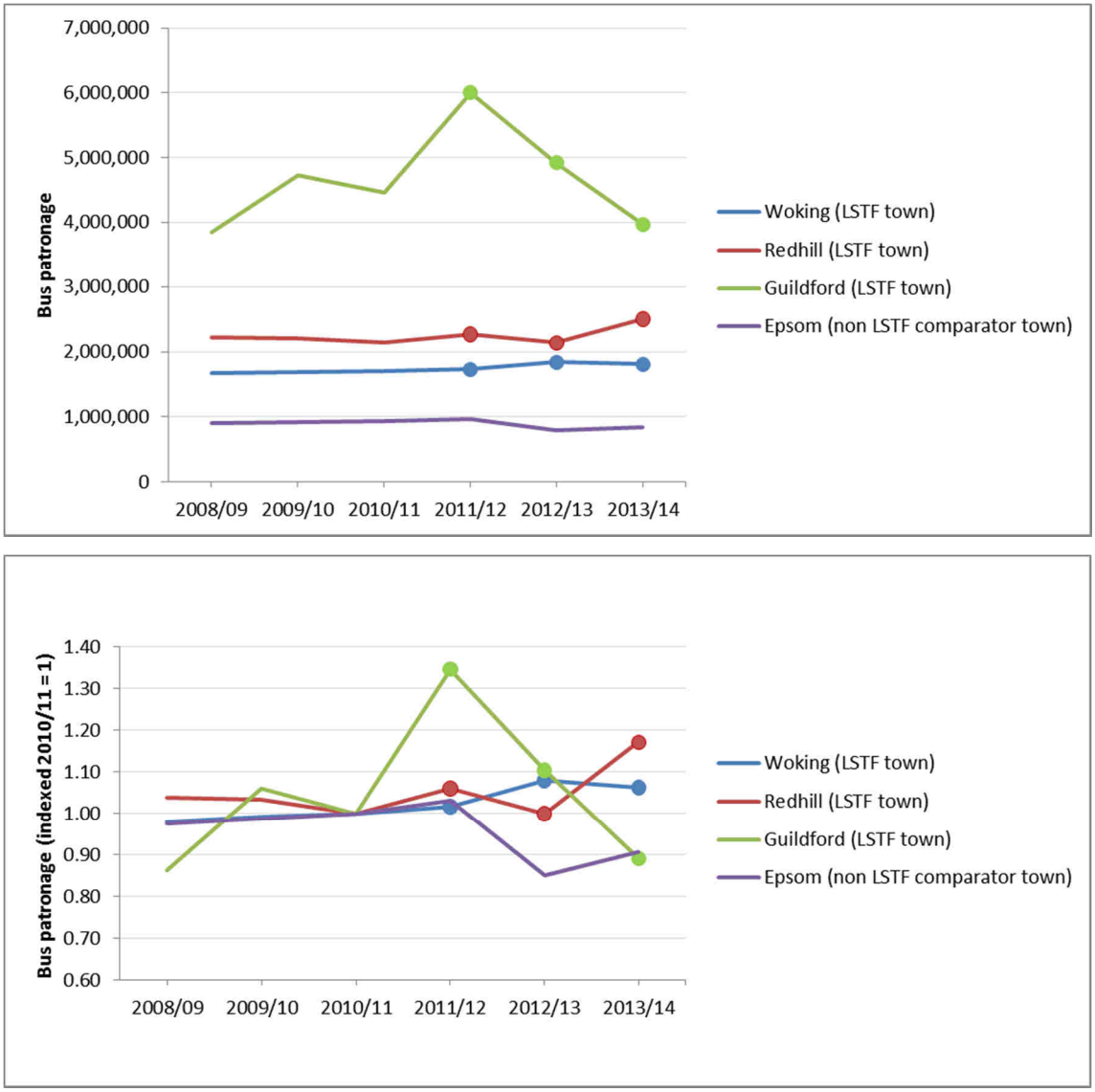
Surrey has provided supplementary information allowing comparison of trends in bus use in the three Large Project towns (Guildford, Redhill and Woking) with a comparator town (Epsom) that has not been the subject of LSTF improvements. These data are tabulated in Table 6.5 and the trends are plotted in Figure 6.4. Although the data cover a consistent set of route numbers the data are suspected to be problematic in several respects: bus route numbers and bus routes have changed during the period in question; changes in bus operators are known to have resulted in large patronage changes; passenger numbers were recorded through a manual process susceptible to variable levels of bus driver diligence. The extreme (>50%) variability within the Guildford time series data tends to confirm these questions regarding the data collection methodology and indicates that the variation due to these non-LSTF factors is far larger than the scale of any patronage changes that could reasonably be expected to have resulted from LSTF. Thus, although the indexed patronage trend in the comparator town can be seen to be running below the LSTF towns (taken together), it is not possible to draw firm conclusions from this dataset about the effects of the LSTF programme.

Table 6.5: Annual bus patronage in Surrey Large Project towns compared with a non-LSTF comparator town

	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14
Guildford (LSTF town)	3,845,415	4,725,743	4,457,880	6,004,468	4,922,349	3,971,029
indexed to 2010/11	*0.86*	*1.06*	*1.00*	*1.35*	*1.10*	*0.89*
Redhill (LSTF town)	2,218,816	2,210,879	2,137,987	2,265,598	2,135,017	2,504,985
indexed to 2010/11	*1.04*	*1.03*	*1.00*	*1.06*	*1.00*	*1.17*
Woking (LSTF town)	1,666,015	1,687,725	1,702,289	1,729,527	1,838,863	1,807,859
indexed to 2010/11	*0.98*	*0.99*	*1.00*	*1.02*	*1.08*	*1.06*
Epsom (no LSTF)	908,314	919,774	931,114	959,642	791,158	844,555
indexed to 2010/11	*0.98*	*0.99*	*1.00*	*1.03*	*0.85*	*0.91*

Grey-shaded cells indicate years when Surrey Large Project was receiving LSTF funding

Figure 6.4: Annual bus patronage in Surrey LSTF towns compared with a non-LSTF comparator town



Filled circles show years when Large Projects were receiving funding

Telford reports bus passenger numbers at Telford bus station. The data are tabulated in Table 6.6 and plotted in Figure 6.5.

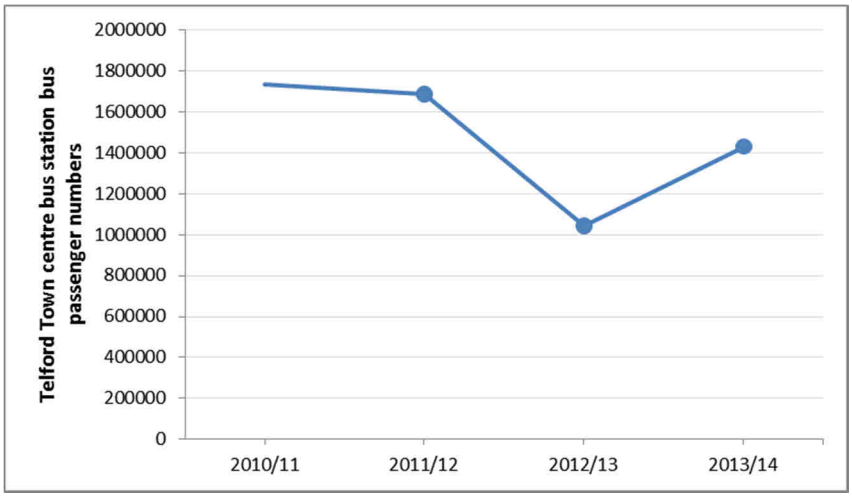
As with most other Large Projects the pattern is a drop in 2012/13 followed by a recovery in 2013/14, but the extent of the change is an order of magnitude greater. No information is available to determine whether the large changes reflect a data collection issue (it is not clear whether the source is electronic ticket machine data provided by operators or a more approximate collection process) or whether the fluctuations arise from local disruption in 2012/13 (for example the town centre Box Road scheme which is the centrepiece of the LSTF Project).

Table 6.6: Telford town centre bus station passenger numbers

	2010/11	2011/12	2012/13	2013/14
Telford	1,734,312	1,688,155	1,043,462	1,431,142

Grey-shaded cells indicate years when Telford Large Project was receiving LSTF funding

Figure 6.5: Telford town centre bus station passenger numbers



Filled circles show years when Telford Large Project was receiving LSTF funding

6.6 Route-specific bus patronage data for new or improved routes

A number of Large Projects have used LSTF funding to create new bus services, to enhance service levels on existing routes, or to extend existing routes to serve new areas. These types of changes are the most likely to show quick, clear effects on patronage and offer the greatest potential for definite attribution to LSTF interventions.

Six Large Projects have provided data for new or improved routes that can be analysed to assess the relationship between patronage uplift and LSTF interventions. The data covers 19 sets of bus routes.

Patronage increase can most easily be attributed to LSTF activity for interventions that have created completely new routes. These routes would not have existed without LSTF funding so all the new patronage can be attributed to the intervention with confidence (except where an adjustment is required for a new route that has caused significant abstraction from pre-existing parallel routes, but this does not appear to be the case for any of the LSTF-supported routes).

For upgraded routes, further information is required in order to assess the amount of patronage uplift and the degree to which any uplift may be attributed to the LSTF intervention. It is necessary to know the date of the intervention and to have descriptive information about the nature of the intervention, to assess the timing of the change in patronage trend relative to the timing of the intervention and to assess whether the intervention is of a type and size that might reasonably be expected to result in patronage changes on the scale observed. To estimate change above a 'do-nothing' situation it is necessary to obtain time-series data that shows the pre-existing trend on the route in question. If the pre-intervention trend is rising, patronage uplift can only be attributed to LSTF with confidence if it is significantly above the projected continuation of the pre-existing rising trend. Nevertheless, it is desirable also to consider the trend on a comparator bus route or a set of comparator routes, and use of a comparator may be essential to confidently attribute changes to the LSTF intervention in cases where deviations from the previous trend are small.

Provision of these datasets and the necessary accompanying information is very patchy, but fortunately the extent of the route-specific uplift is so large and rapid in most cases that it is still possible to confidently associate the change with the LSTF intervention.

Table 6.7 lists bus routes that have benefitted from LSTF-funded improvements[18], in each case indicating where a subsequent patronage increase can be confidently attributed to the intervention, with details of the data that allows estimation and attribution of the patronage uplift. For routes where operators have insisted on commercial confidentiality, a percentage increase rather than an absolute increase is given. In all the cases listed, the absolute patronage increases are known, and have been used in the meta-calculation that follows to estimate the total patronage uplift resulting from the whole set of services.

Table 6.7 does not include Bournemouth, where the Large Project has laid on extra Sunday services for routes M1 (Castle Point – Poole) and M2 (Boscombe - Poole) and a new 1X Sunday bus service from Bournemouth to Poole, because the operators of these routes have refused to release patronage data to the council[19]. Some further Hertfordshire bus routes (306, 318, 622, S1/2/3, S22) appear to have received service improvements according to information in Annual Outputs Reports but are excluded because no results were reported in Outcomes Reports and patronage data has not been obtainable subsequently[20].

Table 6.7: Patronage uplift for routes for which LSTF funding has improved service levels

Project / Route	Annual uplift	Notes on attribution of patronage uplift to LSTF activity
BDRS		(For more detailed discussion of BDRS routes see Chapter 12)
ASOS Jobconnector	192,000	Attributable: service would not exist without LSTF. Anticipated to be commercially viable in future.
A1 Jobconnector	135,000	Not attributable: funding, which was for a minor upgrade, only started in Feb 2014, and cannot explain the whole patronage rise in 2013/14.
S74 Jobconnector	2,400	Attributable: no service previously, but discontinued as unviable.
X19 Jobconnector	180,000	Attributable: patronage shows a clear sharp upward deviation from a previously flat trend when the service frequency was doubled. Commercially viable at the new service frequency.
Hertfordshire		
ML1/2	40,376	Attributable: new services (to Maylands business park) but as yet only achieving 27% of their commercial viability target.
Watford route 10	21%	Attributable: patronage also rose in the year prior to the upgrade but only by 1%. Absolute figures commercially sensitive. Commercially viable at the new 10 minute service level.
Merseyside		
264	3,660	Attributable: a new service (to extend hours of the 265 Halewood to Whiston Hospital link). Annual uplift extrapolated from first two months' patronage. No information on projected future viability or local plans for further funding.
249	5,360	Attributable: a new service (to Knowsley Leisure Park). Annual uplift calculated from figures for average monthly patronage. Has not reached commercially viability as intended and is not due to receive further funding to continue.

[18] In addition to the tabulated interventions, Reading is due to implement a large park and ride scheme, but this is not yet in operation.

[19] Where operators are unwilling to share patronage data with the local authority (even under a guarantee of confidentiality), local authorities are faced with an insurmountable challenge in understanding whether they are getting good value for money for their investment of public funds.

[20] From dialogue with Hertfordshire it appears that the LSTF-funded service upgrades to 622 and S1/2/3 have been discontinued as unviable, whereas the 318 service is continuing on a commercial basis but patronage figures have not been sought from the operator. No information is available for the 306 or S22.

Project / Route	Annual uplift	Notes on attribution of patronage uplift to LSTF activity
111	9,370	Attributable: a new service*. Annual uplift calculated from figures for average monthly patronage. Has not reached commercial viability as intended and is not due to receive further funding to continue.
Surrey		
Onslow P&R	60,000	Attributable: new facility. Annual patronage estimated from car park monitoring (survey due March 2015). Commercial viability unknown.
TfGM		
Local Link	20,531	Attributable: only a single pre and post data point is provided but these show very substantial uplift, above 100%, for each of the four upgraded demand-responsive services for which this uplift is a combined total. Annual uplift calculated from figures for average monthly patronage. Passenger numbers do not appear commercially viable. This would be expected for services of this nature, but the local commitment to continue funding is unknown.
WEST		
X18	18,672	Attributable: new service (peak-hours-only peak-direction-only commuter service Kingswood to Aztec West). Anticipated to be commercially viable.
C1-8	16,296	Attributable: new services (peak-hours-only peak-direction-only commuter services Weston to Bristol N. Fringe). Anticipated to be commercially viable.
X1 upgrade	28%	Attributable: marked departure from previous patronage trend at point of service upgrade (from two to three buses per hour). Uplift calculated** relative to a comparator of all other First bus services in Greater Bristol. Anticipated to be commercially viable.
X2/3 upgrades	24%	Attributable: marked departure from previous patronage trend at point of service upgrade (from two to four buses per hour). Uplift calculated** relative to a comparator of all other First bus services in Greater Bristol. Anticipated to be commercially viable.
UWE 19	88%	Attributable: clear rise in patronage after service improvement, but significant uncertainty regarding patronage levels prior to service changes. The service is now running on a commercial basis.
UWE 13/13a	40%	Attributable: clear rise in patronage after service improvement, but significant uncertainty regarding patronage levels prior to service changes. The route has since been split and changed with part operating commercially and part continuing to receive subsidy (via University of West of England).
Route 379	469%	Attributable: marked departure from previous patronage trend at point of service upgrade (from peak-only to hourly, with later route alterations). Anticipated to be commercially viable.
Bristol airport A2	10,025	Attributable: new service. Annual patronage uplift extrapolated from first nine months of operation. Now running to a commercial schedule.

* Funding was initially provided to extend service times for the Jaguar plant bus service but the resulting take-up was too low to justify continuation, so funding was subsequently switched to route 111.

** The data used is not from Outcomes Reports or Outputs Reports but draws on data provided to the meta-analysis research team by First for other research for DfT (Sloman et al. 2015 *Finding the Optimum: revenue / capital investment balance for sustainable travel*).

A number of the routes listed in Table 6.7 serve employment sites that were previously impossible (or extremely difficult) to reach by bus. In the absence of these new bus services, a substantial majority of trips would be made by other modes. For example, this applies to the ASOS Jobconnector (BDRS), ML1/2 (Hertfordshire), Local Link (TfGM), and X18 and C1-8 (WEST). Some other routes serve destinations that *could* previously be reached by bus, but now offer a more

attractive journey (for example an express service). This could in theory lead to a combination of modal shift (e.g. from car commuting to bus commuting) and trip generation (e.g. new trips for other purposes such as shopping). Data on diversion rates and journey purpose are limited, but in the case of the X1 and X2/3 in WEST, it is known that loadings are very high at peak commuter times, and survey data suggest that a high proportion of new passengers previously travelled by car as drivers: 64% in the case of the X1 and 68% for the X2/3[21].

Table 6.7 indicates whether a service is due to be continued, either as a commercially viable service, or under another funding programme. This information is required in order to assess the levels of continuing annual benefits, such as car mileage and emissions (carbon) reductions, that are likely to result from the interventions. The following calculations of ongoing car mileage and emissions reductions exclude all services where operation is anticipated to cease after LSTF funding ends or the likelihood of future operation is unknown: Hertfordshire ML1/2 services are assumed to be too far from commercial viability to continue; Merseyside 264 service is assumed to be likely to stop for the same reasons as the other Merseyside services. Onslow Park and Ride represents a significant level of investment, so it is presumed that local support for the service will continue even if patronage is not fully commercial. TfGM's investment in Local Link also appears to be part of a longer term emphasis on demand-responsive services and is presumed to be due to continue. Our calculations of ongoing car mileage and emissions reductions therefore consider only 13 bus services.

Estimation of mileage and emissions (carbon) benefits also requires knowledge of journey lengths and the proportion of the LSTF-attributed patronage uplift that previously made the trip as car driver. For some routes passenger survey data provides one or both of these pieces of information (both are known for X19 Jobconnector and X1, X2/3; only the diversion factor from car is known for X18 and C1-8). For the ASOS Jobconnector service, these factors have been estimated in discussion with BDRS (see Chapter 12). For services where one or both of these factors are unknown, the journey length is taken to be the average non-London local bus trip length, as reported from the National Travel Survey[22], and the diversion rate is taken as the average proportion of new bus users that used to travel by car as assessed by academic and professional studies (Mackie et al. 2002 and TAS 2002 found, respectively, that 32% and 33%[23] of new bus users had previously travelled by car). The resulting estimates of car mileage and emissions savings in Table 6.8 should therefore be considered to be indicative rather than precise.

More than 90% of the car mileage savings and carbon savings tabulated are due to routes that appear fully commercial at the new level to which the LSTF funding has boosted the service. It is therefore reasonable to assume that these levels of benefits from the LSTF interventions will continue indefinitely.

[21] Survey data for X1 and X2/3 is not from Outcome Reports or Output Reports but draws on data provided for other research for DfT (Sloman et al. 2015 *Finding the Optimum: revenue / capital investment balance for sustainable travel*).
[22] 7.6km, National Travel Survey 2013 Tables NTS 0308/0309.
[23] These figures equate to a 28% car driver diversion rate taking average car occupancy as 1.18 (National Travel Survey 2013 Table NTS0906) for commuter trips, which is appropriate because all the bus routes in question are primarily aimed at a commuter market. Mackie et al. (2002) *Achieving best value for public support of the bus industry Part 1: Summary report on the modelling and assessment of seven corridors*, in Commission for Integrated Transport / LEK (2002) *Obtaining best value for public subsidy for the bus industry* and TAS Partnership (2002) *Monitoring quality bus partnerships volume 1: the evidence*, quoted in Sloman (2003) *Less traffic where people live*.

Table 6.8: Indicative estimates of car mileage and carbon savings due to improvements in service levels on 13 bus routes*

Total ongoing patronage uplift (millions of trips per year)	**Total annual car travel replaced** (millions of car km per year)	**Total annual emissions CO_2e avoided** (tonnes CO_2e per year)
1.3	6.8	1,300

*Routes included are: ASOS; X19; 10; Onslow P&R; TfGM Local Link; X18; C1-8; X1; X2/3; UWE 19; UWE 13/13a; 379; A2.

Route-specific patronage data has been collected for two other types of route-specific intervention: a programme of infrastructure improvements and a fare reduction scheme.

BRDS has provided time-series patronage data for the route 52 and the Parkgate/Dearne services and a considerable increase in patronage is evident. However, the 'hotspot' congestion improvements along these routes are largely uncompleted and there do not appear to be any other significant LSTF upgrades that are likely to have led to the patronage uplift. In the absence of this information it is not possible to attribute the uplift to LSTF.

Reading has provided a report on a fare discount scheme funded by LSTF for bus routes 5, 6, 72 and 82. The main single fare was dropped to £1.40 from £1.80 and 'short hop' central fares were held at £1 instead of increasing to £1.20 as on other bus routes. The reduced fares were advertised at bus stops and through fliers dropped door-to-door. The trial ran for 54 weeks. For the Reading Buses routes involved the patronage increase was nearly 10% above the network-wide average rise (3.5% in the same year). This was not sufficient to fully offset the price reduction, resulting in a 4% net loss of revenue on the urban services (more on the rural services). However, this increase in patronage was sufficient for Reading Buses to decide at the end of the trial that the ticket price should rise only to £1.50, rather than reverting to the previous level. At this time prices of other routes rose to £1.90, so the net effect of the trial appears to be an ongoing price reduction of 17% compared with the pre-trial price level and 21% against the post-trial standard price level. Reading Buses has also decided that the increased patronage merits investment in additional vehicles to increase the service frequency on the routes.

6.7 Conclusions on outcomes related to bus patronage

Table 6.9 summarises the findings related to bus patronage. At this interim stage it is not possible to draw firm conclusions about the extent to which area-wide patronage increases (or slowing or cessation of patronage decline) may be in part attributable to LSTF funding.

At the finer-grained level of individual routes, patronage changes are more illuminating. In a number of cases, where new bus routes have been initiated or existing routes have been enhanced, patronage increase has been sufficiently large and clear over a short period of time for the change to be confidently attributed to the LSTF intervention. Although it is apparent in some cases that the new service levels will not be sustainable beyond the end of the LSTF funding period, there are a set of routes that have been successfully 'kick-started' to a commercial level, or boosted from one level of commercial operation to a more frequent service that has also become viable during the period of LSTF support. Some of these commercial services are frequent operations involving large numbers of travellers, and most are routes that provide important links to work or education.

Table 6.9: Overview of outcomes related to bus patronage

Large Project	Over-view	Summary of change since baseline year~	Attributable to LSTF?+
BDRS	■	**Area-wide patronage** Overall fall, but a rise in 2013/14 may show longer term decline is slowing (length of time series data is insufficient)	-
	■	**Finer-grained patronage** Clear rise on two commuter routes	Y
Bournemouth	■	**Area-wide patronage** Level overall, but a slight rise in 2013/14	-
	■	**Finer-grained patronage** No data (operators refuse to provide numbers by route)	-
CENTRO	■	**Area-wide patronage** Overall fall, but long-term decline halted in 2013/14	-
	■	**Finer-grained patronage** No data	-
Hertfordshire	■	**Area-wide patronage** No change from the historic trend is evident	-
	■	**Finer-grained patronage** Clear rise on two routes	Y
Merseyside	■	**Area-wide patronage** Level patronage appears better than the historic trend	-
	■	**Finer-grained patronage** Rise on three improved services and QBP routes	Y/N^
Nottingham	■	**Area-wide patronage** Level, in the context of a previously rising trend	-
	■	**Finer-grained patronage** No data	-
Reading	■	**Area-wide patronage** No data for 2011/12	-
	■	**Finer-grained patronage** Town centre boardings/alightings level overall	-
Solent	■	**Area-wide patronage** Overall fall but rising in 2013/14	-
	■	**Finer-grained patronage** No 2013/14 data	-
Surrey	■	**Area-wide patronage** Level overall, as in previous years	-
	■	**Finer-grained patronage** One park and ride scheme	Y
Telford	□	**Area-wide patronage** No completed activities that might have increased bus use	-
	□	**Finer-grained patronage** No completed activities that might have increased bus use	-
TfGM	■	**Area-wide patronage** Unique in showing a slight fall in 2013/14, which may represent a reversion to the longer-term falling trend	-
	■	**Finer-grained patronage** Clear rise on a set of four demand-responsive services	Y
WEST	■	**Area-wide patronage** Rise over period of LSTF, but not above historic trend	Y/N#
	■	**Finer-grained patronage** Clear rise on at least eight commuter routes.	Y

Notes to Table 6.9

■ **decrease** in patronage; ■ **no change** in patronage (within 99%-101% of baseline); ■ **increase** in patronage;

■ **insufficient data** to assess patronage changes; ☐ **too few schemes completed** to be expected to affect patronage.

[+] Note that even where a patronage rise cannot be attributed to LSTF interventions, these activities nevertheless may be responsible for some or all of the improvement, but at this interim stage there is insufficient evidence to establish a causal link. Where attribution is shown, this is on the basis of marked departures from previous trends at the time of the intervention, as discussed further in the main texts.

'Overview' only shows positive or negative change if activities relevant to bus use have taken place.

~ Different Large Projects treat different time periods as 'baseline'. For area-wide trends, baseline year has been standardised as 2011/12 because the choice of different baseline years for different projects would become the major factor in whether patronage appears to have risen or fallen. For finer-grained patronage changes related to upgrades of specific bus services the choice of baseline date is determined by the start date of the relevant upgrade.

^ Patronage on Quality Bus Partnership routes in Merseyside is rising significantly but definite attribution to LSTF is not possible because the time series data covers too few years to assess whether recent rises are above the historic trend and these routes are presently benefitting from Better Bus Area funding. Patronage on three improved services is clearly due to LSTF intervention but these have not attained sufficient patronage to continue in future. However, as noted in the main texts, it can be said that the QBP routes have gained proportionately more patronage during this period than routes across Merseyside as a whole.

[#] LSTF activity may be a significant contributor but other major investments in the Greater Bristol Bus Network and Better Bus Area funding are liable to be large influences, as discussed in the main texts.

7 Active travel: cycling

Key points:

There is not yet sufficient evidence to identify overall changes in cycle traffic which can be attributed to the LSTF interventions, but there are encouraging results from national surveys and from indirect measures of the impact of many of the individual schemes, some of which indicate impacts on levels of cycling directly and some of which measure indirect impacts.

There is evidence of a statistically significant increase in cycling between 2010/11 and 2012/13 in the proportion of people in Merseyside who reported any cycling trips, but not necessarily attributable to the LSTF; however the significant difference should be treated with caution.

Three of the highlights from individual schemes are:

- In Nottingham, the 11 cycle hubs providing secure cycle parking at interchanges were accessed by over 3,000 people per month
- In Reading the 17,000 workplace challenge participants cycled over 68,000 miles and included 350 new cyclists
- In BDRS, 70% of the 1,300 people who registered to lease cycles had previously commuted by car and 65% committed to cycling at least once a week.

7.1 Overview of objectives and outputs targeting cycling

Seven Large Projects explicitly identified either cycling or active travel as one of the objectives of their project. These are summarised in Table 7.1. The remaining five Large Projects had objectives which indirectly relate to cycling, such as encouraging more use of sustainable modes, reducing carbon emissions and providing a transport system which keeps people healthy; these have been identified as 'indirect' cycling objectives in Table 7.1.

In the period covered by the most recent Outcomes Reports, seven Large Projects had delivered many interventions and the remainder had delivered some interventions which might have an effect on metrics related to cycling in the medium-term (see Table 7.1; the extent of the schemes implemented is listed in Table 7.2). Many schemes aimed at encouraging cycling involve on-going delivery of services such as cycle leasing, cycle training and cycling support; the number of participants in such schemes is listed in Table 7.2.

Table 7.1: Summary of cycling objectives and interventions

	Cycling objective?	Summary of cycling-related objectives	Schemes implemented?	Cycling schemes implemented (by July 2014)
BDRS	Indirect	Help businesses through reducing congestion and improving transport connectivity	Many	Cycle routes; cycle parking; cycle maintenance and training, cycle leasing
Bournemouth	Yes	Improve the quality, attractiveness and user perception of the low carbon travel choices and increase levels of active travel	Some	Several junction improvements; cycle lanes and new links; cycle parking spaces. Cycle vouchers for job-seekers; workplace cycle challenge
CENTRO	Yes	Increase residents' cycling for short trips and increase levels of active travel at schools, further education and workplaces in LSTF corridors	Many	Cycle routes; cycle parking spaces; cycle maintenance; cycle training
Hertfordshire	Indirect	Reduce carbon emissions from transport	Some	Cycle routes; cycle parking spaces. Cycle challenge
Merseyside	Indirect	Increase the proportion of journeys made using sustainable modes, enhance access to employment and essential services and broaden travel horizons	Many	Infrastructure improvements to support active travel including routes and speed reduction at key points; cycle parking; cycle maintenance and training. Cycle hire
Nottingham	Yes	Support active travel. Increase competitiveness through sustainable transport for work journeys. Reduce carbon emissions by making low carbon travel a realistic and attractive option	Many	2 cycle lanes; 20 mph limits in 4 residential areas (others planned); secure cycle storage at 11 sites; campus cycle parking; 5 cycle hire depots; cycle loan. Cycle training at 7 centres and at schools; workplace challenge; events; community hubs
Reading	Indirect	Encourage more use of sustainable modes	Many	Improved and new cycle routes and cycle parking at schools and in town centre. Cycle hire scheme. Cycling officer providing cycle maintenance, cycle training, events and challenges.
Solent	Yes	Improve levels of physical activity, health and well-being through increased active travel. Improve sustainable access to jobs and key facilities	Some	Limited cycle routes on key corridors and cycle parking at public transport interchanges. Active travel events, cycle maintenance and training
Surrey	Indirect	Provide a transport system that keeps people healthy and provides for lower carbon transport choices	Some	Limited cycle routes; cycle parking. Small scale cycle maintenance and cycle training
Telford	Yes	Make cycling more attractive to improve health	Some	Improving 1 cycle route and providing central shared space (partially complete); few cycle parking spaces; small scale cycle training
TfGM	Yes	Connecting people with jobs, focusing on local walk and cycle access. Support businesses by promoting low carbon commuting	Many	Secure cycle parking. Cycle training, cycle maintenance, bikes for job-seekers

	Cycling objective?	Summary of cycling-related objectives	Schemes implemented?	Cycling schemes implemented (by July 2014)
WEST	Yes	Increased physical activity and improved health through greater use of walking/ cycling for local journeys, increased use of sustainable modes after transition points	Many	Several infrastructure projects: 12.1km of routes and crossings in the area with automatic cycle counters (outside Bristol), 2.8km of routes in Bristol (where automatic cycle count data not available); cycle parking, cycle hire. Community Active Travel Officers running initiatives with numerous employers, schools and people in transition between life stages; cycle maintenance and cycle training

Table 7.2: Cycling schemes implemented in the 12 Large Projects

	Number of cycle parking spaces introduced or upgraded	New / improved cycle routes (km)	Number of adults taking up bike maintenance services or classes	Number of adults taking up adult cycle training
BDRS	858	21	567	1,260
Bournemouth	81	3	0	0
CENTRO	63	49	2,222	1,582
Hertfordshire	470	6	0	0
Merseyside	354	42	381	193
Nottingham	1,574	5	3,040	2,078
Reading	196	31	622	20
Solent	226	2	4,330	179
Surrey	384	4	18	251
Telford	10	12	0	19
TfGM	780	27	800	2,300
WEST	928	15	2,915	459
TOTAL	**5,924**	**217**	**14,895**	**8,341**

7.2 Metrics used to monitor cycling

The key outcomes are overall changes in cycling identified in monitoring programmes and household surveys, and in surveys of the impacts of specific interventions.

The following Large Projects monitored cycling levels at key intervention sites:

- Bournemouth
- CENTRO (but data not available yet)
- Hertfordshire
- Surrey

The following Large Projects monitored cycling levels more broadly, either across the area as a whole or by monitoring flows across cordons around city centres:

- BDRS
- Merseyside (data on LSTF sites was merged with that for other sites across the area)
- Nottingham
- Reading
- Telford
- TfGM
- WEST

In addition, Solent reported results from the Active People Survey for the area.

At a Project level, the most robust metric used in the Outcomes Reports to monitor changes in cycling was average daily cycle flows derived from automatic cycle counts at key points – either area-wide or targeted at areas with LSTF interventions. Automatic cycle count data were reported by five Large Projects. At the time of writing the Outcomes Reports, other Large Projects had not completed the installation of their automatic cycle counters or had not collected data for a sufficiently long time period to provide robust monitoring results. Moreover only three of the Large Projects had count data for a large enough number of sites to provide robust results (Merseyside, Nottingham and WEST)[24] . (Table 7.3, which summarises the data from automatic counts, indicates the number of sites for which continuous data are available over the monitoring period.) Results from automatic cycle counts are reported in Section 7.5.

Surrey used more limited automatic counts to monitor cycling levels. Twice yearly automatic cycle counts were carried out over 12 hour periods on weekdays in May and September. These results are reported in Section 7.6. Another metric was also used in Surrey: the number of cycles parked at stations. The cycle parking surveys were carried out four times per year initially and then reduced to twice each year in 2012. The figures were compared with one comparator town: Epsom.

Four Large Projects reported data only from manual counts, carried out once or twice each year (BDRS, Reading, Telford and TfGM); these are highly susceptible to fluctuations in cycling due to weather, seasonal variations and other factors which are not related to the LSTF interventions. Results of manual cycle counts are reported in Section 7.6.

[24] Experience in the Cycling Demonstration Towns suggested that at least 15 automatic count sites are needed in a medium-sized town in order to obtain a reasonable picture of changes in cycling.

Just two of the Large Projects have identified 'control' sites for comparison of cycling levels derived from automatic cycle counts with the areas targeted with LSTF interventions: Bournemouth and Hertfordshire.

- In Bournemouth, there is just one control site, on the A3049. This corridor was selected to be the control corridor because few schemes were planned, but because there is only one cycle count site it probably does not provide a robust comparator with the LSTF corridor for cycling
- In Hertfordshire there are five automatic count sites in towns outside the LSTF area and it is anticipated that this data will be supplemented by travel surveys later in the programme to strengthen the basis of the comparisons.

The other metric used by several Large Projects at an area-wide level was the reported frequency of cycling derived from various household surveys, panel surveys and the Active People Survey. However unless household survey data is focused on the areas affected by LSTF interventions, the results are of limited value for evaluating LSTF outcomes. There were some examples of such surveys and the results can provide evidence of the impact of specific LSTF interventions, but are not sufficiently comparable for meta-analysis. These results are summarised in Section 7.6.

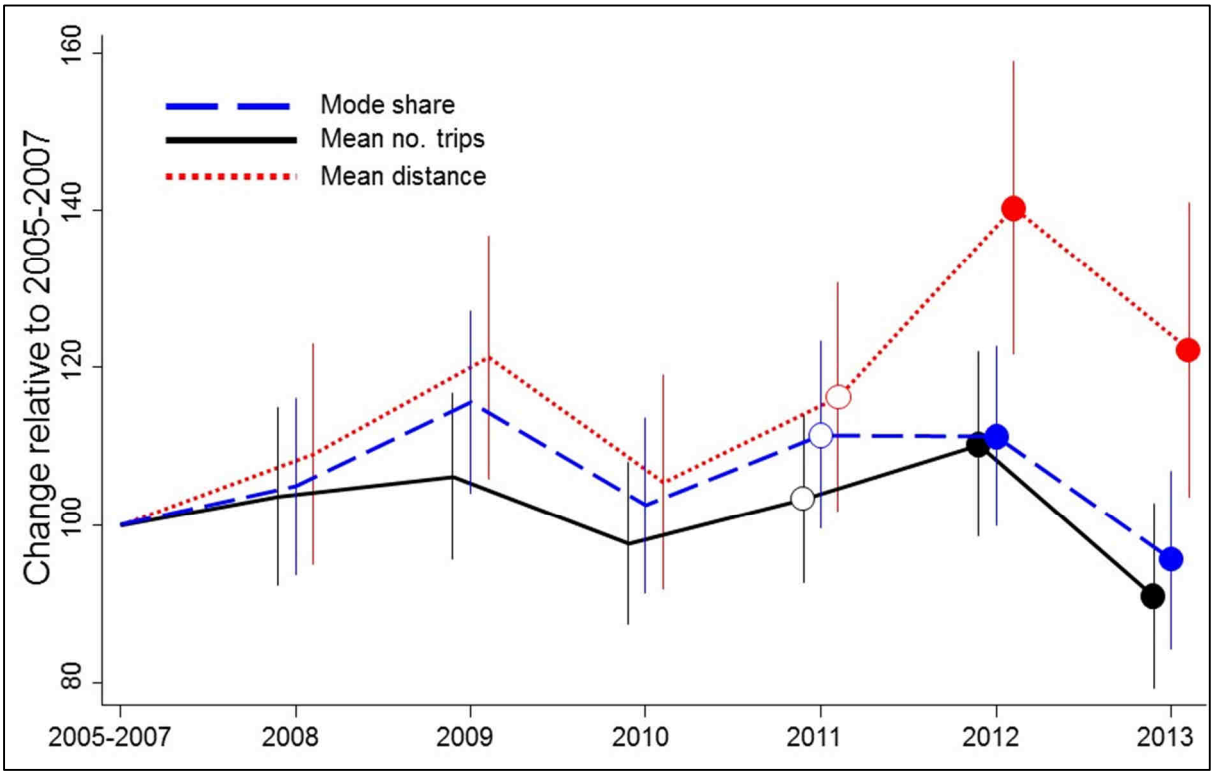
Evaluation of specific schemes through surveys of users and participants focusing on attitudes and reported travel behaviour (thus not relying on counting cycle traffic) has been reported by all but one of the Large Projects (Surrey). In some cases these are short term results (e.g. three months after participating in a scheme) and longer term monitoring is planned in many cases. These results are summarised in Section 7.7.

A few Large Projects also presented data on more targeted metrics such as levels of cycle hire, subscriptions to cycle hire schemes, use of cycle parking and reported impacts of schemes on attitudes and behaviour derived from surveys of participants. None of these measures were suitable for meta-analysis but the key points are summarised in Section 7.7.

7.3 National trends in cycling

The National Travel Survey shows that the average weekly cycling distance by people living in urban areas of England (excluding London) has tended to increase in recent years, with a larger increase between 2011 and 2012 (Figure 7.1). The number of cycling trips has remained fairly stable.

Figure 7.1: Trends in cycling for transport – National Travel Survey



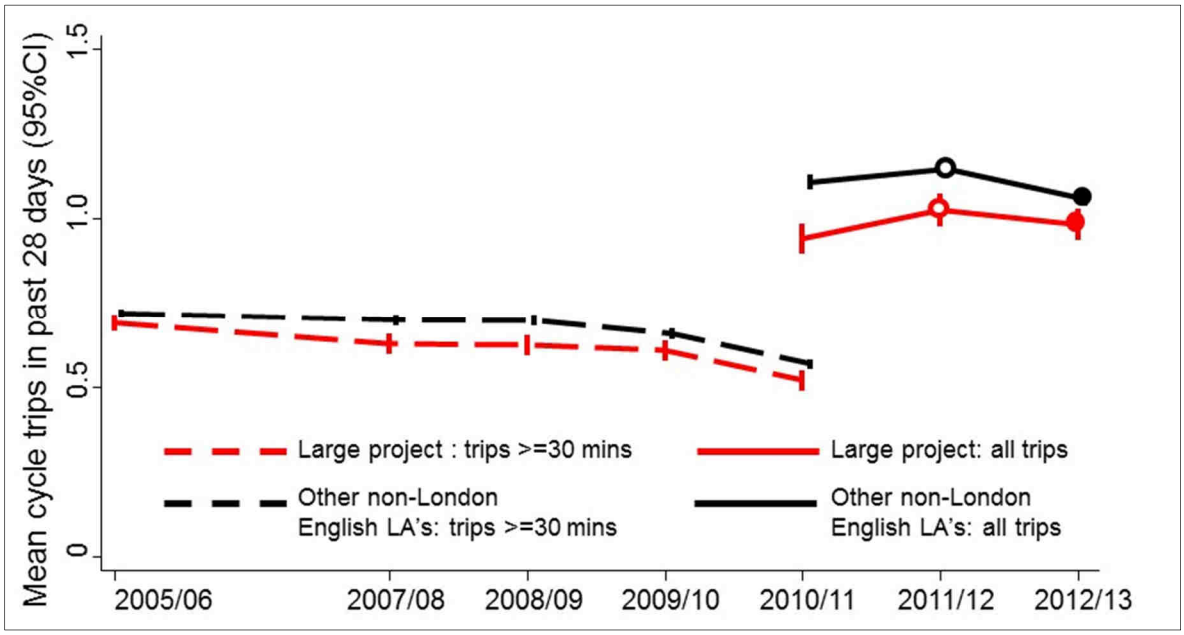
Data are for urban areas of England outside London. 2013 point estimates derived from data provided by the Department for Transport; 2013 confidence intervals are approximate, based on the assumption that uncertainty around the estimates in 2013 is the same as in 2012. Open circles show years when some Large Projects were receiving funding; filled circles show years when all Large Projects were receiving funding.

The Active People Survey provides different measures of levels of cycling which do not show the same trend, but provides some evidence that trends in levels of cycling were more favourable in the Large Project local authorities than the background national trends.

Figure 7.2 shows that among adults, the average number of cycling trips of 30 minutes or more in the past 28 days changed very little from one year to the next between 2005/06 and 2009/10, and then fell slightly in 2010/11. This was the case for the local authorities where the Large Projects are taking place and also for other local authorities in England outside London. A different measure was introduced in 2010/11: the average number of cycle trips of any duration[25]. In the Large Projects, this indicator showed a small increase from 2010/11 to 2011/12, and then a slight decrease to 2012/13. This contrasts with the other local authorities where a smaller increase took place from 2010/11, followed by a larger decrease in 2012/13. The result was that cycling was slightly higher in 2012/13 than in 2010/11 in the Large Project local authorities, while the reverse was true in the other local authorities[26].

[25] This is probably a rather better measure of cycling levels, since many urban cycling trips are of distances that take less than 30 minutes to cycle.
[26] p=0.01 for interaction, i.e. indicating this difference is unlikely to be due to chance.

Figure 7.2: Trends in cycle trips by adults – Active People Survey



Open circles show years when some Large Projects were receiving funding; filled circles show years when all Large Projects were receiving funding.

7.4 High-level outcomes of cycling interventions in the Large Projects

The trends in cycling trips recorded by adults in the Active People Survey in each of the individual Large Projects are shown in Figure 7.3.

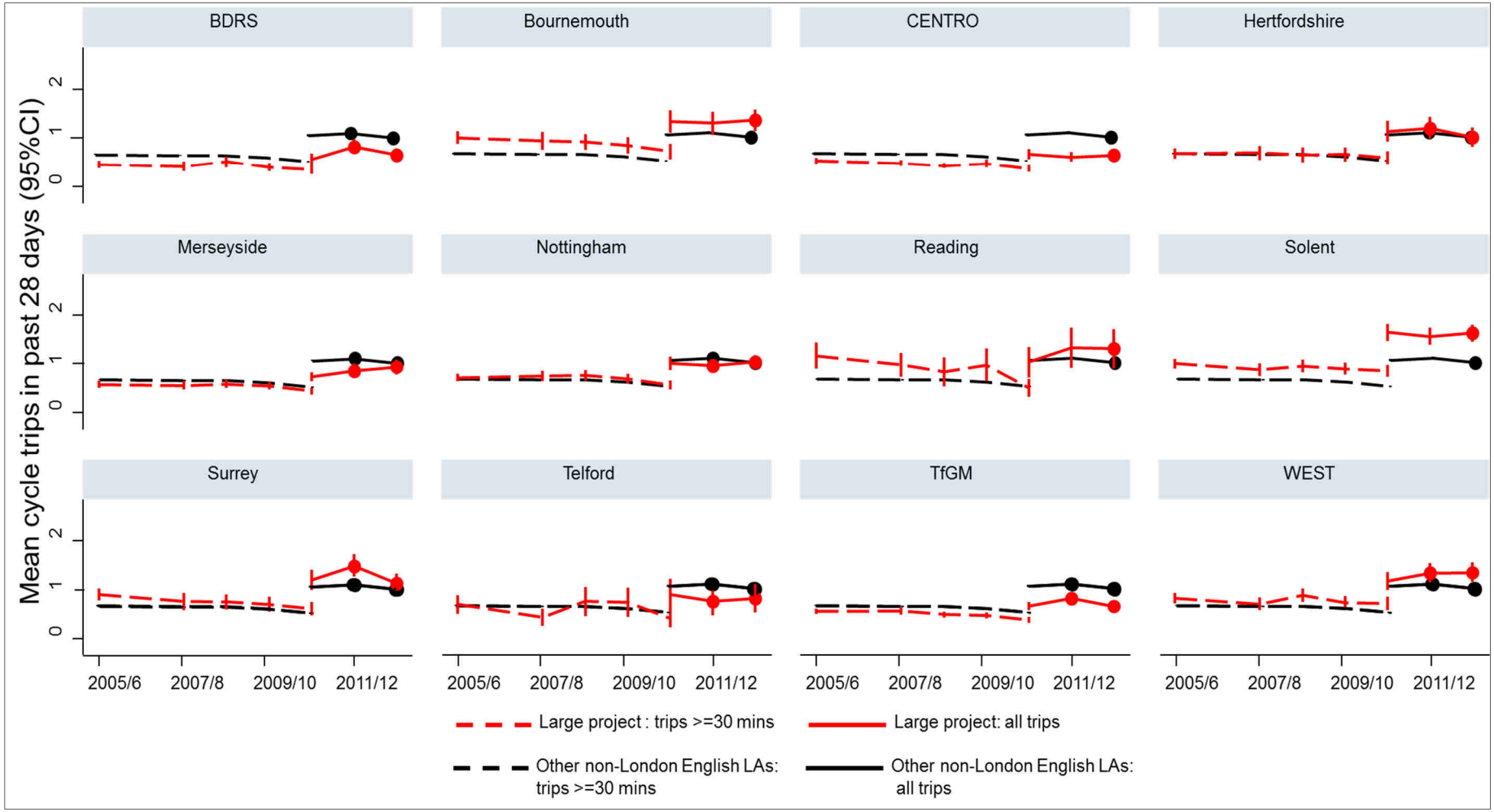
Most of the Large Projects experienced a slight reduction from 2005/06 to 2010/11 (i.e. pre-LSTF) in people reporting cycle trips of 30 minutes or more. Between 2010/11 and 2012/13, Reading, Merseyside and WEST saw an increase in all cycle trips, while Hertfordshire and Surrey saw a decrease and there was little change in the other Large Projects. Thus the Active People Survey does not show an across-the-board increase in cycling for all Large Projects since the start of LSTF.

In Reading, where the reported amount of cycling among people doing any cycling was higher in 2012/13 than in 2010/11, scrutiny of the graph suggests that the difference reflected unusually low levels of cycling in 2010/11 rather than any increase in 2012/13. More promising is the result in Merseyside, where the proportion of people reporting any cycling trips was higher in 2012/13 than in 2010/11[27]. Statistical testing indicated strong evidence that this was unlikely to be due to chance, although still not necessarily attributable to LSTF; the significant difference here should be treated with caution in the context of multiple testing across the 12 Large Projects.

It is worth noting that neither of these Large Projects had LSTF objectives aimed specifically at increasing cycling; they had more general objectives about increasing use of sustainable modes of transport (see Table 7.1). However, Reading, Merseyside and WEST were all in the group of Large Projects that had implemented many cycling interventions.

[27] Logistic regression adjusted for age band and gender, p=0.004

Figure 7.3: Trends in cycling trips by adults in each Large Project – Active People Survey



Filled circles show years when Large Projects were receiving funding.

7.5 Project-level outcomes: automatic cycle counts

Data on levels of cycling from automatic cycle counters presented in the Outcomes Reports for five Large Projects[28] have been indexed to 2010/11 in Figure 7.4, and for the three Large Projects with earlier data indexed to 2009/10, in Figure 7.5. (The data on which these graphs are based are presented in Table 7.3; the footnotes to this table state the basis of the data from each project.)

Merseyside shows a gradual increase in cycling levels since 2008/9 and a more marked increase since the LSTF funding in 2011/12. This is consistent with the results of the Active People Survey reported in Section 7.4, which showed a statistically significant increase between 2010/11 and 2012/13 in the number of people reporting that they cycled. For Merseyside as a whole, automatic cycle count data showed a 12% increase between 2013 and 2014, while in 20mph zones, the data showed a 17% increase over this period. The Large Project has interpreted the results as an indicator of broad trends but concluded that it is not yet possible to isolate the influence of LSTF from economic and demographic changes.

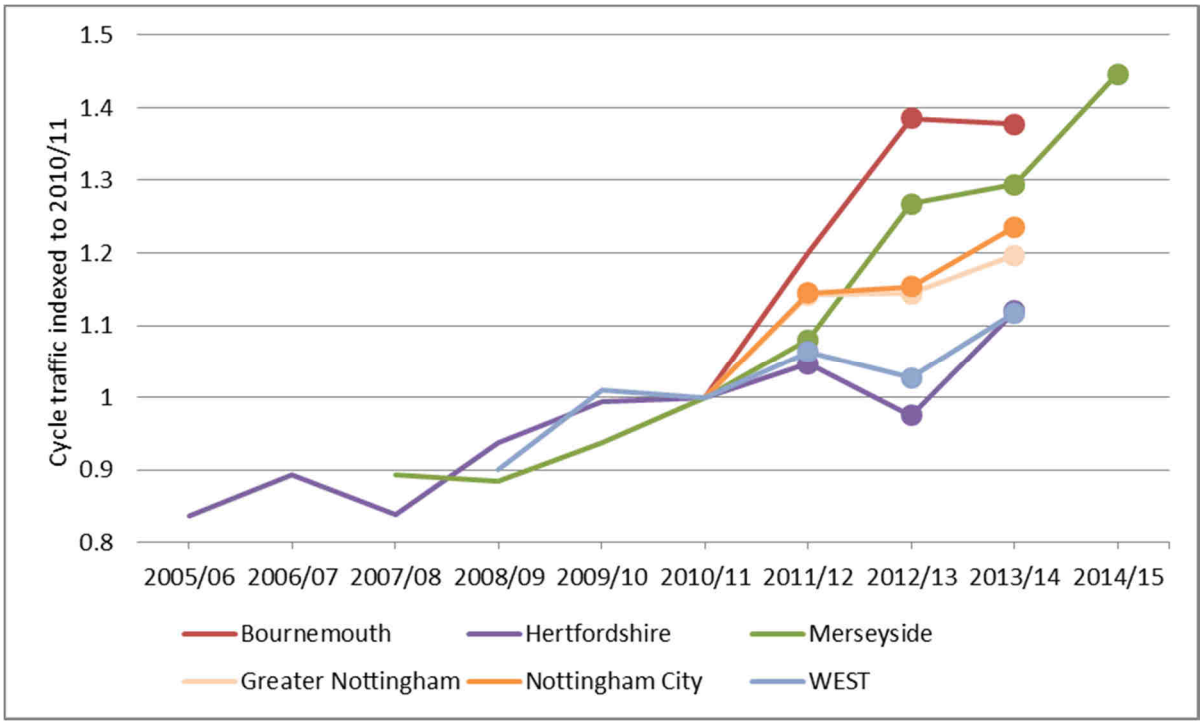
In the case of Bournemouth and Nottingham, there is some indication that there may have been an increase in cycling levels following the LSTF funding (2012/13 in Bournemouth and 2011/12 in Nottingham). In Nottingham the growth in cycling has taken place on the main cycling corridors in the city so cycling grew rather less in Greater Nottingham than in Nottingham itself; the growth took place in two separate periods. Nottingham City Council attribute the growth in cycling to a combination of factors which may include the LSTF, but also include the economic downturn, the large scale construction programme in the city and the increase in interest in cycling associated with the 2012 Olympic Games. However the evidence in Bournemouth and Nottingham is not strong because the Outcomes Reports have not presented data prior to 2010/11, so it is not clear whether cycling levels at the monitoring sites were already increasing prior to LSTF. Moreover the one count site on the control corridor in Bournemouth showed an increase in cycling which was greater than on the LSTF corridor. Note that of these two, Nottingham is the one Large Project identified in Table 7.1 as having direct cycling objectives and many schemes implemented by July 2014.

Two of the other Large Projects for which count data are available (Hertfordshire and WEST excluding Bristol[29]) show gradual increases in cycling levels over recent years, but no greater increase since the LSTF funding began in 2011/12 than in the earlier years. In WEST a 12% growth in cycling in the authorities outside Bristol was recorded between 2010/11 and 2013/14 (equivalent data were not available for Bristol), compared with a 10% increase between 2008/09 and 2010/11. In Hertfordshire as a whole, cycle count data showed that cycling also increased; further work is planned to provide a more robust analysis in 2015 when travel survey results will be available to complement the automatic cycle count data. Note that the Active People Survey results for Hertfordshire and WEST in Figure 7.3 do not show statistically significant increases in cycling since 2010/11.

[28] For comparability, only the count sites for which data have been presented for the entire time period covered are included.

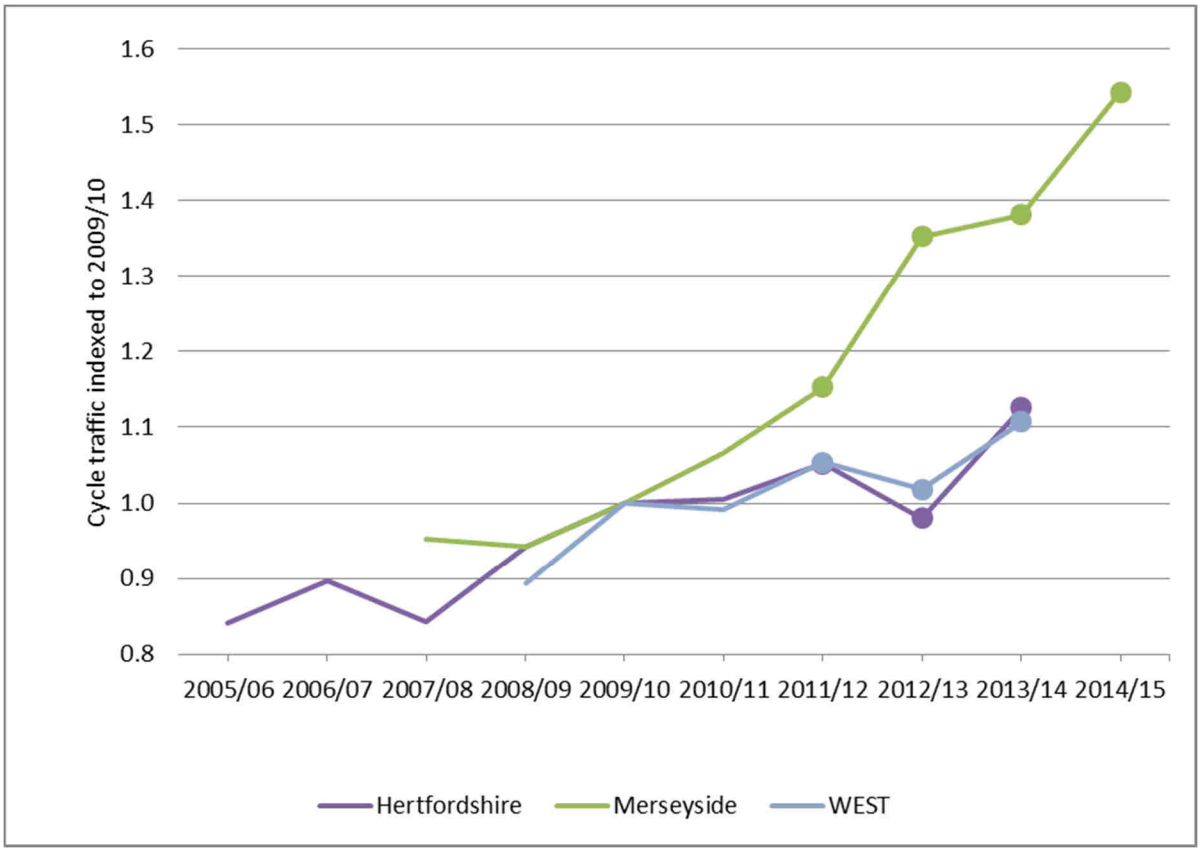
[29] The Outcomes Report for WEST notes that due to a breakdown in the management of the automatic cycle counters in Bristol, Bristol is excluded from the analysis of trends in levels of cycling in the WEST Large Project.

Figure 7.4: Trends in cycling levels in Large Projects – indexed to 2010/11



Filled circles show years when Large Projects were receiving funding.

Figure 7.5: Trends in cycling levels in Large Projects – indexed to 2009/10



Filled circles show years when Large Projects were receiving funding.

At this stage in reporting outcomes, the following Large Projects have not yet presented data from automatic cycle counters:

- BDRS – cycle counters yet to be installed
- CENTRO – biennial counts, so comparison with 2012/13 baseline not yet possible; previous data not available
- Reading – cycle counters were installed in 2013
- Solent – no plans for cycle counts reported
- Telford – manual counts only
- TfGM – manual counts and surveys only; automatic cycle count data not available in a suitable form for analysis.

Two other Large Project will have improved monitoring data in future:

- Hertfordshire – further cycle counters to be installed
- Merseyside – automatic and manual cycle counts at LSTF sites.

Thus it should be possible to draw more definitive conclusions about the impact of the LSTF on cycling levels later in the programme when there will be monitoring data available from more of the Large Projects and for a longer time period.

Table 7.3: Automatic cycle counts indexed to 2009/10 and 2010/11

	Indexed 2009/10						*Indexed 2010/11*				
	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2010/11	2011/12	2012/13	2013/14	2014/15
Bournemouth							1	1.20	1.39	1.38	
Hertfordshire	1	1.01	1.05	0.98	1.13		1	1.05	0.97	1.12	
Merseyside	1	1.07	1.15	1.35	1.38	1.54	1	1.08	1.27	1.29	1.45
Nottingham city							1	1.15	1.15	1.24	
Greater Nottingham							1	1.14	1.14	1.20	
WEST	1	0.99	1.05	1.02	1.11		1	1.06	1.03	1.12	

Highlighted grey cells are from the first year of LSTF funding onwards: either Key Component funding in 2011/12 or Large Project funding in 2012/13.

Data are for individual years (rather than moving averages) unless specifically stated.

Bournemouth - index calculated from total of AADT at the 6 sites on LSTF corridor for which continuous data is available over the period (2 additional sites count sites did not start collecting data until after 2010). Note that the one control site shows a greater increase in cycling compared with 2010 (1.54) than the 6 LSTF sites

Hertfordshire – index calculated from data for the 4 LSTF sites with continuous data over this period, spread across 3 towns on weekdays over 16 hour periods (2 additional sites started collecting data after 2010 and 1 site did not collect data in 2013). Note that 2 sites in the control area show an increase in cycling, averaging 9% between 2009/10 and 2012/13 (2 further count sites started collecting control data after 2010 and 1 site did not collect control data in 2013).

Merseyside – 14 LSTF sites and 65 other sites combined into an index based on the moving average (period used to calculate this is not known).

Nottingham – 19 sites across the city and Greater Nottingham, of which 14 have automatic counters and 5 sites have monthly one day counts. The index takes account of alterations to automatic cycle counter network over the period; two indices are available: City and Greater Nottingham

WEST – index based on combined automatic counts at 33 sites in North Somerset, South Gloucestershire and Bath & North East Somerset, excluding Bristol City (for which no data collected in 2013/14)

7.6 Project-level outcomes: manual counts and surveys

Manual count data are available for monitoring levels of cycling in BDRS, Reading, Telford and TfGM (see Table 7.4). Cordon counts in Reading and TfGM district centres show upward trends. Counts for Telford town centre also show upward trends, but the manual count data for Telford is not suitable for identifying trends over a short time period due to the variability from year to year. There is no indication of an upward trend in BDRS and the variability from year to year also makes the data unsuitable for identifying trends.

A slight increase in cycling was recorded in Surrey in the periodic automatic counts; these are included here rather than in the previous section because, like manual counts, they represent a 'snapshot' from a limited time period.

Table 7.4: Reported outcomes of cycling interventions based on manual cycle counts and periodic automatic counts

Large Project	Results from manual cycle counts and periodic automatic counts
BDRS	The cordon count data show that levels of cycling recorded are highly variable; there is no evidence that cycling levels have increased in Barnsley and Doncaster since 2010/11 but in Sheffield and Rotherham the counts show a steady increase; in 2014 the number of cycles counted was 10% higher in Sheffield and 40% higher in Rotherham than in 2010.
Reading	Cycle counts across the town centre cordon have fluctuated since 2007 but there are indications of an upward trend (depending on which year is taken as the baseline): in 2014 there were 58% more cyclists than in 2007, and higher than in 2013.
Surrey	There was no change in cycling between 2010/11 and 2012/13 and then a slight increase between 2013 and 2014; in 2014 there were 5% more cyclists counted than in 2010. (Based on automatic cycle counts on weekdays over a 12 hour period for two months each year in May and September in LSTF focus areas - 8 sites in Guildford and Woking with continuous data available.)
Telford	Manual cycle count data are available for one weekday in July (12 hour manual counts, not always for the same weekday); the count sites for which data are available for many years show high levels of variability between years, indicating that the data are of limited value for monitoring LSTF improvements over a short time period. • For example the Telford Town Park site is described as showing an increase in cycling attributable to the improved cycle routes and cycle parking but the cycle count for 2013, although higher than in 2012 (38 compared with 10), was lower than for any year since 2008 (ranging between 63 and 100 during 2008-11). Combined results from manual counts at four town centre count sites show a 42% increase in cycling between 2012 and 2013, although this is likely to reflect the high level of variability of small samples taken on one weekday each year and land use changes, as much as the improvement in cycle facilities in the town centre.
TfGM	Cordon count data for the AM peak period (0730-0930) show increases since 2010 for nine out of 10 Greater Manchester district centres. For the two district centres with the largest absolute numbers of cyclists, Manchester and Stockport, the increases were +43% and +23% respectively (latest survey = 2014 for Manchester, 2013 for Stockport).

More limited evidence on overall levels of cycling is available from household surveys in three of the Large Projects. These indicate small increases in the reported frequency of cycling (Bournemouth – National Highways Transport Survey; CENTRO – residents' panel survey; and in one of the two towns in Hertfordshire the number of cycle trips per person per year increased). These are changes from one year to the next; longer term results are needed before definitive conclusions can be drawn. In WEST a household survey (the Bristol Quality of Life Survey) has shown no change in the proportion of people reporting that they cycle at least once a week; additional household survey data will be available in future.

- In Bournemouth, data from the National Highways Transport Survey for the relevant wards (around 1,500 respondents each year) show a small increase in the percentage of people reporting that they cycle daily, weekly and monthly and a decrease in the percentage who cycle less frequently or never (from 73% to 68%) between 2012 and 2013. Statistical testing indicates that these results provide some evidence of a change, but the evidence is not strong.
- In CENTRO the interim resident panel survey in June 2014 showed that compared with the 2013 baseline, 11% of over 900 respondents had substituted car trips with cycling, but this may be influenced by factors beyond the LSTF programme
- In Hertfordshire between 2012 and 2013, the number of cycle trips per person per year increased from 28 to 39 in samples of about 800 people in St Albans, fell from 11 to 6 in samples of about 1000 in Hemel Hempstead, and did not change in the control town of Harpenden.

In Solent, the Large Project used the Active People Survey to monitor changes in cycling. However the differences in reported levels of cycling are small and there is no clear evidence of a change between 2010/11 and 2012/13.

In Surrey, use of cycle parking at stations was used as an indicator of overall cycling levels. There were increases in the number of cycles parked in the three LSTF towns and in Epsom, a comparator town, continuing a trend which began before LSTF funding.

7.7 Intervention-level outcomes for cycling from Outcomes Reports

Outcomes of cycling interventions are being monitored through surveys and data collection targeted at the specific schemes. The key outcomes are summarised in Table 7.5. Although they show encouraging results in most cases, the indicators used tend to be indirect measures of the impact on cycling behaviour, for example: the percentage of people reporting that they cycle more often after receiving cycle training; numbers taking up a cycle lease who commit to cycling to work at least once a week; number of cycle hire subscriptions; number of new cyclists.

A few examples of direct impacts were reported, for example: the number of job-seekers who had found work and said that the cycle vouchers had been important in securing the job; cycle mileage ridden in cycle challenges or by cycle hire users (but without any indication of how these trips would otherwise have been made).

Table 7.5: Reported outcomes of individual cycling interventions

Large Project	Outcomes from individual schemes
BDRS	Two schemes show promising results: • 1,327 people registered for cycle lease, of whom 70% previously used car for commute and 65% committed to cycling to work at least once a week • 17,000 miles ridden by Rotherham cycle hire users.

Large Project	Outcomes from individual schemes
Bournemouth	Two small scale schemes have provided the basis for growth in cycling among specific groups: • Cycle vouchers have been provided to 84 job-seekers and 30% of them had found work, all of whom said the scheme was important in helping them to secure work. All of the remainder said they were using the bike to attend interviews and most had been able to access interviews which they would not otherwise have been able to reach • A cycle challenge at workplaces generated 210 new cyclists.
CENTRO	Small scale results for two schemes provide only weak indications of the impact of LSTF activities: • Three months after receiving cycle training, 87 of the 4,000 people provided follow-up information and some of these reported cycling more for specific types of journey: 40% for leisure, just over 20% to education or work and just under 20% to the shops. • Cycle ownership increased slightly between 2012/13 and 2013/14 among students over 16 (49% to 53%) but the change was not statistically significant; it decreased significantly among 11-16 year olds (66% to 63%[30]) and also fell slightly among staff at education establishments (49% to 44%); these changes may not be related to cycle training or other LSTF initiatives, and could be influenced by other factors
Hertfordshire	Promising results were obtained from one small scale intervention: • The 2014 business cycle challenge was the best of the three which have been run, with the number of lapsed and non-cyclists involved increasing from 130 in 2012 to 190 in 2013 and 271 in 2014.
Merseyside	Encouraging results were achieved in the one LSTF scheme for which results are given: • By the end of July 2014, the Citybike scheme had recorded over 7,000 cycle hires and 3,900 subscriptions
Nottingham	Information on the impacts on travel is available in only a few of the schemes aimed at encouraging active travel: • 400 bikes have been provided at three cycle hire points and 495 people have registered to join the scheme • 11 cycle hubs providing secure parking at interchanges were on average accessed by over 3,000 people per month in 2013/14 • Three months after receiving cycle training, 81 people reported cycling an average of 4.5 hours per week compared with an average of 2.6 hours per week among 150 people before starting the training • Inconclusive evidence is available on the 20mph zones. An increase in cycling in the 20mph zone was accompanied by a smaller increase at the control sites and a decrease where the 30mph limit was retained; it is not clear whether the 20mph limit encouraged an increase in cycling, or whether cyclists were diverting off the 30mph roads into the 20mph area.

[30] Chi squared test for association $p<0.001$

Large Project	Outcomes from individual schemes
Reading	Some individual schemes indicate a potential for growth in cycling: • Over 17,000 participants in workplace cycle challenges but only 350 were new cyclists; 6,500 cycle journeys covered 68,000 miles • After Bike It, the proportion of a small sample of pupils who never cycled to school fell from 66% to 40% in 2013/14 • The first four months of the cycle hire scheme saw 995 annual subscriptions.
Solent	Reports from two interventions indicate a growth in cycling: • Active Steps, a 10-week programme for people with low levels of physical activity led to immediate increase in time spent cycling (2.4 hours per week) and the time continued to be higher than before a year after the programme • In a Commuter Challenge, 7% of participants were not cycling before the programme but were afterwards; cycle trips and cycling time increased (an extra 30 minutes per week).
TfGM	Some participants in schemes to encourage cycling reported cycling more: • Of 211 people responding to a follow up to Learn to Ride training, 46% said they were cycling more • Of 603 people receiving cycle maintenance training, 26% said they were making more cycle trips than 6 months previously and 10% were making fewer cycle trips • Three months after personalised travel planning, 11% of those with a bike reported cycling more and 3% reported cycling less; 35 of the 39 people cycling more said this was due to personal travel planning to some or a large extent. However other factors such as the low cost of cycling and the health benefits are also important influences: • 25% of cyclists crossing city centre cordons whose route was affected by interventions said that improved cycle routes to the city centre had influenced their decision to cycle, but 67% said the decision was influenced by other factors.
WEST	Encouraging results are reported for some specific activities, but monitoring results for most of the activities are not yet available: • A small scale survey among 62 people receiving travel advice or cycling support reported increasing the amount of cycling (74%).

7.8 Conclusions on outcomes related to cycling

Table 7.6 summarises the findings on cycling. At this interim stage, there is not yet sufficient evidence to identify overall changes in cycle traffic which can be attributed to the LSTF interventions, in some cases because there is not yet sufficient data and in others because schemes have not yet been completed. On an area-wide basis there are external influences which may affect the level of cycling so that it is not yet possible to ascertain whether the changes are attributable to the LSTF. However attribution can be established for new interventions which have received LSTF funding and have been evaluated directly with the users; the Large Projects where individual schemes have been evaluated and show evidence that cycling has been encouraged are listed in Table 7.6 as having "some" improvement attributable to LSTF. It is important to note that even where no causal link has been identified at this interim stage, LSTF interventions nevertheless may be responsible for some or all of the increase in cycling.

Of the four Large Projects with objectives aimed specifically at increasing cycling and which had implemented many cycling schemes, three (Nottingham, TfGM and WEST) had gathered sufficient

data to indicate whether there had been an overall change in cycling levels following the LSTF funding. However the evidence to enable attribution (i.e. to demonstrate a causal link) is not strong. In Nottingham, data from automatic cycle counts are not available prior to 2010 so it is not clear whether cycling levels at the monitoring sites were already increasing prior to LSTF; in TfGM the data are from manual counts and hence may be less reliable; while in WEST the growth in cycling was the continuation of an existing trend:

- In Nottingham a 24% growth in cycling was recorded between 2010/11 and 2013/14, focused on the main cycling corridors in the city
- In TfGM, cycling grew by 23% for Stockport and 43% for Manchester, between 2010 and 2013 or 2014, based on manual cordon counts; seven other district centres also showed an increase but based on much smaller numbers of cyclists
- In WEST a 12% growth in cycling in the authorities outside Bristol was recorded over three years from 2010/11 to 2013/14 (equivalent data were not available for Bristol). This is similar to the rate of growth in cycling before the start of LSTF (10% over the two years from 2008/09 to 2010/11).

Two of the Large Projects which implemented many cycling schemes but did not have objectives aimed at increasing cycling specifically, also showed evidence of increases in cycling, although not necessarily attributable to the LSTF:

- In BDRS, cordon counts in two of the four urban areas showed an increase in cycling but there was no evidence of change in the other two areas
- In Merseyside the automatic cycle count data and the Active People Survey both show an increase in cycling but the Large Project has interpreted the results as an indicator of broad trends and concluded that it is not yet possible to isolate the influence of LSTF from economic and demographic changes.

Of the Large Projects which had implemented cycling schemes on a smaller scale, one showed an increase in cycling levels, although this was not necessarily attributable to the LSTF but the other showed only a slight change in cycling:

- In Bournemouth a 38% increase in cycling on the LSTF corridor was recorded but this was less than at the single site on the control corridor (54%)
- In Surrey, monitoring in two of the LSTF focus towns found cycling levels in 2014 to be 5% higher than in 2010.

Although evidence on overall levels of cycling is not yet conclusive, there are encouraging results from indirect measures of the impact of many of the individual LSTF schemes (such as levels of cycle hire and numbers of people who commit to cycling more following participation in an LSTF scheme) in eight of the Large Projects (BDRS, Bournemouth, Hertfordshire, Merseyside, Nottingham, Reading, TfGM and WEST). A few examples of direct impacts of LSTF interventions also show increases in cycling in nine of the Large Projects (BDRS, Bournemouth, CENTRO, Merseyside, Nottingham, Reading, Solent, TfGM and WEST).

Table 7.6: Overview of outcomes related to cycling

Large Project	Over-view	Summary of change since start of LSTF project~	Attributable to LSTF?
BDRS	■	Cordon counts indicate increases in overall levels of cycling in two of the four urban areas but no evidence of change in the other two. Cycle hire schemes show good levels of use and mileage ridden.	Some^
Bournemouth	■	Levels of cycling have increased on the LSTF corridor but also at the one control site. Small scale schemes have provided the basis for growth in cycling among job-seekers and employees	Some^
CENTRO	■	Area-wide data not yet available. Small scale results for some schemes provide only weak indications of the impact of LSTF activities	-
Hertfordshire	■	Cycle counts show an increase in overall levels of cycling but not more than before LSTF, while the Active People Survey showed a small but not significant decrease in cycling between 2010/11 and 2012/13. Business cycle challenge indicates signs of possible localised growth in cycling	Some^
Merseyside	■	The Active People Survey shows a significant increase in cyclists. County-wide cycle counts show an increase in cycling but it is not yet possible to isolate LSTF from the influence of other factors. Encouraging results have been achieved in Citybike rentals	Some^
Nottingham	■	Overall cycling levels have increased since 2010/11 but the evidence on the impact of the LSTF is not strong because it is not clear whether this represents a continuation of previous trends. However cycle hire and cycle parking schemes are successful	Some^
Reading	■	There is an upward trend in cycling into the town centre. Some schemes indicate a potential for growth in cycling; cycle hire is successful	Some^
Solent	■	Two interventions led to a growth in cycling but wider data is limited	Some^
Surrey	■	Marginal increase in overall level of cycling	-
Telford	■	Data are not sufficient for identifying changes in cycling	-
TfGM	■ ■	The Active People Survey shows no change. Annual one day manual cordon counts indicate increases in cycling into district centres. Some LSTF schemes targeting individual behaviour have shown an increase in reported levels of cycling but there is evidence that the low cost of cycling and the health benefits are also important influences	Some^
WEST	■	Overall levels of cycling have increased but not more than before LSTF. Some activities targeting individual behaviour have shown an increase in cycling but monitoring results for most of the activities are not yet available	Some^

■ **decrease** in cycling; ■ **no change** in cycling; ■ **increase** in cycling; ■ **insufficient data** to assess impact on cycling;
☐ **too few schemes completed** to be expected to affect cycling.

~ Different Large Projects treat different time periods as 'baseline'. Changes summarised here are since 2011/12 for Large Projects that received Key Component funding (BDRS, Hertfordshire, Merseyside, Nottingham, Surrey, Telford, TfGM and WEST), and since 2012/13 for Large Projects that did not receive Key Component funding (Bournemouth, CENTRO, Reading, Solent).

^ Where 'some' of the observed uplift in cycling is attributed to LSTF, this is on the basis that monitoring data from individual schemes shows that these schemes have encouraged cycling.

8 Active travel: walking

Key points:

There is insufficient evidence to ascertain whether the Large Projects' active travel interventions have resulted in increases in walking. At this stage, the data available for identifying changes in walking are limited.

Two Large Projects have shown evidence of an increase in walking, both of which have implemented many schemes aimed at increasing active travel in general or walking in particular. Another project found car trips that had been replaced by walking, but the project noted that this may not have been solely attributable to the LSTF. However walking levels appear to have declined in three Large Projects (as in the national data) and have not changed in a fourth; this may reflect other factors not related to the LSTF interventions.

A few individual schemes have produced positive results, several through indirect measures such as people reporting that they have been walking more frequently following participation in a scheme and in two cases with direct measures of increased levels of walking. Three of the highlights are:

- In one area of Nottingham there was a 17% increase in the number of journeys by walk or cycle after the introduction of 20mph speed limits on residential roads (compared with an 11% increase at control sites)
- In TfGM, 12% of people who had received personalised travel planning reported walking more. Most of these people said their increased walking was due to personal travel planning to some or a large extent (while less than 1% reported walking less)
- In one of the 'Walkboost' schemes in BDRS, 740 people had taken part in walks.

8.1 Overview of objectives and outputs targeting walking

Eight Large Projects explicitly identified support for either walking or active travel as one of their objectives. These are summarised in Table 8.1. In the remaining four Large Projects, support for walking was implicit in the objectives, for example encouraging use of more sustainable modes, reducing carbon emissions or increasing transport connectivity.

In the period covered by the most recent Annual Outcomes Reports, five Large Projects had delivered many interventions and six had delivered some interventions which might have an effect on metrics related to walking in the medium term (Table 8.1). Some progress has been made with infrastructure investment, with a total of 42km of new or improved pedestrian routes completed, together with 163km of new or improved off-road shared pedestrian / cycle routes[31]. Many on-going services are being delivered with the aim of increasing walking, such as active travel events, community travel hubs, walking maps and guided walks.

[31] We have no break-down of what proportion of the new or improved shared routes will have benefitted pedestrians (e.g. because a previously unpaved route was surfaced) and what proportion will mainly have benefitted cyclists rather than pedestrians (e.g. where a pre-existing footway is converted to shared use).

Table 8.1: Summary of walking objectives and interventions

	Walking objective?	Summary of walking-related objectives	Walking schemes implemented?	Walking schemes implemented (by July 2014)
BDRS	Indirect	Help businesses through reducing congestion and improving transport connectivity	Many	Around 40km of pedestrian route improvements. On-going programmes to encourage walking for residents, commuters, and pupils including walking maps, street audits and child pedestrian training.
Bournemouth	Yes	Improve the quality, attractiveness and user perception of the low carbon travel choices and increase levels of active travel	Some	Several new or improved pedestrian crossings, some as part of junction improvements; new footbridge and shared cycle-pedestrian path; urban realm improvements.
CENTRO	Yes	Increase walking for short trips made by residents and increase levels of active travel at schools, further education and workplaces in LSTF corridors.	Many	Around 30km of infrastructure improvements (mainly shared pedestrian / cycle routes); guided walks.
Hertfordshire	Indirect	Reduce carbon emissions from transport.	Some	Infrastructure improvements: 1 town centre redevelopment and 1 pedestrian link complete.
Merseyside	Indirect	Increase the proportion of journeys made using sustainable modes, enhance access to employment and essential services and broaden travel horizons.	Many	Almost 35km of route improvements to support active travel and speed reduction at key points; guided walks.
Nottingham	Yes	Support active travel. Reduce carbon emissions by making low carbon travel a realistic and attractive option.	Many	Infrastructure schemes: 20 mph speed limits in 4 residential areas; improved walking links at key sites are in progress (less than 5km). Large programme of active travel events, community travel hubs.
Reading	Indirect	Encourage more use of sustainable modes.	Many	Improved and new shared pedestrian / cycle routes totalling just over 30km and additional pedestrian crossing points. Ongoing events and challenges.
Solent	Yes	Improve levels of physical activity, health and well-being through increased active travel.	Some	Active travel events on-going.
Surrey	Yes	Reduce carbon emissions, for example by bringing about an increase in the volume and proportion of journeys by low carbon, sustainable modes including walking and cycling	Few	Around 4km of shared pedestrian / cycle routes completed. Preparatory design work for a map-based signage scheme in Guildford, Redhilll/Reigate and Woking.
Telford	Yes	Make walking more attractive to improve health.	Some	Around 14km of shared pedestrian / cycle route improvements; major town centre public realm enhancements (partially complete). Walking maps.

	Walking objective?	Summary of walking-related objectives	Walking schemes implemented?	Walking schemes implemented (by July 2014)
TfGM	Yes	Connecting people with jobs, focusing on local walk and cycle access. Support businesses by promoting low carbon commuting.	Some	Around 20km of pedestrian route improvements.
WEST	Yes	Increased physical activity and improved health through greater use of walking/ cycling for local journeys, increased use of sustainable modes after transition points	Some	Infrastructure improvements: crossings, bridges, public realm totalling almost 15 km. Community Active Travel Officers running initiatives with numerous employers, schools and people in transition between life stages.

8.2 Metrics used to monitor walking

The key outcomes are overall changes in walking identified in manual counts and household surveys, and evaluation results of specific interventions. Walking interventions may also impact modal share; impacts on modal share are summarised in Chapter 10.

At a project level, the main metric used was the level of pedestrian activity obtained from manual counts at key points across the Large Project area, or across areas with interventions. In some cases manual counts of pedestrians take place only every other year so no 'after' data is available yet, while in others there is not yet data for a sufficiently long time period to provide robust monitoring results which isolate the impact of LSTF from other changes. Because the amount of walking varies with weather conditions, the annual monitoring for one 12 hour period which is carried out in some Large Projects is likely to fluctuate from year to year for reasons which are not related to the LSTF interventions. Results of the manual counts are summarised in Section 8.4.

- Area-wide manual pedestrian count data were reported for BDRS, Bournemouth, Nottingham and Telford
- CENTRO report baseline pedestrian counts at locations along their targeted corridors, but 'after' data are not yet available
- Merseyside, Reading, Telford and TfGM reported pedestrian count data for town centre cordons
- Nottingham also reported the combined change in walking and cycling in the area where 20mph zones had been implemented and compared this with the change at control sites
- No pedestrian count data were reported for Hertfordshire, Solent, Surrey or WEST.

The other metric used by some Large Projects at an area-wide level was the reported frequency of walking derived from household surveys and panel surveys (see Section 8.4). However without filtering the results to focus on the areas affected by LSTF interventions, they are of limited value for evaluating LSTF outcomes:

- Bournemouth and Hertfordshire reported the results of household surveys, comparing reported frequency of walking with that reported by another sample in the previous year. Sample sizes were around 1,500 for Bournemouth and just under 2,000 for Hertfordshire; longer term results are needed before definitive conclusions can be drawn
- CENTRO reported results of a panel survey, comparing just under 1,000 individuals between 2013 and 2014
- Merseyside reported differences between mode share surveys carried out in 2010 (10,000 people) and 2014 (2,000 people).

Hertfordshire also presented a comparison with household survey results in the control area of Harpenden, without any LSTF interventions. Apart from the comparison for walking and cycling combined in Nottingham, this was the only Large Project to present control data for assessing the change in walking.

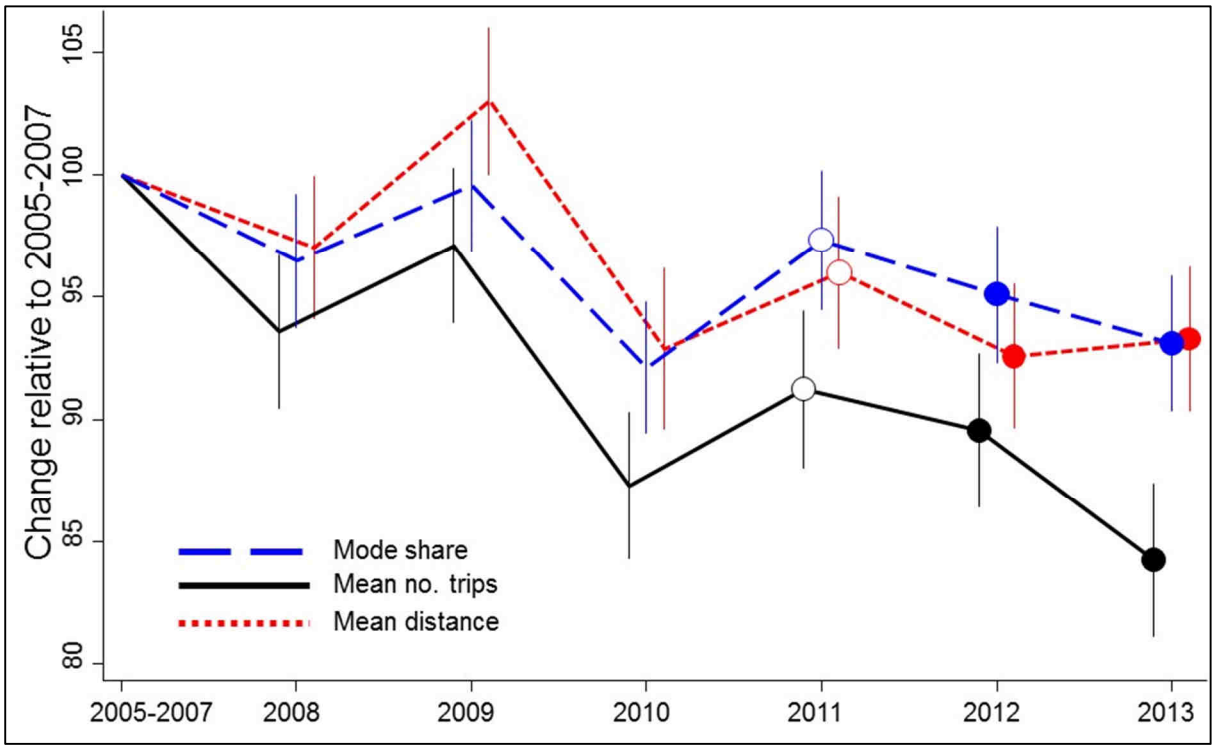
In Solent, the results of the Active People Survey were used as an indicator of changes in levels of walking; however changes in the definition of walk trips in 2012 mean that this is not suitable for identifying changes in walking over this period.

Evaluation of specific schemes by carrying out surveys of attitudes and behaviour was reported by six of the Large Projects – BDRS, CENTRO, Reading, Solent, TfGM and WEST. In addition, two projects (Hertfordshire and Telford) used pedestrian counts to monitor specific sites with LSTF interventions. These results are summarised in Section 8.5.

8.3 National trends in walking

The National Travel Survey provides the only suitable source of national data on trends in walking[32]. Figure 8.1 shows that the average weekly distance walked by adults in urban areas of England (excluding London) has varied from year to year but with an overall tendency to decrease in recent years. Between 2010 and 2011 it showed some increase, but this was followed by a slight fall in 2012, and by 2013 it was slightly higher than in 2010. The average number of walk trips has followed a similar pattern. Note that the confidence intervals in Figure 8.1 show a degree of uncertainty about the changes indicated.

Figure 8.1: Trends in walking for transport – National Travel Survey



2013 point estimates derived from data provided by the Department for Transport; 2013 confidence intervals are approximate, based on the assumption that uncertainty around the estimates in 2013 is the same as in 2012.
Open circles show years when some Large Projects were receiving funding; filled circles show years when all Large Projects were receiving funding.

8.4 Project-level outcomes of walking interventions

Data on levels of walking from manual counts presented in the Outcomes Reports are summarised in Table 8.2. This shows limited evidence for an increase in walking into Reading town centre, an increase in walking into the urban centres in TfGM and an increase in walking and cycling combined in one of the low speed limit zones in Nottingham – a larger increase than at the control sites.

However the pedestrian counts indicate a decrease in levels of walking in three of the BDRS towns (Barnsley, Doncaster and Sheffield) as well as in Bournemouth and Merseyside, as in the National Travel Survey. The pedestrian counts indicate no change in Telford and an inconclusive result in Rotherham, the fourth BDRS town.

[32] In the Active People Survey the definition of the walk trips recorded changed in 2012, so comparisons with earlier years are not meaningful; this also means that high level comparisons of changes in walking across the Large Projects are not possible.

Two of the Large Projects showing an increase in pedestrian activity are two of the four with many walking schemes implemented and monitoring results available; in the case of Nottingham, there was also a specific objective to increase active travel.

With the exception of BDRS, the Large Projects which have shown a decrease in walking have implemented fewer schemes, although two of the four (Telford and Bournemouth) do have specific objectives for increasing active travel.

Table 8.2: Monitoring results from pedestrian counts

Large Project	Summary
BDRS	Data from the cordon counts in the four urban areas show a decrease in pedestrian activity between 2010 and 2014 in Barnsley, Doncaster and Sheffield of around 6-7%, and an increase in Rotherham of 23%; this is however a reflection of lower levels of walking recorded in Rotherham in 2009 and 2010.
Bournemouth	The manual counts made on one day each year at 18 sites on the LSTF corridor show an average decrease of 9%, comparing 2013 with the 2010-12 average.
Merseyside	Counts of the people walking into Merseyside urban centres in the morning peak show an 8% reduction in the level of walking between 2012 and 2014.
Nottingham	Monitoring one year after the implementation of 20mph limits in the Sherwood area are encouraging, showing a 17% increase in the number of journeys by walk or cycle compared with an 11% increase at control sites; further monitoring is planned to establish whether the trends continue.
Reading	Pedestrian counts across the town centre cordon have fluctuated since 2007 but there are indications of an upward trend (depending on which year is taken as the baseline). In 2014 there were 20% more pedestrians than in 2007; the figure was also higher than in 2013.
Telford	Pedestrian count data are available for one weekday in July (12 hours, note day of the week varies); the count sites for which data are available for many years have high levels of variability between years, indicating that the data are of limited value for monitoring LSTF improvements over a short time period. The number of people counted was the same in 2010 and 2013 at the 20 sites where data was available; but numbers were higher in 2011 and 2012.
TfGM	Cordon count data for the ten urban areas show in increase in pedestrian activity between 2010 and 2013 of 11% in the morning peak and 5% in the off-peak period (1000 – 1200). In both cases there had also been an increase in the year before LSTF funding.

At this stage in reporting outcomes, the following Large Projects have not yet presented data from pedestrian counts:

- CENTRO – biennial counts, so comparison with 2012/13 baseline not yet possible[33]
- Hertfordshire, Solent, Surrey and WEST – pedestrian counts not mentioned.

[33] CENTRO also have data for earlier years, which will be relevant to the final meta-analysis. Extraction of this information from the database held by their consultants for the interim meta-analysis would have incurred an additional cost and was not undertaken.

Later in the programme, it should be possible to draw some further conclusions about the impact of the LSTF on walking levels, when there will be monitoring data available for a longer period and for one more project.

In addition to these overall results from pedestrian counts, four Large Projects have used area-wide survey data to identify changes in levels of walking, although in three of these cases the changes reported at this stage are from one year to the next. None of the results are particularly encouraging but in three of the four cases, the level of implementation was relatively modest. In one case there was a decrease in reported level of walking, and in another there was a small increase which was similar to the increase in the control area. In another case there was a small increase which was not supported by the count data, while in the more robust panel survey (albeit a sample of only 900 people), car trips were reported as being substituted for walking but the Project noted that this may not have been solely attributable to the LSTF.

- In Bournemouth, data from the National Highways Transport Survey for the relevant wards (around 1,500 respondents each year) show that between 2012 and 2013 there was an increase in the percentage of people reporting that they walk daily (from 53% to 58%), a small decrease walking weekly and monthly and a decrease in the percentage who walk less frequently or never (from 8% to 5%)[34]. These results are not consistent with the results from the pedestrian counts shown in Table 8.2.
- In CENTRO the interim resident panel survey carried out in June 2014 showed that since the 2013 baseline, 57% of over 900 respondents had substituted car trips with walking, but it was noted that this may be influenced by factors beyond the LSTF programme
- In Hertfordshire, household surveys have shown an increase in the reported level of walking between 2012 and 2013 in St Albans (5%) and Hemel Hempstead (4%); this was similar to the proportion in Harpenden, the control town (4%) and indicates that the increases reported may not be attributable to the LSTF interventions
- In Merseyside, mode share surveys show a 12% reduction in walking levels across Merseyside between 2010 and 2014; this can be compared with the 8% reduction in walking into Merseyside town centres shown in Table 8.2

8.5 Intervention-level outcomes for walking from Outcomes Reports

Evaluation of specific interventions aimed at encouraging walking was reported in seven of the Large Projects. In five of these this was done through surveys of users and participants, while in Telford and Hertfordshire, pedestrian count results for sites affected by the LSTF interventions were analysed. In some cases these intervention-level outcomes are short term results (e.g. three months after participating in a scheme) and longer term monitoring is planned. The key outcomes identified in this way are summarised in Table 8.3.

These tend to be small scale – with between a few hundred and 2,000 participants - but show encouraging results in most cases. However the indicators used tend to be indirect measures of the impact on the amount of walking as a mode of transport; for example: the number of people taking part in organised walks, a change in the proportion who report that they never walk or walk more frequently after receiving personalised travel planning, numbers in a walking challenge who report walking more during the challenge.

[34] Chi^2 test for association $p=0.005$ for difference 2012 and 2013 and $p<0.001$ for trend

A few examples of direct impacts were reported, for example: the increase in footfall on a new pedestrian link; an increase in the number of journeys by walk or cycle after implementing 20mph speed limits over and above the increase in a control area.

Interventions for which targeted evaluations did not show any evidence of an increase in walking were one of the personalised travel planning initiatives in CENTRO (where walk trips fell slightly) and the town centre in Telford where pedestrian numbers fell.

Table 8.3: Reported outcomes of specific walking interventions

Large Project	Summary
BDRS	• 1,229 people were involved in one 'Walkboost' scheme, of whom 740 had taken part in walks and 378 had registered their details.
CENTRO	• Following a personalised travel planning initiative (A45 and A41 South), the proportion of people (sample size not specified) who said they never walked fell from 6% to 4% and the proportion who said they walked 1-3 days per month increased from 6% to 15% but the proportion who said they walked every day fell from 25% to 4%. • Another personalised travel planning initiative (Walsall Road and Black Country West) found walking trips recorded in a one day travel diary fell from an average of 2.18 to 2.13 (sample size not specified).
Hertfordshire	• One new footway was completed in September 2014, providing a link to a new market, with an initial increase in footfall compared with 2012 of 15% on weekdays and 3% on Saturdays.
Reading	• The 'Beat the Streets' scheme evaluation found that two-thirds of participants said they walked more during the challenge (number of participants not stated)
Solent	• After 15 months of a 10-week active travel programme aimed at encouraging walking and cycling, 126 people had registered; 64 had completed follow up surveys which showed the number of hours spent in physical activity more than doubled during the programme (4.6 to 9.7 per week) and time spent on car travel fell from 5.8 to 2.7 hours per week and 49% reported fewer miles by car after the programme • 2,000 people signed up for a Commuter Challenge and around 200 provided follow-up data; 15% began walking, 41% said their level of walking had increased to some degree and walking was done on more days of the week, with an extra 8 minutes walked per week.
Telford	One day count data were analysed for sites affected by LSTF interventions: • Silkin Way results are unclear: this is described as showing increases in walking attributable to the improved multi-user route, but although there was an increase recorded between 2010 and 2013 (193%), there was a 29% decrease between 2012 and 2013 • Another site shows an increase in pedestrians from 34 in 2012 to 202 in 2013, which is attributed to the LSTF funding for park and ride and associated promotion of pedestrian routes • Combined results for four town centre count sites (where much of the LSTF investment was focused), show a 29% decrease in walking between 2011-12 and 2012-13 which is attributed partly to roadworks and other developments affecting overall levels of demand.

Large Project	Summary
TfGM	Increases in walking were reported following residential travel planning: • Three months after personalised travel planning, among 1,100 people surveyed, 12% reported walking more and fewer than 1% reported walking less; 86% of those walking more said this was due to personal travel planning to some or a large extent.
WEST	• A small scale survey among 62 people receiving travel advice or cycling support reported increasing the amount of walking (21%)

8.6 Conclusions on outcomes related to walking

At this interim stage, there is not yet sufficient evidence to identify overall changes in walking which can be attributed to the LSTF interventions, in some cases because there is insufficient data and in others because schemes have not yet been completed. On an area-wide basis there are external influences which may affect the level of walking so it is not yet possible to ascertain whether the changes are attributable to the LSTF. However attribution can be established for new interventions which have received LSTF funding and have been evaluated directly; one Large Project where individual schemes have been evaluated which shows evidence that walking has been encouraged is listed in Table 8.4 as having "some" improvement attributable to LSTF. It is important to note that even where no causal link has been identified at this interim stage, LSTF interventions may nevertheless be responsible for some or all of the increase in walking.

Three Large Projects have shown evidence of an increase in walking, two of which (Reading and Nottingham) have implemented many schemes aimed at increasing active travel in general or walking in particular.

- There is limited evidence for an increase in walking into Reading town centre with 20% more pedestrians in 2014 than in 2007, although the trend between these years shows substantial fluctuation
- A year after implementing the low speed zones in the Sherwood area of Nottingham there was a 17% increase in walking and cycling combined, compared with an 11% increase at the control sites
- Between 2010 and 2013 the level of walking in the ten urban areas in TfGM increased by 11% in the morning peak and 5% off-peak, continuing the increase observed in the previous year.

Another project (CENTRO) found car trips had been replaced by walking, but the project noted that this may not have been solely attributable to the LSTF.

However as in the national data on walking, walking levels appear to have declined in two Large Projects (BDRS and Merseyside) and have not changed in Telford; this may reflect other factors not related to the LSTF interventions. In Bournemouth there is conflicting evidence from different sources, with a decrease in walking levels identified in count data but an increase in the household survey.

A few individual schemes have produced encouraging results in several of the Large Projects (BDRS, CENTRO, Hertfordshire, Reading, Solent, Telford, TfGM and WEST) although these are small in scale. In some cases these were through indirect measures such as people reporting that they have been walking more frequently following participation in a scheme and in two cases with direct measures of increased levels of walking.

Table 8.4: Overview of outcomes related to walking

Large Project	Over-view	Summary of change since start of LSTF project~	Attributable to LSTF?
BDRS	■	Cordon counts show decrease in level of walking in Barnsley, Doncaster and Sheffield (7%) since 2010; inconclusive in Rotherham	-
Bournemouth	■	Annual one day counts show on average a 9% decrease in walking between 2013 and the 2010 – 2012 average	-
	■	Household surveys show a small short term increase in people saying they walk every day, every week and every month	-
CENTRO	■	Area-wide data not yet available. Small scale results for some schemes provide only weak indications of the impact of LSTF activities	-
Hertfordshire	■	Area-wide count data are not available.	-
	■	Area wide household surveys show a small increase in the reported level of walking which was similar in the control area	-
Merseyside	■	Walking into urban centres in the morning peak has decreased by about 8% and modal share surveys show a 12% reduction in walking across Merseyside	-
Nottingham	■	Area-wide data are not available but a year after implementation of a low speed zone there was a 17% increase in walking and cycling compared with 11% in the control area	Yes
Reading	■	Possible increase in pedestrians going into the town centre (20% more in 2014 than in 2007, but trend is variable)	?
Solent	□	No overall monitoring data available, few schemes completed	-
Surrey	□	No evidence on walking provided	-
Telford	■	The limited count data available show no change in overall levels of walking.	-
	■	Some specific sites are claimed to have seen LSTF-related increases in walking	Yes
TfGM	■	Upward trend in walking in the ten urban areas between 2010 and 2014 (11% in the morning peak and 5% off peak) continuing a previous trend	-
	■	12% of participants in residential travel planning schemes reported walking more and most of these attributed it to the travel planning	Yes
WEST	■	No overall data available on walking levels yet. Only one small scheme reported impacts (62 people), albeit positive	-

■ decrease in walking; ■ no change in walking; ■ increase in walking; ■ insufficient data to assess impact on walking; □ too few schemes completed to be expected to affect walking.

'Overview' only shows direction of change if significant schemes that might be expected to have an effect on walking have been completed.

~ Different Large Projects treat different time periods as 'baseline'. Changes summarised here are since 2011/12 for Large Projects that received Key Component funding (BDRS, Hertfordshire, Merseyside, Nottingham, Surrey, Telford, TfGM and WEST), and since 2012/13 for Large Projects that did not receive Key Component funding (Bournemouth, CENTRO, Reading, Solent).

9 Economy: support for job-seekers

Key points:

Across all 12 Large Projects, the total number of job-seekers helped during the whole funding period to date is approximately 35,000.

Merseyside and Nottingham in particular have developed large-scale support programmes for job-seekers, reaching a substantial proportion of unemployed people and offering a comprehensive range of services.

Surveys of the effects of these services are currently small-scale and so findings should be treated with caution. However, the results suggest that the various support services are enabling job-seekers to make trips that they would not otherwise make to interviews, training and work placements, hence intensifying their job search; that they are enabling people to accept job offers that they would not otherwise be able to take up; and that having accepted a job offer, they are enabling people to stay in work.

9.1 Overview of objectives and outputs targeting job-seekers

Seven of the 12 Large Projects have included significant activity aimed at making it easier for unemployed people to gain access to interviews, training or employment. The main activities are:

- **Free or discounted public transport travel**: free one-day / one-week tickets to enable travel to interviews or short-term training; discounted public transport travel for job-seekers; and free travel for job-seekers in the first 1-4 months after starting a new job.
- **Personalised travel planning and 'travel training'**: travel training workshops at Work Clubs or Job Clubs to help people to plan journeys; one-to-one personalised journey planning at job centres and via travel 'surgeries' and information stalls; and training for employment advisers at job centres, Work Programme providers, etc, to enable them to offer travel support to job-seekers.
- **Moped loan**: short-term loan or hire-purchase of a moped for people who have been offered a job or training but are unable to get there by any other means of transport.
- **Cycle services**: free or low-cost refurbished bicycles and cycle safety equipment for job-seekers or people who have been offered a job; sometimes accompanied by cycle training and bike maintenance training.
- **Direct job creation**: some Large Projects sought to recruit previously unemployed people to transport-related jobs, either related to the delivery of the LSTF programme or more generally.

Some Large Projects have also funded new bus services or bookable community transport services to hard-to-reach major employment sites, which in certain cases enable unemployed people to take jobs that would not otherwise be accessible to them.

Table 9.1 summarises relevant project objectives and provides an overview of main activities.

Table 9.1: Summary of objectives and interventions supporting job-seekers

	Objective to support job-seekers?	Summary of objective related to job-seekers	Job-seeker support delivered?	Interventions supporting job-seekers delivered so far
BDRS	Yes	Key Component addresses 'the local urgent challenges faced by our communities, and focuses upon people entering employment or acquiring work skills'	Substantial	Travel training workshops at Work Clubs / job clubs; free public transport tickets for travel to interviews / work placements; Wheels 2 Work moped loans
Bournemouth	No	-	Minor	Provision of vouchers for bike and cycle equipment
CENTRO	Yes	Increase the number of people finding employment through WorkWise initiatives and support	Substantial	Free public transport tickets for travel to interviews and new jobs
Hertfordshire	Yes	To maximise contribution to…economic growth by ensuring that…unemployed people can gain work	Minor	Provision of mopeds on hire-purchase to job-seekers
Merseyside	Yes	Deliver real benefits to Merseyside through measures that…enhance access to employment and….broaden travel horizons	Substantial	Free public transport tickets for travel to new jobs; personalised journey plans; free bicycles; cycle training and bike maintenance training; moped hire-purchase; transport-related jobs for young job-seekers
Nottingham	Yes	Link people to jobs by reducing barriers to accessing services and opportunities, particularly in terms of affordability and low travel horizons	Substantial	Half-price public transport travel for job-seekers; free public transport tickets for certain trips for job-seekers; personalised travel information; free refurbished bicycles; transport-related jobs for job-seekers
Reading	No	-	Minor	Personalised travel information at job centres
Solent	Yes	Reduce unemployment in areas of deprivation through improved sustainable access to employment centres	Medium	3 months' free public transport travel to help job-seekers with finding a job; travel advisers in job centres
Surrey	No	-	Minor	Cycle hubs help NEETS gain bike refurbishment skills
Telford	No	Investment in low carbon, low cost transport will help improve travel horizons and opportunities especially for groups such as the young and unemployed	Minor	Moped loans to young people to help gain access to work
TfGM	Yes	Supporting areas with high deprivation and unemployment, by removing problems of access to adjacent employment opportunities or into the wider public transport network	Substantial	Free public transport tickets for travel to interviews and new jobs; journey planning advice; free refurbished bicycles; community transport services to major employment sites
WEST	Yes	-	Medium	Free public transport tickets for travel to interviews, training and new jobs; bicycle loans; loans to buy mopeds

9.2 Scale of activity

Detail on the scale of job-seeker support in each Large Project is given in Table 9.2, based on information in the Annual Outcomes Reports and Annual Outputs Surveys.

The 2013/14 Outputs Surveys asked all LSTF projects to report a single headline figure for the number of job-seekers who had received individual support to gain access to work since the start of LSTF funding. The reported headline figures are not directly comparable to those given in Table 9.2, because the reporting period is slightly different[35]. It is also possible that some Large Projects may have interpreted the question in the 2013/14 Outputs Survey in different ways, and hence under- or over-reported. However, the headline figures reported in the 2013/14 Outputs Surveys do give some sense of whether the overall scale of activity is large or small, and are broadly consistent with the more detailed figures in Table 9.2. Taking headline figures in the 2013/14 Outputs Surveys at face value, the total number of job-seekers helped by the 12 Large Projects would be approximately 53,500. Adjusting the individual Large Project figures (sometimes upwards and sometimes downwards) following scrutiny of the detailed figures as summarised in Table 9.2, a more plausible estimate is that about 34,900 job-seekers have been helped by the 12 Large Projects so far. While figures should be considered approximate, these adjusted estimates suggest that roughly a third of those supported were in Merseyside; a quarter in Nottingham; just under a fifth in the CENTRO area; and about a tenth in the TfGM area.

The number of job-seekers supported by each Large Project can also be related to overall levels of unemployment in the area. Across all 12 Large Projects combined, the total number of job-seekers helped during the whole funding period is approximately 7~11%[36] of the number of 16-64 year-olds who were unemployed in these 12 areas during 2013/14. This figure slightly over-estimates the impact, since activity was spread over two or three years, but the over-estimation is likely to be small because activity has been ramped up as the projects have progressed, with more people supported during 2013/14 than in previous years. Two Large Projects, Merseyside and Nottingham, supported a substantially higher proportion of job-seekers: using the adjusted estimates, Merseyside supported a number of job-seekers that was equivalent to 16% of its unemployed 16-64 year-olds in 2013/14, and Nottingham supported a number that was equivalent to 24% of unemployed 16-64 year-olds in 2013/14. For all other Large Projects, the number of job-seekers supported was less than 8% of unemployed 16-64 year olds in 2013/14 in the relevant area. Figure 9.1 illustrates the scale of activity as a proportion of unemployed 16-64 year-olds.

[35] Typically to March or July 2014 for the Outputs Surveys and to October 2014 for the Outcomes Reports.
[36] The lower figure is based on the adjusted estimates of the total number of job-seekers supported so far, using evidence from the 2013/14 Outcomes Reports and 2011/12, 2012/13 and 2013/14 Outputs Surveys. The upper figure uses the Large Projects' own headline figures for number of job-seekers supported, as reported in the 2013/14 Outputs Surveys.

Table 9.2: Scale of activity to support job-seekers, from start of LSTF funding

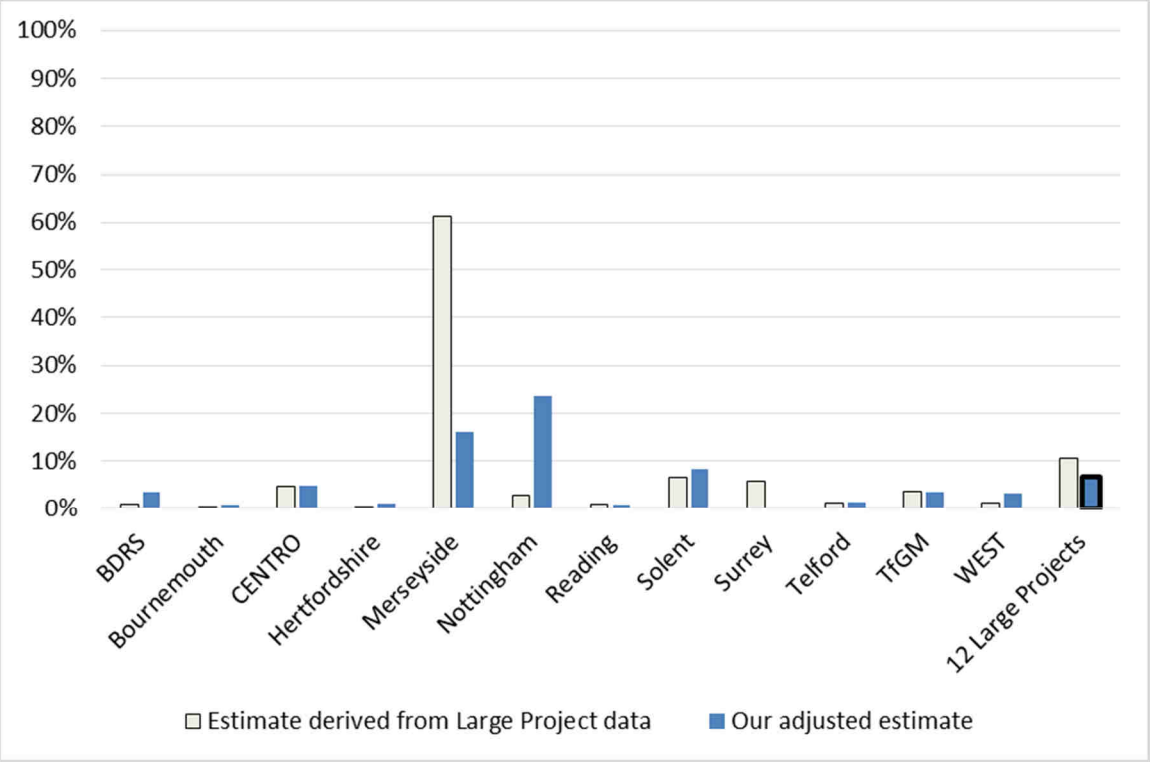
	Free / discounted public transport travel	Travel training / personalised journey planning	Moped loan	Cycle services	Other
BDRS	295 free tickets used to attend interviews, work placements or training; 6,000 half-price bus trips made by NEETS	1,298 job-seekers received travel training	602 people loaned moped to access work, education or training	-	-
Bournemouth	-	-	-	84 job-seekers offered vouchers for bike and equipment	-
CENTRO	5,400 people offered free tickets to attend interviews or 2 months free travel on starting new job	-	-	-	-
Hertfordshire	-	-	100 people offered hire purchase moped	-	-
Merseyside	5,947 people offered free travel passes for the first month of new employment	3,569 people offered personalised journey plans	68 young people offered moped loan	758 job-seekers offered free bicycle to get to work; 154 offered cycle training; 163 offered bike maintenance training	'Employment in the Transport Sector' programme has created 107 jobs filled by young job-seekers
Nottingham	5,495 people offered Jobseekers' Citycard (half-price travel)*; 388 job-seekers received smart card tickets via Community Hubs	2,278 job-seekers offered travel information via travel surgeries, Jobs Fairs and Community Hubs	-	51 job-seekers offered free refurbished bike and accessories	37 people have gained employment in sustainable transport

* During the period to March 2014, the period to which this figure relates, the Nottingham Jobseekers' Citycard was funded via the City Deal, not LSTF; it has been funded by LSTF since March 2014.

	Free / discounted public transport travel	Travel training / personalised journey planning	Moped loan	Cycle services	Other
Reading	-	48 job-seekers received personalised journey advice via road shows at job centres	-	-	-
Solent	2,350 job-seekers offered 3 months free public transport to help with job searches	Travel advisers in job centres offer advice to young job-seekers	-	-	-
Surrey	-	-	-	-	2 volunteer cycle hubs develop skills in bike refurbishing by NEETs
Telford	-	-	68 young people offered moped loan	-	-
TfGM	3,000 free public transport tickets offered to attend interviews or for first 4 months of employment	1,000 job-seekers received journey planning advice via travel surgeries; 214 employment advisers trained to offer travel support to job-seekers	-	80 job-seekers offered free refurbished bike and accessories	4 Local Link community transport services to major employment sites
WEST	1,173 job-seekers offered free public transport tickets to attend interviews or training, or for first month of new employment	-	2 job-seekers offered 'loan to buy' a moped	5 job-seekers offered free loan of a bicycle for 2-6 months	

Figures are taken from 2013/14 Outcomes Reports and 2011/12, 2012/13 and 2013/14 Outputs Surveys. Note that some numbers may relate to the period covered in the Annual Outputs Survey (i.e. to March or July 2014), while others may relate to the period covered in the Annual Outcomes Survey (i.e. to September 2014). Some outputs arising from funding from other sources (local contribution and/or other DfT sources such as City Deal) are included. There is likely to be some 'double counting' in that some job-seekers may have received more than one service.

Figure 9.1: Supported job-seekers during whole funding period as a proportion of number of unemployed 16-64 year-olds in 2013/14



Figures for number of job-seekers supported are derived from Large Project 2013/14 Outputs Reports; adjusted estimates are based on detailed figures in 2013/14 Outcomes Reports and 2011/12, 2012/13 and 2013/14 Outputs Reports. For Large Projects where major amendments have been made, these have been checked with the programme manager. Differences mainly arise because Large Projects interpreted 'support' for job-seekers in different ways, e.g. some included quite limited contact such as a brief conversation at a stall at a jobs fair, while others only included more substantive support such as free tickets or bicycles. Number of unemployed 16-64 year-olds in 2013/14 are from ONS Local Labour Market Indicators for relevant local authorities in the 12 Large Project areas.

9.3 Metrics used to monitor job-seeker support programmes

During the scoping phase of this project, various options were considered for monitoring the effects of job-seeker support programmes. However, discussions with the Large Projects suggested that none of the options considered would be likely to be feasible within the tight timeframe available for completion of 2013/14 Outcomes Reports. Identification of a single, simple metric is challenging because of the very wide range of types of support being offered, to people at different stages in their job search, and by a number of different agencies.

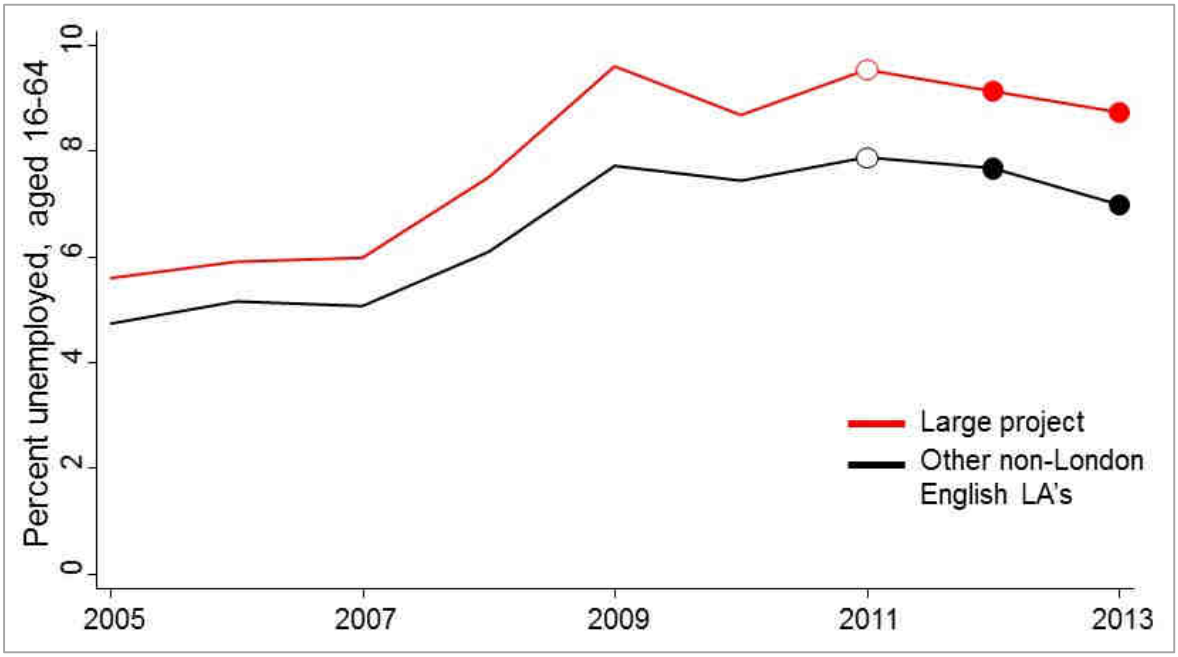
In the absence of a more appropriate metric, unemployment rate has been used as a crude high-level indicator of the effect of job-seeker support programmes, and evidence on this is reported in section 9.4. Other scheme-specific evidence of the effect of job-seeker support programmes is included in Outcomes Reports, commonly based on small-scale surveys of fairly limited scope, and this is reported in section 9.5.

9.4 High-level outcomes of job-seeker support programmes

At this stage in the programme, there is no clear indication that the various forms of travel support offered to job-seekers have resulted in lower levels of unemployment than would otherwise be the case. This null result is unsurprising, given the relatively small proportion of unemployed people who have received support so far (7~11%, as reported above), and the multiple factors that affect unemployment levels.

Figure 9.2 shows how the proportion of unemployed people has changed over time (from 2005/06 to 2013/14) across all Large Projects combined. Since 2011/12, unemployment has fallen across the 12 Large Projects, but the change is parallel to that seen in other non-London English local authorities.

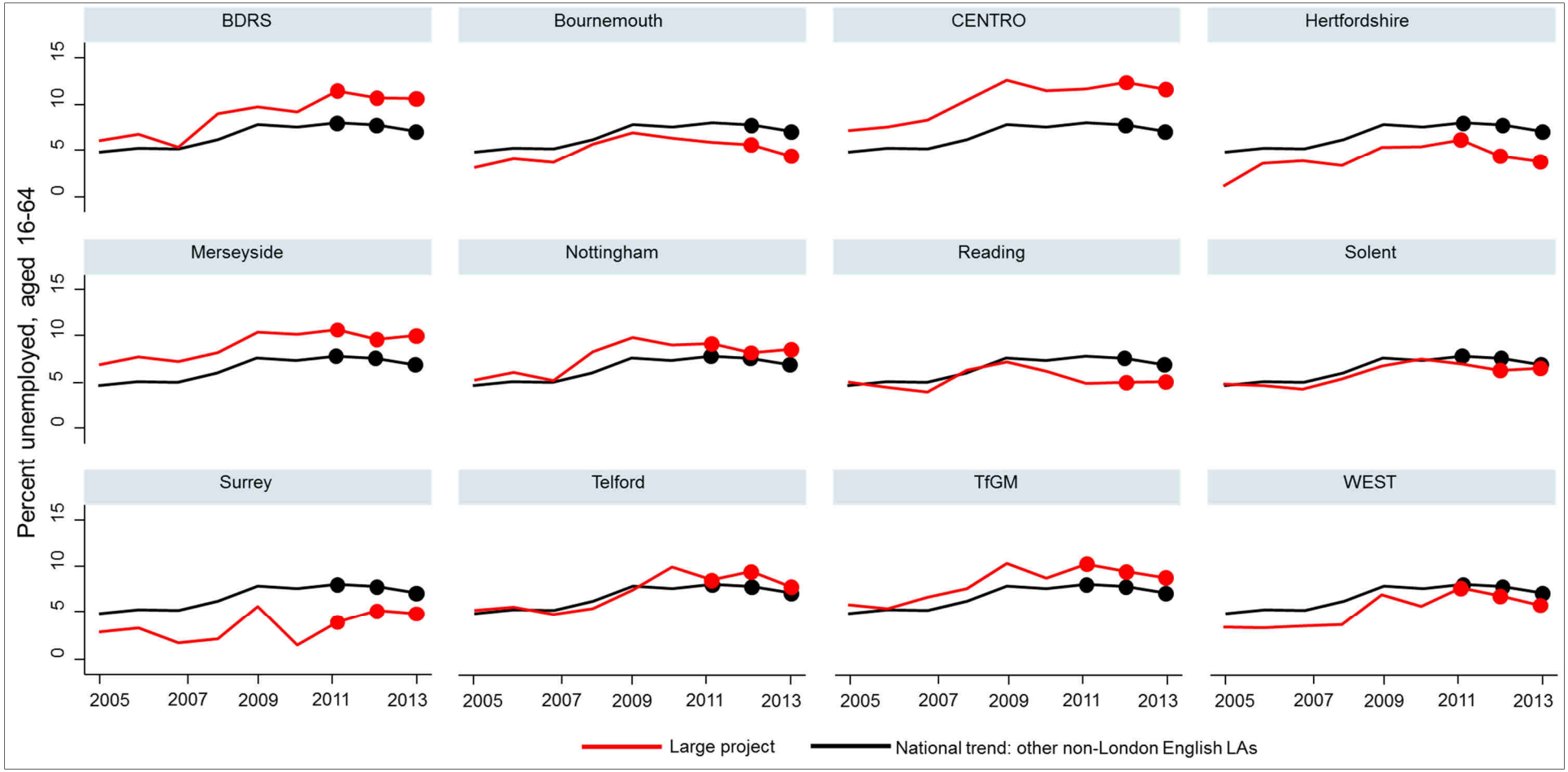
Figure 9.2: Proportion of 16-64 year-olds unemployed, 2005/06 – 2013/14 (all Large Projects combined)



Open circles show years when some Large Projects were receiving funding; filled circles show years when all Large Projects were receiving funding.

Figure 9.3 shows change in the proportion of unemployed 16-64 year-olds for each Large Project, and for non-LSTF local authorities excluding London. Nine of the Large Projects show a fall in unemployment, as do non-LSTF local authorities outside London. There is no indication of any difference in the pattern between those Large Projects with a more substantial job-seeker support programme (Merseyside and Nottingham) and those with a small job-seeker support programme, suggesting that other local factors are more important determinants of unemployment levels.

Figure 9.3: Proportion of 16-64 year-olds unemployed, 2005/06 – 2013/14



Filled circles show years when Large Projects were receiving funding.

9.5 Intervention-level outcomes of job-seeker support programmes

Various survey results reported in 2013/14 Outcomes Reports suggest that support programmes for job-seekers have been helpful in enabling people to get jobs. These are summarised in Table 9.3. The main results are that:

- A proportion of people who were offered free or discounted public transport tickets or cycle vouchers in order to help in their job search subsequently succeeded in gaining work. From evidence in BDRS, Bournemouth, Nottingham and Solent, figures range from 5% to 43%. Higher figures are unlikely to be directly attributable to the interventions, but the figure of 5% in BDRS was for job-seekers who gained employment or were offered permanent positions as a result of work placements accessed using their free tickets, and hence does appear to be attributable to the intervention[37].
- There is evidence from Bournemouth, Nottingham and WEST that free or discounted public transport tickets or cycle vouchers enabled job-seekers to make trips for interviews or training courses that they would not otherwise have made, with between 45% and 86% of respondents to surveys saying that the support had enabled them to make these journeys. Although the evidence is limited, it seems plausible that the support for job-seekers may have enabled people to intensify their job search and shorten the period of time that they were out of work.
- Amongst people who were offered free bus travel for the initial period in a new job, there is evidence that this support was valuable. In CENTRO, 77% of respondents to a survey were still in employment six months after starting their new job, and most of these people (79%) were still travelling to work by bus.
- Evidence from BDRS suggests that travel training workshops may have helped to broaden travel horizons, making job-seekers more confident in planning journeys.
- Evidence from BDRS and Hertfordshire suggests that loan of a moped may have enabled people to take up a job offer, or to remain in work; jobs were often in low-paid sectors with unsocial hours such as factory / warehouse work.
- Evidence from TfGM suggests that community transport services to major employment sites may have resulted in job-seekers applying for and securing employment at locations that they would not otherwise have considered feasible.

[37] Assuming, that is, that job-seekers who would have easily been able to reach the work placement without a free ticket would not have been offered one.

Table 9.3: Reported primary and secondary outcomes of job-seeker support programmes

	Primary outcome: employment secured	Secondary outcomes
General		
Merseyside	Of those supported through the programme, 62% were in employment six months later *(telephone survey of 183 recipients of various services – see Chapter 12 for details)*	
Intervention type: free or discounted public transport travel		
BDRS	In a pilot programme, 295 people received free tickets to attend interviews, work placements or training. Of these, 16 (5%) gained employment or were offered permanent positions as a result of work placements accessed using the tickets (estimated savings of £917.60 in benefits per week, assuming all of these people were eligible for and claiming job-seekers allowance of £57.35 per week).	A further 84 of the people in the pilot programme completed basic skills assessments and training courses in Maths & English to enable them to start looking for employment.
CENTRO	A survey six months after receiving free public transport travel to a new job found that 77% of respondents were still in employment *(2013/14 survey; response rate not given).* Most respondents to the survey (79%) were travelling to work by bus *(2013/14 survey; response rate not given).*	LSTF funding has enabled a significant expansion of a pre-existing 'Workwise' programme of free tickets for travel to interviews /new jobs: 5,400 people have been supported over 2 years, out of 13,700 over the entire 10 years since the programme was launched in 2003.
Nottingham	Independent evaluation of the job-seekers' half-price public transport pass found that 17% of pass-holders had subsequently gained employment *(telephone survey of 400 Job-seeker Citycard holders, February 2014)*	On average, respondents had used discounted tickets to travel to 4.4 job interviews. 41% of respondents strongly agreed and 32% agreed that they would find it difficult to attend interviews without the half-price public transport pass *(telephone survey of 400 Job-seeker Citycard holders, February 2014).*
Solent	Of 1,850 job-seekers who were offered 3 months' free public transport to help with job searches during 2013/14, more than 43% found employment during the period that they had the free transport *(no details given of data collection method but presumed to be Job Centre statistics).*	
WEST		The main journey purposes supported by free tickets were: to attend a training course (45%); attend an interview (18%); or start a new job (18%). 45% of respondents would not have made the journey if they had not received the free bus ticket *(survey of travel intentions of nearly all 422 bus ticket applicants who received free bus tickets in 7 months to June 2014).*
Intervention type: travel training / personalised journey planning		
BDRS		Amongst people who received travel training via workshops at job clubs / training establishments, 87% found the training 'good' or 'excellent', stating that they felt more confident in planning journeys and learning different ways to travel *(post-workshop evaluation forms completed by 187 participants; response rate not given)*

	Primary outcome: employment secured	Secondary outcomes
Intervention type: moped loan		
BDRS	Of the 256 people who received a moped loan in 2013/14, 92% used it to access employment and 8% to access training. Many jobs were low-paid and/or involved shift work (e.g. factory/warehouse work which accounted for 55% of jobs undertaken); the alternative in many instances would have been unemployment and reliance on benefits.	
Hertfordshire	Of the 60 people who received a moped loan in 2013/14, 33% gained employment; 48% were able to stay in employment; and 18% were able to access education or training.	
Intervention type: cycle services		
Bournemouth	Amongst job-seekers who signed up to a cycle voucher scheme to improve access to employment and training, 30% subsequently found work; all agreed that the bike and equipment were extremely important in helping them find work *(no details given of survey method, survey date or response rate)*	Amongst job-seekers who had signed up to a cycle voucher scheme but not yet found work, all were using the bike and equipment to attend interviews; 86% said the scheme had enabled them to access interviews that they previously would not have been able to access *(no details given of survey method, survey date or response rate)*.
Intervention type: other		
TfGM	Amongst users of 'Local Link' community transport services to four major employment sites, 10% (12 respondents) would not have made the trip to work at all if the service had not existed; 15% (19 respondents) said the existence of Local Link was an important consideration in applying for a new job or that they would not have applied for the new job without Local Link *(telephone survey of users six months after Local Link service introduced; 125 respondents; 60% response rate).*	29% of users of 'Local Link' services agreed /strongly agreed they could not work in their current employment without the service *(telephone survey of users six months after Local Link service introduced; 125 respondents; 60% response rate).*
TfGM	A 'Train Learn Drive and Earn' course to equip unemployed people to drive community transport vehicles had been completed by 23 people by June 2014. Their average period of unemployment was 2.5 years. By August 2014, 18 of these people had found paid work and 5 were volunteering in community transport roles.	

9.6 Conclusions on outcomes related to job-seeker support

Table 9.4 summarises the findings related to job-seeker support. At this interim stage, only Merseyside and Nottingham have implemented job-seeker support programmes on a scale that is large enough that its effects might plausibly be discernible in the unemployment rate. However, although the unemployment rate in both Merseyside and Nottingham has fallen since the start of the LSTF programme, there is no direct evidence to suggest a causal link. Elsewhere, activities have been on a small scale relative to total levels of unemployment.

Other evidence collected by the Large Projects does suggest that job-seeker support programmes have helped people in their job search, for example by enabling travel to work placements which subsequently resulted in a job offer, or by enabling travel to interviews or training that would not otherwise have been feasible. There is some limited evidence that support programmes may have broadened people's travel horizons, and hence widened the number of possible jobs that were within scope. Finally, there is evidence that support programmes that provided access to hard-to-reach employment sites (e.g. through community transport services, free public transport travel in the early days of a new job, or loan of a moped) may have resulted in people taking up job offers that they would not otherwise have considered.

Table 9.4: Overview of outcomes related to job-seeker support

Large Project	Over-view	Summary of change since start of LSTF project~	Attributable to LSTF?
BDRS	☐	Unemployment rate has fallen, but unlikely to be attributable to LSTF as scale of intervention too small	-
Bournemouth	☐	Unemployment rate has fallen, but unlikely to be attributable to LSTF as scale of intervention too small	-
CENTRO	☐	Unemployment rate has fallen, but unlikely to be attributable to LSTF as scale of intervention too small	-
Hertfordshire	☐	Unemployment rate has fallen, but unlikely to be attributable to LSTF as scale of intervention too small	-
Merseyside	■	Unemployment rate has fallen; could in part be attributable to LSTF as programme is large scale, but no direct evidence that this is the case	Some
Nottingham	■	Unemployment rate has fallen; could in part be attributable to LSTF as programme is large scale, but no direct evidence that this is the case	Some
Reading	☐	No change in unemployment rate	-
Solent	☐	Slight increase in unemployment rate	-
Surrey	☐	Slight increase in unemployment rate	-
Telford	☐	Unemployment rate has fallen, but unlikely to be attributable to LSTF as scale of intervention too small	-
TfGM	☐	Unemployment rate has fallen, but unlikely to be attributable to LSTF as scale of intervention too small	-
WEST	☐	Unemployment rate has fallen, but unlikely to be attributable to LSTF as scale of intervention too small	-

■ increase in unemployment; ■ no change in unemployment; ■ decrease in unemployment; ■ insufficient data to assess change in unemployment; ☐ too few schemes completed to be expected to affect unemployment.
'Overview' only shows direction of change if significant schemes that might be expected to have an effect on unemployment have been completed.
~ Different Large Projects treat different time periods as 'baseline'. Changes summarised here are all since 2011/12 for Large Projects that received Key Component funding (BDRS, Hertfordshire, Merseyside, Nottingham, Surrey, Telford, TfGM and WEST), and since 2012/13 for Large Projects that did not receive Key Component funding (Bournemouth, CENTRO, Reading, Solent).

10 Modal shift from behaviour change initiatives

Key points:

All Large Projects undertook behaviour change initiatives aimed at encouraging a shift from single occupancy car driving towards more sustainable modes. Activities included the delivery of personal travel advice through workplaces, schools, community events, rail stations and direct to households, as well as improvements to non-car modes of travel at workplaces and schools.

Meta-analysis of data from workplace initiatives provides evidence that, on average, there was a real reduction in car mode share between baseline and follow-up in the 61 workplace surveys conducted across five of the Large Projects. The pooled effect size was a percentage point reduction of 2.5%, equivalent to a relative decrease of 4%. However, this effect was variable across workplaces and across Large Projects, and lower response rates in some follow-up surveys may have introduced a bias.

Data from surveys undertaken in relation to school or household PTP interventions show positive results from school travel work in Bournemouth, and from household PTP in CENTRO, Hertfordshire and TfGM.

10.1 Overview of objectives related to modal shift

Encouraging modal shift may be seen as an important aim by local authorities for three reasons:

- In the context of general changes in population, jobs and travel habits, it may be more meaningful to look at the relative shares of different modes (rather than absolute travel by any particular means).
- Some authorities are reluctant to set targets on traffic reduction, both for the political reason of not wishing to seem anti-car, and for the practical reason that, for example, they may be happy to see an increase in travel by all means to locations where they are also trying to encourage employment growth.
- Some travel initiatives (as discussed in section 10.2) are inherently multi-modal in their approach, and are intended to achieve general behavioural shift, rather than favouring any particular form of travel.

Table 10.1 summarises the objectives listed in the Annual Outcomes Reports that relate to modal shift. Five authorities have objectives that directly reference modal shift, of whom two (Reading and WEST) are repeating the objective set out for the LSTF programme as a whole. However, the remaining seven authorities all make reference to modal shift, to encouraging or enabling use of more ‘sustainable modes’ or to increasing access by a range of means, either directly, or as part of the way in which they intend to achieve primary objectives. Many authorities link these goals with particular trip purposes, specifically travel for work/business (BDRS, Bournemouth, CENTRO, Hertfordshire, Nottingham, Solent, TfGM), and travel for school (Bournemouth, CENTRO).

Table 10.1: Summary of objectives relating to modal shift

	Modal shift objective?	Summary of modal shift objectives
BDRS	No	No direct objective, although 'facilitating and encouraging sustainable commuting' potentially implies encouraging modal shift.
Bournemouth	Yes	• **Deliver modal shift** to low carbon alternatives to the car, particularly for shorter distance commuting and school car trips. • **Create more integrated, multi-modal sustainable travel opportunities** on the corridor. • Enhanced, and more equal, opportunities to access jobs and services, for all sections of the community, particularly by public transport, walking and cycling.
CENTRO	No	No direct objective, although objectives to 'maintain sustainable travel to work' and 'increase levels of active travel' for workplaces, secondary schools and further education establishments within the 10 corridors.
Hertfordshire	No	No direct objective, although a focus on encouraging business access by sustainable means.
Merseyside	No	No direct objective, although mode shift discussed in relation to a number of the stated objectives.
Nottingham	Yes	• Increasing economic competitiveness and creating capacity for growth by **bringing staff into the workplace using an integrated multi-modal sustainable transport network** and attracting inward investment. Associated target: Increase sustainable travel modal share by 10% from 2011/12 levels by 2014/15.
Reading	Yes	• Reduce carbon emissions by bringing about **an increase in the** volume and **proportion of journeys made by lower carbon, more sustainable means of travel** including walking and cycling.
Solent	No	No direct objective, but one of the three main strands of work is defined as 'behaviour change measures encouraging people to make trips by sustainable modes'
Surrey	No	No direct objective, although mode shift discussed in relation to a number of the stated objectives.
Telford	Yes	• [To achieve] a reduction in carbon emissions through **a 10% modal shift to sustainable modes**.
TfGM	No	No direct objective, although a focus on promoting 'low carbon commuting options'
WEST	Yes	• Reduce carbon emissions, for example by bringing about **an increase in the** volume and **proportion of journeys made by low carbon, sustainable modes** including walking and cycling.

10.2 Measures implemented to achieve modal shift

Some of the key strands of work in the Large Projects relate to behavioural change programmes, which are not aimed at promoting a particular mode, but are generally trying to achieve a shift away from single occupancy car use, to more use of public transport, walking and cycling (and, in some cases, greater car sharing, more use of local facilities, more efficient journey planning and the reduction of unnecessary journeys).

The nature of such programmes includes:

- **Workplace travel planning** (where travel solutions are developed for particular workplaces)
- **School travel planning** (where travel solutions are developed for particular schools)

- **Personalised travel planning** (where individuals receive targeted travel advice and offers, through contact at home, workplaces or other locations)
- **Other initiatives** – such as community smarter travel hubs, 'transitions programmes' (for people moving to university, or into a new residential development) etc.

Tables 10.2 and 10.3 summarise the scale of the behavioural change programmes in the Large Projects.

As indicated in Table 10.2, workplace engagement has been a significant activity for nine Large Projects. Nearly 1,500 businesses have received initiatives and/or support, and workplace travel activities have often formed a major strand of work, albeit that the focus has been different in different locations (compare, for example, the BDRS focus on bus service provision with Reading's focus on providing personalised travel advice to employees).

Seven Large Projects have significant programmes of engagement with schools. In some cases, this might involve just a couple of types of initiative (e.g. cycle training and Bike It); others, such as WEST, are employing a wider range of interventions.

Six Large Projects have undertaken household personalised travel planning on a significant scale. Collectively, more than 80,000 households have received personalised travel planning information, incentives and/or advice.

All of the Large Projects have also offered some form of personalised travel advice to people in non-household contexts. Nearly 65,000 adults have received advice. Major initiatives include the distribution of free bus tickets (by BDRS) and the provision of advice through events and workplaces (CENTRO, Nottingham, Reading, Solent, Surrey and WEST).

Other behavioural change initiatives include work at railway stations (CENTRO); development of community smarter travel hubs (Nottingham); and work focussed on transition points, such as the move from primary to secondary school, or to university, or moving house (WEST).

Table 10.2: Scale and nature of engagement with employment sites

	Number of workplaces helped to reduce single occupancy car use*	Activity to date	Intensity of activity
BDRS	219	Enhanced bus services to major employment sites (see BDRS case study) and a range of services to businesses to support take-up of sustainable travel by employees (Busboost, Cycleboost, Walkboost)	High
Bournemouth	2	Largely preparatory: consultant appointed to implement a Business Travel Network; employer travel grant scheme launched in March 2014; travel plan commissioned for Bournemouth Borough Council	Low
CENTRO	64	Substantial business support programme, working with many businesses along the target corridors: employer travel grant scheme; implementation of sustainable transport improvements; ticketing initiatives; cycle training and promotion etc	High
Hertfordshire	124	Enhanced bus services to Maylands Business Park and area travel plan for Maylands businesses	High
Merseyside	165	Distributing sustainable travel information to employees; employer travel grant scheme; supporting employers to develop travel plans	High
Nottingham	92	Support for businesses to develop travel plans, including travel survey, bespoke advice, and implementation of sustainable transport improvements.	High
Reading	140	Workplace PTP service offered to businesses	High
Solent	248	Workplace challenge; establishment of 4 business travel plan networks	High
Surrey	30	Five business travel forums established, each with a devolved budget for local transport improvements	Medium
Telford	5	Limited activity to date	Low
TfGM	320	Business travel network established; action plans developed with businesses; employer travel grant scheme; various services including cycle training and promotion, workplace PTP	High
WEST	85	New commuter bus services; employer travel grant scheme; various services including sustainable travel roadshows; cycle maintenance sessions	High

* Aggregate figures for whole programme period, as estimated by Large Projects in 2013/14 Annual Outputs Surveys. Note that the basis for estimation is likely to have varied between projects. Figure for Nottingham adjusted following check with programme manager.

Table 10.3: Scale and nature of other behaviour change initiatives (schools, residential PTP, non-residential PTP)

	Schools supported*	Intensity of activity	Households receiving PTP*	Intensity of activity	Adults receiving PTP at non-home locations*^	Intensity of activity	Other significant initiatives
BDRS	29	medium	240	low	7,616	medium	
	Child pedestrian training, road safety workshops, Bike It				BusBoost free one-month trial tickets + information for drivers at workplaces		
Bournemouth	1	low	0	-	50	low	
CENTRO	41	medium	12,164	high	7,144	medium	Activities at 18 stations e.g. 'Love your Bike' sessions and car-share promotion
	Sustainable travel grants, personalised journey information for students, student-led sustainable travel campaigns		4 projects on different target corridors, each ~3000 households		Journey planning advice via events / roadshows, at various locations including workplaces		
Hertfordshire	2	low	16,377	high	885	low	
			2 projects: Hemel Hempstead (10,000 households) & St Albans (6,000 households)				
Merseyside	0	-	29,200	high	3,850	medium	
			A mix of 'conventional' household PTP, town-centre drop-in, and marketing to households along Quality Bus route				
Nottingham	53	medium	663	low	4,728	medium	5 community smarter travel hubs Journey planning advice during major disruption at station
	Bike It, cycle training, road safety awareness programme				Journey planning advice at events and workplaces		
Reading	33	medium	12,960	high	5,875	medium	
	Bike It, Bike Club and Beat the Street walking challenge		Rolling programme of household PTP, delivered in most residential areas over successive years		Journey planning advice, mainly at workplaces		
Solent	139	high	~3,000	medium	9,121	medium	
	Bike It, Walk once a Week campaign, Modeshift STARS action plans and accreditation		Separate projects in Eastleigh (Southampton), Gosport, and two areas of Portsmouth		Journey planning advice at events and workplaces		
Surrey	24	medium	0	-	2,300	low	
	Bike It, cycle training				Journey planning advice at events and workplaces		

	Schools supported*	Intensity of activity	Households receiving PTP*	Intensity of activity	Adults receiving PTP at non-home locations*^	Intensity of activity	Other significant initiatives
Telford	10	low	0	-	162	low	
TfGM	0	-	4,500 2 projects: Didsbury and Audenshaw	medium	500	low	
WEST	90 Large Active Travel to School programme: cycle training, bike maintenance sessions, 'transition rides' for pupils moving to secondary school etc; many Safer Routes to School infrastructure schemes	high	1,076	low	22,569 Major programme of sustainable travel roadshows, at workplaces and other locations	high	'Transitions' programme, working with universities and in new residential developments

* Aggregate figures for whole programme period, as estimated by Large Projects in 2013/14 Annual Outputs Surveys, with some adjustments to reflect detailed responses to Outputs Surveys. Note that although figures have been adjusted for consistency as far as possible, the basis for estimation is likely to have varied between projects.

^ Figures for adults receiving PTP at non-home locations include people who received journey planning advice as part of a workplace initiative (for which number of workplaces engaged is reported in Table 10.2).

10.3 Metrics used to monitor modal shift

Eight of the Large Projects report cordon count data for inbound travel to significant urban centres (sometimes reported as vehicle split, and sometimes as person split). This provides a high-level measure of changes in modal share, and is reported in Chapter 4.

At the project or intervention level, various types of travel survey have been used to monitor changes in modal share associated with specific initiatives. In some cases, a comparison is made between baseline and follow-up surveys; in others, a post-intervention survey is used to gather data on previous and current travel patterns. Where the monitoring approach involves baseline and follow-up surveys, it is commonly the case that at this interim stage only the baseline survey has been completed.

Annual Outcomes Reports often do not give details of sample sizes, response rates, timing of survey(s) relative to the initiative, or precise questions asked (e.g. usual mode of travel versus actual mode on day of survey). In cases where the comparison is between a baseline and a follow-up survey, it is not always clear that results are comparable (for example, because reported results may be aggregated across a number of businesses in a business park, but with different businesses taking part in different years). There are also some problems monitoring school travel initiatives because of the removal of a question on travel to school from the School Census in 2011.

Section 10.5 summarises the main evidence collected through non-workplace surveys.

Because many of the Large Projects have particularly focussed on travel to work, we obtained detailed workplace-level data from baseline and follow-up travel surveys from all Large Projects that had this, and carried out our own analysis. This is reported in Section 10.6.

Specifically, the Large Projects were asked to supply workplace travel survey data for all employment sites where there had been at least two sets of survey results (one 'baseline' and one 'follow-up'). Information was also sought on the approximate number of employees at each employment site, the survey response rate in each year, whether there had been LSTF-funded interventions affecting the employment site in the period between the two surveys, and the wording of the survey question on mode share.

Six Large Projects were able to supply pre- and post-intervention workplace travel survey data for some workplaces (summarised in Table 10.4), of which five sets of data were useable[38]. Three Large Projects (Nottingham, Solent and TfGM) reported that at this stage they only had baseline survey data available, but expected to carry out follow-up surveys at a later date. Three Large Projects were carrying out some other type of survey to assess the effect of workplace-based interventions.

[38] Data supplied by Hertfordshire were for businesses at Maylands Business Park, and were not disaggregated by company. There were major differences between 2013 and 2014 surveys in terms of which companies responded, so it was not clear that figures could be compared.

Table 10.4: Evidence of outcomes of workplace engagement available for the Large Projects

	Number of employment sites with baseline travel survey~	Number of employment sites with baseline and follow-up travel surveys	Other evidence
BDRS	Not known	-	Post-intervention survey of employees receiving free one-month bus pass via Busboost
Bournemouth	None	-	
CENTRO	>24 businesses	24 businesses	
Hertfordshire	1 business park with multiple businesses	1 business park with multiple businesses	
Merseyside	106 businesses	18 businesses	
Nottingham	46 businesses	-	
Reading	Not known	-	Post-intervention survey of employees receiving workplace PTP
Solent	17 businesses	-	
Surrey	14 businesses	3 businesses on 1 business park	
Telford	1 employer (local authority)	1 employer (local authority)	
TfGM	Not known	-	
WEST	24 businesses	15 businesses	Post-intervention survey of roadshow participants

~ Large Projects were not specifically asked to provide figures for the number of baseline surveys undertaken, but some provided this information and if so it is included here. 'Not known' = not known by meta-analysis research team.

10.4 National data for mode share

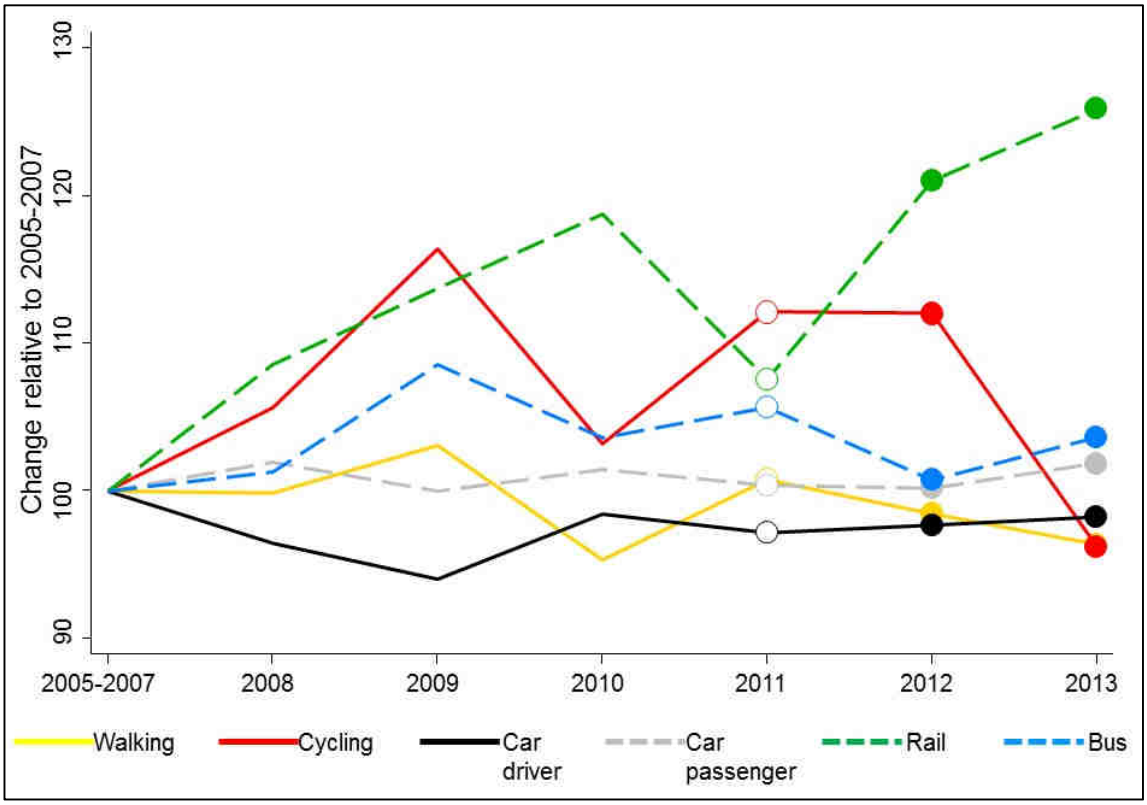
Table 10.5 and Figure 10.1 show National Travel Survey data for changes in trip mode share for all trip purposes in all urban areas outside London. This provides some context for the results in the Large Projects, although it should be noted that patterns may vary slightly for different trip purposes. The broad picture is of rather little systematic change over this time period (i.e. mode shares are somewhat variable from year to year, but do not show clear change in a consistent direction, either upwards or downwards, and in most cases absolute differences are small between 2009-2011 and 2013). The exceptions to this are rail mode share, which appears to be increasing but represents a very small proportion of trips in absolute terms; and walking mode share, which appears to be decreasing.

Table 10.5: Trip mode share of different modes in 2013, relative to 2009-2011 (National Travel Survey: all urban areas outside London)

	Average mode share, 2009-2011	Mode share, 2013	Percentage point change 2013 versus 2009-2011
Walking	19.8%	19.1%	-0.67%
Cycling	1.7%	1.5%	-0.22%
Car – driver	36.4%	37.0%	+0.67%
Car – passenger	28.1%	28.5%	+0.35%
Rail	1.7%	1.9%	+0.19%
Local bus	8.3%	8.1%	-0.18%
Other	4.0%	4.1%	+0.04%

Source: National Travel Survey, for all urban areas outside of London. Calculation of confidence intervals is not possible because 2013 data was derived from population level data provided by the Department for Transport rather than individual-level data. Individual-level data from NTS in 2013 will not be published until mid-2015.

Figure 10.1: Trip mode share of different modes over time, relative to 2005-2007 (National Travel Survey: all urban areas outside London)



Source: National Travel Survey, for all urban areas outside of London. Confidence intervals not shown in order to make the lines easier to read. Open circles show years when some Large Projects were receiving funding; filled circles show years when all Large Projects were receiving funding.

10.5 Project level outcomes for workplace initiatives

Table 10.6 summarises the change in car mode share for employment sites with baseline and follow-up data. Across 61 workplaces with useable data, 37 showed a decrease in car mode share and 24 showed an increase. Table 10.6 also shows the estimates changes in cars per 100 staff, weighted by the total workforce size in each employment site.

Table 10.6: Change in commuter car use between baseline and follow-up surveys

	Number of workplaces where car (driver) mode share…		Total number of staff at all employment sites	Cars per 100 staff at baseline	Cars per 100 staff at follow up
	fell	rose			
CENTRO	12	12	23,052	64.7	63.6
Merseyside	14	4	not known	^	^
Surrey	1	2	771	64.0	64.6
Telford	1	-	not known	83.4	82.0
WEST	9	6	33,528	61.0	60.1
OVERALL	**37**	**24**	**>56,580**		

Data used are as follows: CENTRO *'lone driver'* + *'car driver with passenger'*; Merseyside *'car'* (driver and passenger not differentiated); Surrey *'lone driver'* + *'car share as driver'* + 0.5* *'car share 50% driver 50% passenger'*; Telford *'lone driver'* + *'car driver with passenger';* WEST *'lone driver'* + 0.5* *'car with others'*. Cars per 100 staff is calculated as the proportion of car uses in each employment site weighted by the *total* workforce size of each employment site: i.e. large employment sites count more than small employment sites, even if the number of survey respondents in each was similar.
^ Cars per 100 staff cannot be calculated for Merseyside as details of number of employees at each workplace were not supplied.

To statistically test the significance of the recorded changes in car commuting, for each workplace, we compared the baseline and follow-up travel surveys in terms of the percentage of people travelling to work by car. We did so in terms of both absolute percentage-point change, and also in terms of relative change. The equations we used were as follows, with '% $Car_{Baseline}$' representing the car mode share in the baseline survey, and '% $Car_{FollowUp}$' representing the mode share in the follow-up survey. Note that these calculations differ from those in Table 10.6 in that they are not weighted by the total size of each employment size, but instead only take into account the number of participants in each travel survey.

Change in absolute percentage point increase: $\%Car_{FollowUp} - \% Car_{Baseline}$

Ratio of relative percentage change: $\%Car_{FollowUp} \ / \% Car_{Baseline}$

We defined confidence intervals for single proportions using the Wilson score method[39], and defined confidence intervals for the difference between two proportions using the Newcombe-Wilson score method[40]. We used log limits to approximate the standard error ratios between proportions[41].

We then synthesised the 61 individual travel surveys using random effects meta-analysis, and thereby generated overall pooled effect sizes[42]. This was both done for all the 61 travel surveys together and for the four Large Projects separately. We used forest plots to present estimates from individual studies and the pooled effect sizes, together with an I^2 value representing between-workplace heterogeneity (i.e. variation between workplaces in the extent of change).

There was evidence that the car mode share decreased on average in absolute terms, with **a pooled effect size of -2.5 percentage points** (95%CI -4.3%, -0.7%), p=0.007 (Figure 10.2). Results were

[39] Newcombe, R.G. (1998b). Two-sided confidence intervals for the single proportion: comparison of seven methods. *Stat Med,* 17, 857-872.
[40] Newcombe, R.G. (1998a). Interval estimation for the difference between independent proportions: comparison of eleven methods. *Stat Med,* 17, 873-890.
[41] Armitage, P., Berry, G., & J, M. (2002). *Statistical Methods in Medical Research (4th ed.)*. Oxford; Malden, MA: Blackwell.
[42] Higgins, J.P., & Thompson, S.G. (2002). Quantifying heterogeneity in a meta-analysis. *Stat Med,* 21, 1539-1558.

similar when the change was defined in relative terms, with a pooled effect size of 0.96 (95%CI 0.93, 0.98), or **a 4% relative decrease** (p=0.002, see Figure 10.3)[43].

For both absolute and relative change, however, there was also strong evidence of heterogeneity between workplaces in the extent of the change (I^2 values 42-48%, p≤0.002)[44]. Part of this heterogeneity may exist at the level of the Large Project: the decreases observed in Merseyside and WEST were somewhat larger than those seen in CENTRO, Surrey and Telford (although interpretation of this finding is complicated by the small number of surveys in the latter two projects)[45]. This is not the only source of heterogeneity, however, as significant variation was also observed among the workplaces within WEST (I^2 value 70%, p<0.001).

Moreover, response rates to the surveys were low, with less than a quarter of the employment sites achieving reasonable response rates (e.g. over 30%) in both surveys. There may also be some bias in the results, since response rates were variable at the same employment site in different years, with a tendency for lower response rates in the second survey. It is also possible that changes in car mode share may be related to other factors. For example, the WEST monitoring team reported that some employment sites experienced significant change unrelated to LSTF between 2013 and 2014 which could have affected results[46].

Looking at the changes for each Large Project individually, all achieved an average reduction in the car (driver) mode share. However, for the four Large Projects with more than one survey, the pooled effect size was only significant for Merseyside.

[43] It should be noted that the method used weights results according to the size of the surveys available, so that larger surveys 'count' more than smaller surveys. The unweighted mean generated from averaging across the surveys was relatively similar. Weighting results by workplace size was not possible, given the lack of data for Merseyside and Telford.

[44] In meta-analyses, I^2 is a standard measure of heterogeneity in the results across the different observation units. In this case, this corresponds to measuring how far there is heterogeneity across different workplaces in the change in car modal share. Specifically, I^2 values capture the percentage of total variation across workplaces that is due to genuine underlying differences in modal share ('heterogeneity') as opposed to change ('homogeneity'). I^2 values can vary between 0% and 100%, with a value of 0% indicating no underlying heterogeneity between workplaces, and larger values indicating increasing heterogeneity (Higgins & Thompson *op. cit*.).

[45] Note also that the decrease observed for Surrey appears to contradict the change in cars per 100 staff between baseline and follow-up as reported in Table 10.6. This is because the meta-analysis results are weighted by the size of each survey, and so give most weight to the very substantial reduction in car use at one medium-sized workplace (Workplace C, car mode share decrease from 70% to 51%; 150 employees, of whom 97 completed the travel survey). By contrast, the calculation of cars per 100 staff in Table 10.6 is weighted by the total size of the workforce, and so gives most weight to the small increase in car use at one large workplace (Workplace B, car mode share increases from 63% to 66%; 491 employees of whom 166 completed the survey).

[46] Specifically, one employer had seen many of their staff move to a different site in the same area.

Figure 10.2: Forest plot from random-effects meta-analysis, examining the percentage-point change in car modal share between baseline and follow-up (N=61 workplaces in five Large Projects)

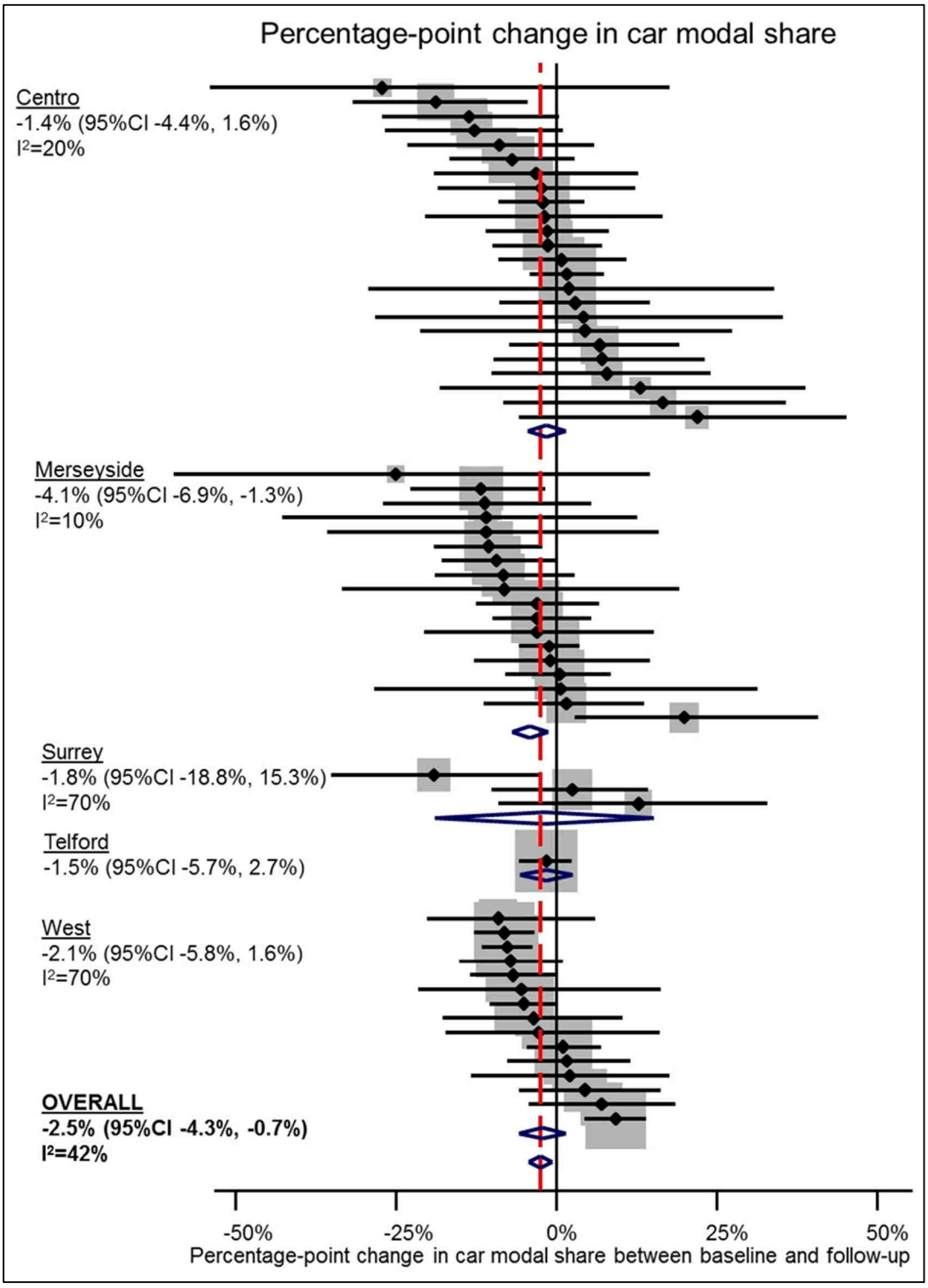
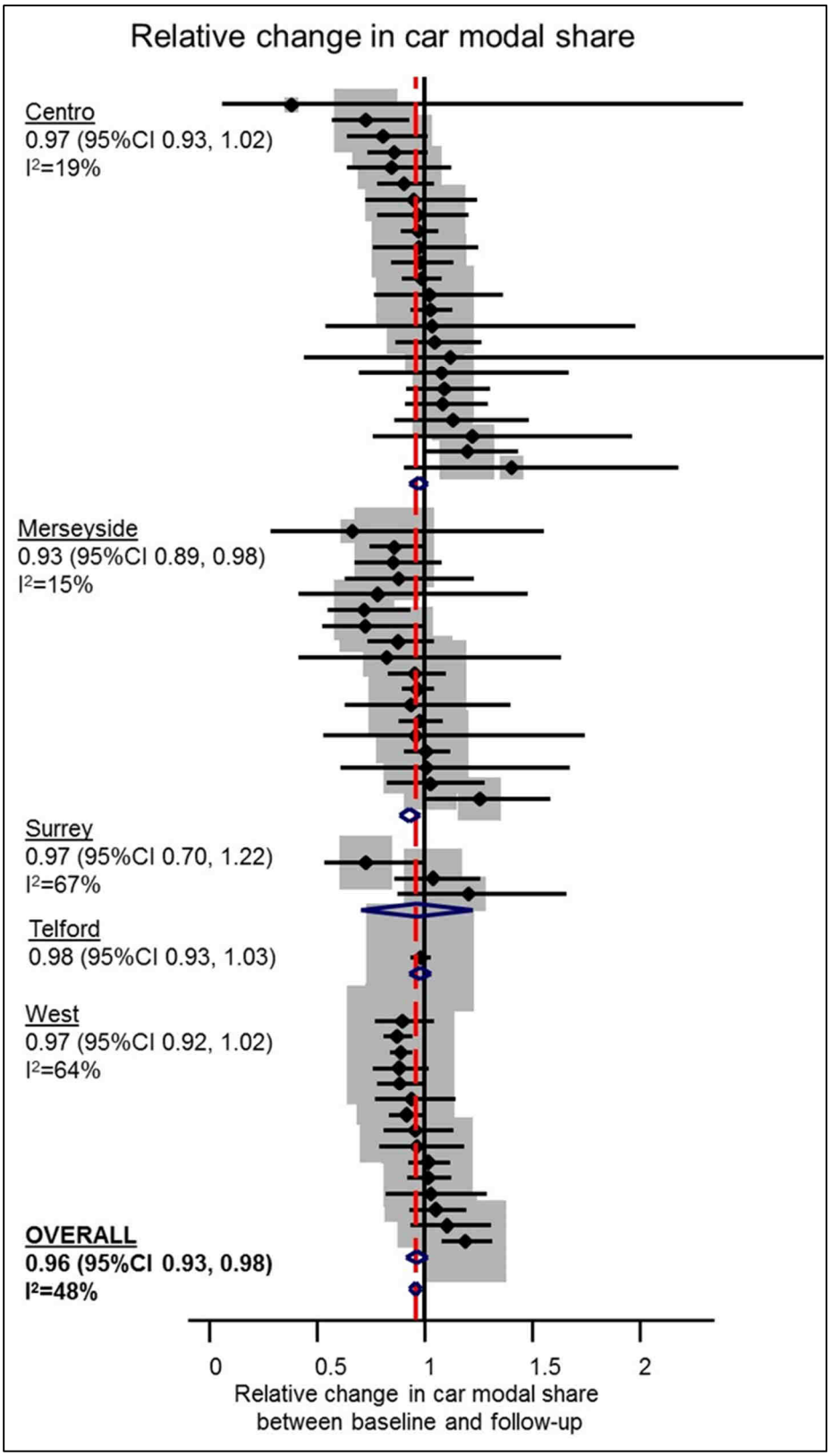


Figure 10.3: Forest plot from random-effects meta-analysis, examining the relative change in car modal share between baseline and follow-up (N=61 workplaces in 5 Large Projects)



10.6 Intervention-level outcomes for workplace initiatives

Three Large Projects had carried out other types of survey to assess the effect of workplace-based interventions. These are reported in Table 10.7.

Table 10.7: Reported outcomes of individual workplace interventions

Large Project	Outcomes from individual schemes
BDRS	'Busboost' offered a free one-month travel pass to employees who usually commuted to work by car (as driver or passenger) at workplaces in the four targeted corridors. • In an 'experience feedback' survey at the end of the one-month trial, 77% of respondents said that they would continue to choose public transport for some of their journeys to work (N=3,073, response rate not given). Results were similar for employees working at Meadowhall shopping centre (79%, N=217, response rate 55%) and Sheffield Hallam University (85%, N=205, response rate 79%). • In a further survey 6-18 months later, 37% of respondents (at all workplaces) said that they typically travelled to work by bus, with a further 18% saying that they typically travelled by tram or train and only 29% typically driving (N=665, response rate not given). Results were similar for employees working at Sheffield Hallam University (bus 44%; tram or train 15%; car as driver 22%; N=120, response rate not given).
Reading	Personalised travel planning was provided to 2,646 employees during 2013/14. In a quality control survey in April 2014, with 195 respondents (response rate not given), 31% said that they had made a change towards sustainable travel after meeting a travel adviser.
WEST	Sustainable Travel Roadshows took place at 178 employment sites (and 179 other locations) during 2013/14. The events engaged 3,233 participants ('engagement' involved leaving contact details, requesting a service, or taking up a service) and had shallower contact (a conversation but no follow-up) with another 5,398 people. A follow-up survey of participants found that 26-27% of respondents had changed how they travel (N=460, response rate not given).

10.7 Project and intervention-level outcomes for non-workplace initiatives

Aside from data on workplace initiatives, various Large Projects report on results from other initiatives, as summarised in Table 10.8. Some positive results are reported in relation to school travel work in Bournemouth, and from household personalised travel planning in CENTRO, Hertfordshire and TfGM.

It is likely that the body of evidence of this nature will be greater in the final Outcomes Reports, since some Large Projects have major household surveys scheduled towards the end of their programmes, and it is planned to repeat various other baseline surveys before the end of the programme.

Table 10.8: Other evidence reported on modal shift

Large Project	Outcomes from individual schemes
Schools and other educational establishments	
Bournemouth	School travel data shows a reduction in car mode share, from 30% (based on a combination of 2011/12 and 2012/13 data) to 27% (based on 2013/14 data) for pupils at all Bournemouth and Christchurch schools in the corridor (~23 schools; N=7,403 at baseline; 8,230 at follow-up). Figures for schools in Poole not available due to changes in School Census data collection.
CENTRO	Surveys of mode of travel to educational establishments (including 11-16 year olds, 16+ students and staff) show car driver mode share falling slightly from 16.0% (2012/13) to 15.1% (2013/14) and car passenger mode share increasing (from 17.5% to 20.3%) (results are for same group of educational establishments in each survey; N=3,920 at baseline; 4,010 at follow-up)*.
Telford	Travel to school data for all schools in the borough shows little change in car mode share (from 35.8% in 2012 to 36.1% in 2013; N=26,056 at baseline; 26,138 at follow-up).
Household personalised travel planning	
CENTRO	Households along four of the 10 targeted corridors were offered personalised travel planning. In a post-intervention customer satisfaction survey of households in two of these corridors (A45 and A41S), 19% of respondents reported that they had reduced their car use following involvement in the PTP project (with the remainder reporting 'no change' or 'don't know'; N=603, response rate not given)*. Following these two PTP projects, there was a reduction in use of car / van for shopping or leisure trips to Birmingham city centre, but an increase in use of car / van for shopping or leisure trips to some other destinations*. Baseline and follow-up one-day travel diaries completed by households on the other two corridors that received PTP (Walsall Rd and Black Country West) found a reduction in car driver mode share after PTP (from 58% to 54%), with car driver trips apparently being substituted by not travelling rather than by other modes (sample size not stated, response rate not stated)*.
Hertfordshire	Baseline and follow-up surveys were carried out in two areas where there was a household PTP project (St Albans and Hemel Hempstead), and in one control area (Harpenden). In the control area, car driver mode share has remained constant, and the number of car driver trips per person has increased slightly. In the LSTF areas, car driver share and trips have reduced. In both LSTF areas, walking and public transport use has increased, and cycling may also have increased in St Albans.
TfGM	In a follow-up survey three months after a first wave of PTP work, 9% of respondents making car trips to work reported that they had reduced the number of days they travelled to work by car (N=479); and 9% of car users reported a reduction in car mileage (across all car journeys) since receiving their personal travel pack, with almost two thirds (64%) estimating their reduction to be between 6% and 20% (while only 0.4% reported a car use increase) (N=1,112).

* CENTRO results are on pp 78, 94, 103 and 108 of 2013/14 Outcomes Report

10.8 Conclusions on modal shift

Data from workplace initiatives provides evidence that, on average, the car modal share decreased between baseline and follow-up in the 61 workplace surveys conducted, but also indicates that this effect was variable across workplaces and perhaps across Large Projects. The meta-analysis suggests that the observed reduction was not simply due to chance, but we cannot rule out the possibility that lower response rates in some follow-up surveys may have introduced a bias.

The pooled effect size of the average reduction in car use achieved at the workplaces was comparable to results reported from a previous town-wide engagement programme (in Peterborough)[47]. However, it was small compared to previous evidence of the effects that can be achieved under ideal conditions[48]. This may in part be because the time between baseline and follow-up surveys was relatively short[49]. It may also be because the intensity of interventions has been low at some workplaces: the information in Outputs Surveys and Outcomes Reports tends to suggest that Large Projects have focussed on 'easy' actions such as providing information to employees, rather than more challenging, but more effective, actions such as reducing or restraining parking. It will therefore be interesting to see whether employment sites in Nottingham show greater change, when follow-up surveys are undertaken, given the existence of the workplace parking levy there.

Data from other initiatives is relatively patchy, not least because final monitoring of some initiatives is yet to take place. Nonetheless, positive results are reported from school travel work in Bournemouth, and from PTP type activities in Centro, Hertfordshire and TfGM.

[47] Sloman et al. (2010) *The Effects of Smarter Choice Programmes in the Sustainable Travel Towns: Summary Report* found that in Peterborough, the mean reduction in car use across 19 organisations that had been engaged in travel planning was -2.7%-points (from 75.7 to 73.0 cars per 100 staff), which is very similar to the pooled effect size of -2.5%-points that we report here.

[48] For example, Cairns et al. (2002) *Making Travel Plans Work: Research Report* found that across 20 organisations selected as examples of good practice in workplace travel planning, there was a mean reduction in car use of 14%-points.

[49] For example, WEST commented in reviewing this chapter that their baseline and follow-up surveys took place in 2013 and 2014, i.e. only one year apart.

Table 10.9: Overview of outcomes related to modal shift

Large Project	Over-view	Summary of change	Attributable to LSTF?+
BDRS	■	Results from the Busboost project suggested that modal shift towards public transport use had occurred amongst car commuters offered taster bus tickets.	Yes
Bournemouth	■	Reduction in car mode share for school travel.	-
CENTRO	■	Some reductions in reported car use following household PTP; reductions in car driver mode share to educational establishments; variable results for workplaces.	Some*
Hertfordshire	■	Reductions in car driver mode share in areas receiving household PTP; not seen in control area.	Yes
Merseyside	■	Reductions in car driver mode share to 14 out of 18 targeted workplaces; statistically significant pooled effect size -4.1%-points.	Yes
Nottingham	■	No post-intervention workplace survey data at this stage.	-
Reading	■	Some reductions in reported car use following workplace PTP.	Yes
Solent	■	No post-intervention survey data at this stage.	-
Surrey	■	Variable changes in car mode share for workplaces, based on limited data (3 workplaces with baseline and follow-up data)	-
Telford	■	Little change in car mode share for travel to school, or from workplace surveys at one employment site.	-
TfGM	■	Some reductions in reported car use following household PTP.	Yes
WEST	■	Reductions in the car driver mode share to 9 out of 15 targeted workplaces (but not statistically significant); positive impacts on modal shift reported from surveys of people engaged via Sustainable Travel Roadshows.	Some^

■ Some evidence of a decrease in car mode share; ■ no change in car mode share; ■ insufficient data to assess overall impacts on modal shift.

+ It should be noted that even where a modal shift cannot be attributed to LSTF interventions these activities nevertheless may be responsible for some or all of the improvement, but at this interim stage there is insufficient evidence to establish a causal link.

* Change in reported car use amongst households receiving PTP may be attributable; changes for educational establishments and workplaces cannot be attributed to LSTF at this interim stage.

^ Change in reported car use amongst people engaged via Roadshows may be attributable; changes for workplaces cannot be attributed to LSTF at this interim stage.

PART III: RELATIONSHIP BETWEEN PROJECT ACTIVITIES AND OUTCOMES

11 BDRS: bus travel to employment sites

11.1 Context

BDRS work to improve bus services has included expenditure to connect hard-to-reach employment sites with transport hubs and residential areas, concentrating particularly on areas with high levels of deprivation. The LSTF programme has supported four services it terms 'Jobconnector' buses (although this term is not used as a public branding):

- ASOS Jobconnector (serving the ASOS site)
- S74 Jobconnector
- A1 Jobconnector
- X19 Jobconnector

The LSTF funding for these routes has been applied in the context of quality bus partnerships with bus operators, Better Bus Area funding and longer term funding from local authority budgets.

11.2 Inputs

Total expenditure for interventions to improve public transport services totalled £2.4 million to 2013/14, 12% of LSTF expenditure. This included new bus services (both those listed above and feeder services to a tram interchange); improvements to key bus routes; tram stop upgrades; and the Busboost programme of marketing of bus services. There was further expenditure of £0.3 million on highway and traffic signal changes designed to improve bus flows through congestion 'hotspots' and at the same time to improve general traffic flow.

The direct (revenue) support for the Jobconnector services listed in section 11.1 totalled £0.9 million to 2013/14 (DfT and local contributions). Although the Jobconnector services constitute a minority of the bus expenditure, this chapter concentrates on these interventions because they produce immediate service changes that result in rapid patronage responses which can be monitored, whereas the infrastructure changes are liable to result in longer term responses which are unlikely to be easily detectable at this interim stage.

The total (past *and* projected) expenditure directed at the four Jobconnector bus services is given in Table 11.1. There was no substantial spend on route-specific marketing or branding, but the services were indirectly promoted via LSTF-funded activities with businesses.

Table 11.1: Total (past and projected) expenditure on Jobconnector bus services

Service	Total spend	Annual average spend	Notes
ASOS Jobconnector	£835,000	£208,000^	Key Component funding from 2011/12-2014/15. Separate LSTF capital funding has provided a new bus stop at the ASOS site. ASOS (turnover £769 million) has been asked to help support the services but so far have not contributed. The operator, Stagecoach, has provided the vehicles (full size single deck buses), but these are not

Service	Total spend	Annual average spend	Notes
			brand new. The total spend includes LSTF monies deployed to ensure other buses provided important connections at Wombwell.
S74 Jobconnector	£48,000	£48,000	2012/13-2013/14 (one full year of operation to January 2014).
A1 Jobconnector	£85,000	£85,000	2013/14-2014/15 (less than one full year of operation).
X19 Jobconnector	£446,000	£149,000	2012/13-2014/15. This expenditure was linked to an agreement with the operator to purchase six new WiFi-equipped single-decker vehicles worth approximately £840,000. The route is also one of the beneficiaries of LSTF capital funding to improve congestion 'hotspots'.

^ Average of spending during full years of operation.

11.3 Main activities (outputs)

ASOS Jobconnector

ASOS, which describes itself as the UK's largest independent online clothing retailer, located its distribution warehouse to the disused site of Grimethorpe colliery in 2011. The site lies between Barnsley and Doncaster away from the main transport routes. Its operations require 3000 semi-skilled staff, but Jobcentre Plus reported that, when ASOS started to recruit, 75% of potential applicants had no access to a car to reach the site, with the result that 92 people every week were prevented from applying. BDRS stepped in with funding to address this situation prior to the start of its LSTF programme, working with bus operators to alter bus routes to reach the site and to serve shift changeover times (07:00; 15:00; 23:00). The buses provide links to the centre of Barnsley, which offers train and bus links, with other transport interchanges at Wombwell and Grimethorpe. As a result of the LSTF programme the support for bus services has been sustained and expanded with extra daytime, evening and weekend services.

S74 Jobconnector

The Dearne Valley contains a number of employment sites that are hard to access by public transport. The S74 Jobconnector service was set up to address this problem, using a small 10-seater 'microbus' operated by Sheffield Community Transport to provide a peak-hours-only service for commuters. The route linked a new employment site at Shortwood on the A6195 Dearne Valley Parkway (a dual carriageway link to junction 36 of the M1) with Elsecar railway station and Hoyland town centre. It also enhanced services to an older business site on the A6195 at Platts Common.

A1 Jobconnector

Sheffield Business Park on the old airport site and the Advanced Manufacturing Park are anticipated to be employing nearly 7000 people by 2015, but both sites are distant from the main public transport hubs and services. BDRS has been striving to improve bus services to this area of the city for many years. Section 106 monies (planning gain) funded the A1 Sheffield-Meadowhall-Rotherham service from 2003 to 2006 and support continued thereafter from the general bus budget. By 2014 the A1 was becoming overloaded at peak times. Starting in February 2014, LSTF monies were diverted from the unsuccessful S74 Jobconnector to boost capacity of the A1 with duplicate buses,

running directly behind existing buses at the same time so that commuters could be sure of getting to work by bus and have a more comfortable journey. This was a stop-gap solution whilst a long term arrangement could be agreed with operators through the Rotherham Bus Partnership.

X19 Jobconnector

There is no direct east-west rail link from Barnsley to Doncaster. Both places and the intervening settlements of Goldthorpe and Thurnscoe have stations, but on three different north-south lines into Sheffield. East-west journeys by train therefore require a dogleg via Sheffield Meadowhall with added expense, change of train, and a journey time of about one hour. The X19 Jobconnector bus runs along a direct route on the A635 between Barnsley and Doncaster, taking about 50 minutes for the 17 mile journey. Over this section the X19 provides a faster alternative to the parallel 219, which runs via smaller settlements (also at a half-hourly service interval) but takes about 1 ½ hours for the end to end trip. The bus is important for trips for work and other purposes between Barnsley and Doncaster, and is valuable for residents living between at Goldthorpe and Thurnscoe. Prior to receiving LSTF funding the X19 was running on a commercial basis at an hourly interval (with a subsidised extension to Robin Hood airport). LSTF funding was used to double the X19 service frequency in October 2012, from a 60 minute service interval to a 30 minute service interval.

11.4 Outcomes

ASOS Jobconnector

Between the start of the ASOS services in June 2011 and the point at which the services started to receive LSTF funding in September 2011 the number of commuter journeys to and from ASOS grew rapidly to over 3000 per month[50]. Numbers continued to grow rapidly thereafter, reaching 4000 per month by the end of 2012 and over 16,000 per month by end 2014 (192,000 per year). Patronage growth is related to the considerable growth of ASOS during this period rather than further improvements in the bus service. Nevertheless, it is evident that without the LSTF subsidy the buses would not have existed and that this level of patronage would not have been attained. Demand has been sufficient for BDRS to enlarge the ASOS bus shelter, felt to be particularly important on such a bleak exposed site. The ASOS Jobconnector bus services now appear to be commercially viable, at least for the weekday services serving the shift change overs. It is therefore anticipated that the operator will continue with the present service after the LSTF programme ends. BDRS officers feel that the success of the service is strongly linked to the provision of the service at the start of occupation of the site, so the workforce that has built up has a pattern of public transport use. This contrasts with the S74 Jobconnector, as discussed below.

S74 Jobconnector

Uptake of this service was much lower than anticipated, reaching only 46 journeys per week, 60% of which were by pensioners rather than the commuter target group. The service was therefore withdrawn in January 2014 so that the funding could be switched to the A1 Jobconnector, discussed below. This route is similar to the ASOS service in that both locations are on major roads outside built up areas with environments that are hostile to pedestrians, but BDRS officers feel that the S74 differed in being later on the scene relative to occupation of the employment sites, so that staffing had already been established around a pattern of car use.

A1 Jobconnector

Following six months of intervention using LSTF funds to double-up peak time buses, a longer-term solution was negotiated with operators. Bus operator First modified its commercial routes (particularly route 74) to service the key employment sites, picking up on patronage built up by the

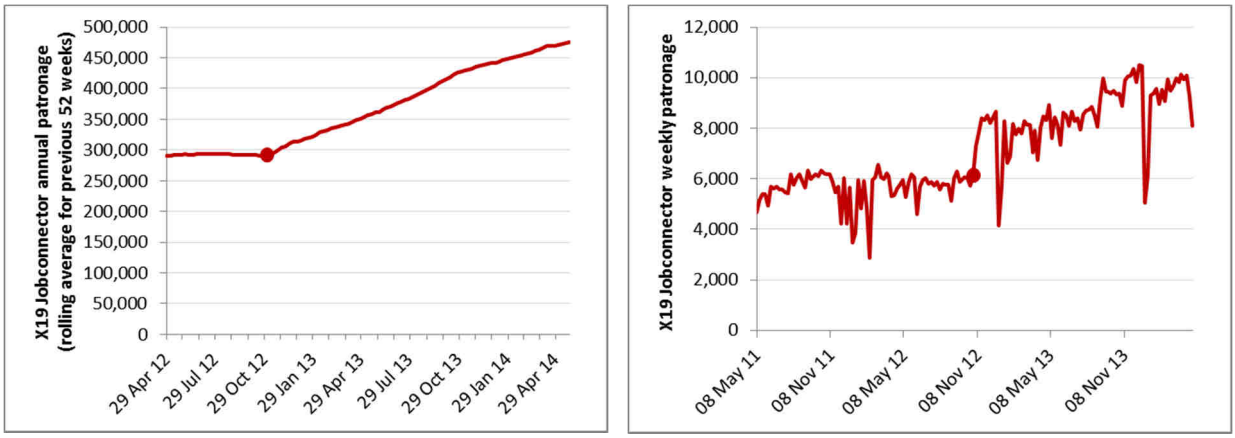
[50] Measured as the number of passengers boarding at ASOS plus the number alighting.

previous subsidised service. This incorporation into a commercial route would not have happened without the publicly-funded intervention to build patronage, so BDRS officers regard this outcome as a success. The last two years of operation of the A1 prior to the route changes showed an uplift in annual patronage from 321,000 to 455,000 (based on estimates from passenger survey data, not operator ticket machine data). It is not possible to estimate the amount of patronage uplift that is specifically due to the LSTF programme because the LSTF funding has been deployed in the context of a larger longer-term programme of revenue investment to improve bus services to the employment sites in this part of the city. The route restructuring has not entirely removed the need for the A1, which continues as a subsidised service run by TM Travel on a truncated Sheffield-Waverley-Meadowhall route to add services in areas that remain insufficiently covered.

X19 Jobconnector

Following the doubling of service frequency, patronage started to rise sharply. The 'kickstart' to make the route commercially viable at a higher service frequency appears to have been successful. The initial agreement specified that the operator, Stagecoach, would continue the twice-hourly service frequency for a fourth year beyond the three years of subsidy, but it is anticipated that the doubled frequency will continue indefinitely. The patronage trend, plotted as a 12-month rolling average to the end of 2013/14 financial year is shown in Figure 11.1. The sharp change of trajectory at the point of the intervention, against a previously steady (flat) trend, allows the extra journeys to be confidently attributed to the LSTF-funded improvement. At the end of the 2013/14 financial year the annual patronage was 470,000, a year-on-year patronage rise since inception of the improved service of 180,000 extra journeys. Patronage is verbally reported to have subsequently plateaued at approximately 10,500 journeys per week, which would equate to about 546,000 journeys per year and a patronage uplift of 256,000 extra journeys.

Figure 11.1: X19 Jobconnector patronage on a rolling annual average and weekly basis



Marker shows date of service frequency increase (28.10.2012).

11.5 Impacts

The annual impact of the Jobconnector interventions on car mileage and carbon can be estimated for the two bus routes where the patronage uplift due to the intervention is clear and where it appears that the impact of the service will continue due to operation on a commercial basis. Assumptions are given in Table 11.2.

Table 11.2: Estimation of carbon savings for two BDRS Jobconnector bus services

ASOS Jobconnector
There is no passenger survey data for the ASOS service but some estimation of car miles and carbon emissions avoided can be made. As a first approximation, the average commuter trip length can be taken to be the distance from Barnsley or Wombwell, 13 km. Regarding the theoretical counterfactual, for the case in which no bus service was present, it is evident that the workforce would be constituted differently, with a large proportion of those who presently commute by bus either seeking access to cars, or being replaced by different people who have access to private cars (it is relevant that BDRS provides mopeds for journeys to work through a Wheels to Work scheme, also supported by LSTF, but for the purposes of this calculation we shall ignore the possible variations on the counterfactual that this raises and consider the case where no LSTF funding was available for either bus or moped provision). Assuming that 80% of trips would have been car trips in the absence of the bus, then the 192,000 annual patronage at end 2014 indicates that approximately 1,997,000 car kilometres per year are being replaced by the ASOS bus service. This mileage represents an annual emissions saving of 378 tonnes CO_2e.
X19 Jobconnector
On-board survey data for the X19 (not seen, summarised figures only available) enables use of patronage figures to estimate how many car miles and carbon emissions have been avoided. 39% of passengers are commuting, with an average one-way commuting trip distance of 14 km. Of these commuters, 7% report that they would make the trip by car if the service did not exist. The reported data does not specify whether the journey would have been made as car driver or as passenger, but it is reasonable to presume the national average journey to work car occupancy of 1.18[51]. No figures are given for the diversion rate from car travel or trip length for other types of passengers, but if it is assumed that the numbers are comparable to the commuter figures then the annual patronage uplift of 180,000 to the end of the 2013/14 financial year corresponds to 149,000 car kilometres avoided. This mileage represents an annual emissions saving of 28 tonnes CO_2e.

Note: car mileage conversion factor to CO_2e is taken from the 'passenger vehicles' tab of a 17.02.2015 download of the latest dataset (2014) of conversion factors from the DEFRA Greenhouse Gas Conversion Factor Repository at http://www.ukconversionfactorscarbonsmart.co.uk/ as recommended in DEFRA's Greenhouse Gas Emissions Reporting Guidance: 0.18943 kg CO_2e per km (0.304858 kg CO_2e per mile) for an 'average car'.

These suggest that boosts to bus services to the point of commercial viability have delivered annual ongoing carbon savings of approximately 0.4 kT CO_2e [52], for roundly 5% of total LSTF project expenditure. If other BDRS project expenditure were, on average, similarly effective[53], this would mean that the BDRS Large Project would deliver annual savings of the order of 8 kT CO_2e. This is roughly equivalent to 0.3% of the BDRS local authorities' total annual carbon emissions from transport (see Chapter 14).

11.6 Future potential

The LSTF funding appears to have successfully 'kick started' a service to ASOS that now appears a viable proposition for continuation on a commercial basis in the long term, although some modifications may be required for services falling between shift changeover times. The S74, although disbanded, may nevertheless have a useful legacy by highlighting the importance of establishing commuter public transport services as soon as a new employment site is established, as achieved at ASOS. The A1 intervention (mostly funded by other sources than LSTF) has resulted in substantially better coverage of worksites by commercial routes, which should continue to be viable

[51] National Travel Survey 2013 Table NTS 0906

[52] That is, kilotonnes of 'carbon dioxide equivalent', a number that converts all gases emitted from car exhausts (for example, N_2O) into the amount of CO_2 that represents their global warming potential.

[53] We have no way of knowing whether the other BDRS scheme elements were on average more, or less, effective than support for bus services, in reducing carbon emissions. Other research (Sloman et al. 2015 *Finding the Optimum: revenue / capital investment balance for sustainable travel* report for DfT) suggests that revenue funding for new bus services can offer very high value for money, but we also know that some other smarter choice interventions can be highly effective.

in future. The X19 funding, by helping to cover risk for the operator, has achieved a service that is twice as frequent and has brand new buses, which should continue at the improved service level.

As a result of the success of the X19 service through the northern Dearne Valley, an extension of LSTF funding through 2015/16 is being used to introduce a further hourly bus service between Barnsley and Doncaster (route X20), giving equivalent connectivity for communities in the southern Dearne Valley.

12. Merseyside: support for job-seekers

12.1 Context

Merseyside's Large Project has put a major emphasis on supporting job-seekers into work. The region has one of the highest unemployment rates of all the Large Projects: over 10% of economically active 16-64 year-olds were unemployed in 2013/14. The 'Travel Solutions' element of Merseyside's Large Project is designed both to help job-seekers to access employment and training, and to build the confidence of people who may be several steps back from entering the job market. Travel Solutions is one of four main elements of the Merseyside Large Project[54].

Merseyside previously received ERDF funding of £6 million for a 'Let's Get Moving' project to broaden travel horizons, between 2006 and 2009. There was also a smaller project from 2009, supported by the European Social Fund. The LSTF work built on this previous experience.

12.2 Inputs

Over the three years 2011/12 to 2013/14, the Travel Solutions work has involved an expenditure of £3.6 million (including both DfT grant and local contribution). Three-quarters of this (74%) was revenue and one-quarter capital. The Travel Solutions work represented a quarter (24%) of overall LSTF programme expenditure over this period.

12.3 Main activities (outputs)

The main activities to support job-seekers are:

- Free travel passes offered to job-seekers in their first month of employment
- Personalised journey plans to help job-seekers and existing employees find the best way to get to work
- Loans to enable people to buy a moped to access employment where public transport is not available
- Free bicycles, cycle training and bike maintenance training
- One-to-one travel training
- An 'Employment in the Transport Sector' programme, which is changing how people are recruited to transport jobs on Merseyside, working with the Job Centre Plus sector-based work academy programme.

The Travel Solutions work has also included: led walks and cycle rides in disadvantaged communities; a 'Bike It' programme to promote cycling via schools and community groups, which was specifically tasked with engaging parents who were not economically active; and development of a journey planning app to help school and college leavers work out what sustainable travel options are available as they consider moving to further education or employment. These activities engage with people who may be quite distant from the job market, including single parents, NEETS and homeless people.

The activities have been delivered by a number of organisations. For example, free travel passes were offered via job centres, by the individual local authorities, via BikeRight! (a social enterprise

[54] This chapter is based on information provided by Merseytravel (the Passenger Transport Executive, which coordinates the Large Project), and on separately accessed published reports by one of the project partners, BikeRight!. It may not fully reflect all the outputs and outcomes delivered by other local authority and voluntary sector partners in the Merseyside Large Project.

contracted to provide a range of services under the name Choose Freedom), and via Connexions (a job advice service for young people). Personalised journey plans were provided by Merseytravel, the local authorities, BikeRight!, Sustrans and Connexions. The loan-to-buy moped scheme was provided by Merseytravel, working with a credit union.

The Travel Solutions package has been focussed on specific disadvantaged areas of Merseyside. During 2011/12, it covered five tightly defined areas (in total about 43 km^2). From 2012/13 onwards, it expanded to cover a larger area (about 270 km^2, or 40% of the total Merseyside area).

12.4 Outcomes

Over the three years of the project, approximately 10,800 job-seekers have received some form of direct service or intervention, as summarised in Table 12.1. This is significant in terms of overall levels of joblessness on Merseyside, equivalent to 16% of unemployed people in 2013/14, although it should be noted that the figure may be an over-estimate because of double-counting (i.e. some job-seekers are likely to have been recorded more than once because they received more than one service).

In addition, about 15,500 people (not all job-seekers) have had contact with Bike It, BikeRight!, or other services that work with people with low travel horizons. Again, there may be an element of double-counting in this figure.

Some other people have had more limited contact with the Travel Solutions project – for example, through speaking to a member of the team at an event, such as a job fair. These numbers are not separately recorded in Outputs Surveys.

In total, Merseyside's 2013/14 Annual Outputs Survey estimates that 39,900 people have either benefitted from a service or intervention aimed at job-seekers, taken part in an activity aimed at people with low travel horizons, or had contact with project staff.

Table 12.1: Number of people receiving different types of support from Travel Solutions projects

Services mainly aimed at job-seekers:	**10,766**
Travel passes	*5,947*
Travel support (personalised journey plans or travel training)	*3,569*
Refurbished bicycle	*758*
Bike maintenance training	*163*
Cycle training	*154*
'Employment in the Transport Sector' programme	*107*
Loan to buy a moped	*68*
Other services:	**15,506**
Bike It / BikeRight! activities (e.g. cycling sessions, cycle rides)	*15,506*
Limited contact*	**Not separately recorded**
REPORTED TOTAL	**39,903**

Figures are aggregated from Annual Outputs Surveys for 2011/12, 2012/13 and 2013/14. Note that there is some double counting because some individuals receive more than one service e.g. some people receiving a refurbished bicycle are also offered cycle training and bike maintenance training.

* Limited contact might, for example, involve speaking to a member of the Travel Solutions team at an information stall, but not providing contact details or receiving a specific service.

Gathering data on the outcome of Travel Solutions support has been challenging. A small follow-up telephone survey of job-seekers was undertaken by Merseytravel, which aimed to contact

individuals 13 weeks after they had received a Travel Solutions service[55]. Table 12.2 summarises the findings of the telephone survey. Overall, 62% of those surveyed were in employment 13 weeks after receiving a Travel Solutions service. Proportions varied substantially according to the situation of the person at the time they received the service: amongst individuals provided with a travel pass during a training programme aimed at unemployed people and run by NAC, the proportion in employment at 13 weeks was 36%; for other people surveyed (i.e. rows 2-5 of Table 12.2), the proportion in employment at 13 weeks was higher, at 80% overall. This may be because this second group was mainly made up of people who already had a job offer at the time they received the Travel Solutions service. These figures should be treated with caution because sample sizes are very small and because it is not clear to what extent the sample may be biased towards people who had been successful in their job search after contact with the Travel Solutions service.

Table 12.2: Proportion of job-seekers in work 13 weeks after receiving a Travel Solutions service

Service	Sample size^	Number in employment	Proportion in employment#
Travel pass provided to individual as part of NAC training programme+	74	27	36%
Travel pass provided to individual who has an offer of employment (via Job Centre Plus)	40	27	68%
Travel pass (not further specified)	12	12	~
Bicycle*	54	45	83%
Loan to buy moped	3	3	~
TOTAL	**183**	**114**	**62%**

^ Sample size = number of people successfully contacted. Number of failed contacts not reported.

Uncertainty for quoted proportions is between +/-7%-points and +/- 15%-points at 95% confidence level.

~ Proportions not given where sample size is very small.

* Figures for individuals offered a bicycle are for 10 people supported via Travel Solutions and 44 supported via the Employer Network LSTF funding stream.

+ NAC run a Manufacturing Smart Programme, aimed at helping unemployed people get a job in manufacturing, logistics or engineering.

Some survey data are also available on the effect of Choose Freedom activities provided by Bike Right![56] These activities are designed to expand travel horizons and thereby improve access to employment, training and education, and to encourage people to adopt active travel modes. The services offered included travel passes for job-seekers; personalised travel advice; free bicycles, cycle training and bike maintenance training; led bike rides; community walks; and administering a workplace cycle storage grant scheme. The project is not only aimed at job-seekers: amongst those responding to a survey in 2014, just over half were in full-time work (54%; N=125).

Amongst respondents to the 2014 Choose Freedom survey, 58% reported that their involvement had improved their health / made them more active; 54% said it had enabled them to get out / meet

[55] Staff made three attempts to contact each individual, but many individuals had opted out of being contacted, or supplied phone numbers that did not work, or were not available. Data on successful contact rates (and therefore response rate) are not available.

[56] BikeRight! (2014) *Choose Freedom survey – South Liverpool respondents;* BikeRight! (2014) *Choose Freedom survey;* BikeRight! (2014) *Choose Freedom Outputs Table (2012 – October 2014).* Surveys had small sample sizes and response rate is not reported. Respondents were roughly equally split according to gender and came from most age groups except 16-19 year olds who were under-represented.

other people; and 37% said it had helped them to get to work, voluntary activities or training. Only 4% said that their involvement had not been useful (N=130). Survey respondents were also asked whether they agreed or disagreed with a series of statements made by other people who had attended Choose Freedom sessions. There was a high level of agreement that respondents had learnt new skills, were able to go to places they were not used to going to, and were more motivated, active and healthy (between 71% and 86%, N=113-117). Significant numbers also agreed that 'I've started college / training', 'I've become a volunteer' or 'I've got a job' (between 14% and 26%). Responses are shown in Figure 12.1.

Figure 12.1: Participants' level of agreement with statements on the effect of their involvement with Choose Freedom

Choose Freedom survey 2014; N=79-86 for top three statements and N=113-117 for remaining statements

There is also limited qualitative evidence on the effects of one-to-one travel training. This has been offered to small numbers of individuals (~120 people) identified by job centres as likely to benefit from it. The Merseyside Large Project team reported that travel training carried out by St Helens had been used to support vulnerable individuals, and that in some cases this had led to individuals gaining a part-time job, with estimated savings to the social care budget of the order of £250,000.

12.5 Impacts

The available data is not sufficient to enable a reliable estimate to be made of the overall effect of the Travel Solutions work on car mileage (and hence carbon). The LSTF programme manager does not consider that a reduction in car mileage would be expected from activities aimed at job-seekers, because pre-intervention levels of car ownership and use amongst this group are likely to be low. However, this may underestimate the effect of the programme: it is arguable that by supporting individuals to secure work and at the same time enabling them to travel to work by public transport or bicycle, the programme is ensuring that overall levels of sustainable travel to work are increased[57].

Amongst respondents to the Choose Freedom post-intervention survey, the proportion reporting that their 'regular way of travelling to work, voluntary work or college' was 'car' fell from 35% before

[57] For example, because people have established the habit of cycling or taking the bus to work from the outset in their new job, and hence are less likely to feel that they need to buy a car even after they have acquired sufficient money from their new job to be able to afford one.

involvement with Choose Freedom to 21% afterwards; while the proportion reporting that their regular mode was 'bicycle' increased from 23% to 47% (N=114). Choose Freedom had supported a total of 1,050 individuals by October 2014. *If* the survey results were representative of the entire Choose Freedom group (although on the evidence available it is not possible to say whether this is the case), they thus suggest that around 150 people may have switched from using a car as their regular means of commuting to using a bicycle. At an order of magnitude, this implies a reduction in car use of around 310,000 km per annum[58], equivalent to an annual emissions saving of 59 tonnes CO_2e[59]. This figure should be considered highly tentative.

Looking at the impact of the programme on levels of employment, it appears possible that around 3,900 – 8,600 job-seekers may have gained work following support from Travel Solutions[60]. This figure should also be considered highly tentative, because the data on which it is based is very limited. We also have no evidence on the relative importance of the Travel Solutions support compared to other assistance (training, help writing CVs etc) to the individuals who gained employment, and on how many of these job-seekers would have gained work without support.

12.6 Future potential

Merseyside was not successful in securing LSTF revenue funding for the continuation of its Large Project into 2015/16. This is likely to mean that the support for job-seekers and the Travel Solutions project will be reduced, and that fewer activities will be undertaken.

However, some services will continue with funding from other sources. For example, nearly all the job centres across Merseyside[61] now offer free one month travel passes to people who need this support to start a new job. This follows the piloting of the service at six job centres (paid for by LSTF), and then an extension of the service to another 19 job centres using resources from the Flexible Support Fund[62]. Merseyside Large Project was able to cease using LSTF funding for free travel passes from October 2014 because of this roll-out.

The Merseyside Large Project team have also worked closely with the Liverpool City Region Employment and Skills Board to ensure that bids the Board makes for funding – for example to the European Social Fund – include a transport element.

The Merseyside Large Project team feel that changes in the way job centres work, partly as a result of initiatives such as those supported via LSTF, mean that it is now possible for them to shift their focus away from job centre clients, and towards supporting the long-term unemployed and people who are relatively distant from the job market.

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[58] Assuming those shifting mode are within cycling distance of their work, and using the average one-way distance for a commuter cycle trip of 3.2 miles (National Travel Survey 2011 Tables NTS 0409 and 0410), for 240 working days per year; also presuming national average journey to work car occupancy of 1.18 in the pre-intervention period (National Travel Survey 2013 Table NTS 0906).

[59] Car mileage conversion factor to CO_2e is taken from the 'passenger vehicles' tab of a 17.02.2015 download of the latest dataset (2014) of conversion factors from the DEFRA Greenhouse Gas Conversion Factor Repository at http://www.ukconversionfactorscarbonsmart.co.uk/ as recommended in DEFRA's Greenhouse Gas Emissions Reporting Guidance: 0.18943 kg CO_2e per km (0.304858 kg CO_2e per mile) for an 'average car'.

[60] Assuming that 10,766 job-seekers received support, and that the proportion securing employment partly as a result of that support lies somewhere in the range between 36% (as reported in Table 12.2 for unemployed individuals on the NAC training programme) and 80% (aggregate percentage for individuals who received support as a result of having a job offer, as reported in Table 12.2).

[61] The only exception is Halton.

[62] Flexible Support Fund is administered by Jobcentre Plus to reduce barriers to people accessing employment.

13. Nottingham: support for cycling

13.1 Context

Nottingham[63] is in the midst of a substantial programme of investment in transport infrastructure (over £750m), including expanding the tram network, redeveloping the station, bus network improvements and major highway improvements. The overall aim is to improve the economy and quality of life in Nottingham. Supporting increased walking and cycling through the resources of the LSTF is an important part of this programme. One of the four headline targets is to double the levels of cycling in key intervention areas from baseline levels by 2014/15.

The investment in cycling in particular is capitalising on the investment in cycling infrastructure that has been made over recent years. For example between 2003/04 and 2010/11, £4.3m was invested through the Local Transport Plan (LTP1 and LTP2) in implementing schemes specifically for cyclists, and cycling investment has continued under LTP3 and the Cycle Safety Fund. Other LTP investments over this period such as traffic calming and bus lanes will also have benefitted cyclists. Using the Workplace Parking Levy which was introduced in 2011, £150k has been made available to organisations to improve their on-site cycle facilities. Through the LSTF, a range of services is being provided that are aimed at overcoming barriers to cycling and encouraging people to use that cycling infrastructure, particularly to enable them to access employment and training.

The interventions aimed at encouraging cycling are a major element of the LSTF programme activity, and are being delivered in all four strands of the programme: Active Travel Solutions; Community Smarter Travel Hubs and Places for People; Worksmart and Green Transport Infrastructure; Smartcard Development, Integrated Ticketing and Multi-modal Integration.

13.2 Inputs

The analysis of LSTF expenditure is based on Active Travel: cycling and walking combined. Over the three years 2011/12 to 2013/14, the expenditure on all work to encourage cycling and walking was approximately £7.6m (including both DfT grant and local contribution). This is an approximate figure as some of the other expenditure, such as on behaviour change, will also have benefitted cycling. The £7.6m is a mixture of capital expenditure on cycle routes and 20mph zones and revenue expenditure on cycle training, active travel events etc. It represents about a third of the total expenditure of £22.9m.

13.3 Main activities (outputs)

The main LSTF activities and interventions to increase cycling were:

- Cycle hire
- Cycle parking
- Cycle maintenance services
- Cycle training for adults and children
- Community cycle centres
- Active travel marketing, promotion and events such as led cycle rides, cycle races and Cycling for All events providing advice, cycle training and cycle checks
- 20mph limits programme in residential roads in four areas.

[63] This chapter draws upon material in the 2013/14 Outputs Survey and 2013/14 Outcomes Report from the Nottingham Large Project. Nottingham city council officers have pointed out that some of the reported figures relate only to the city, and some to the wider urban area (i.e. Greater Nottingham).

These main activities have been accompanied by small scale neighbourhood improvements in cycling infrastructure and a BMX track to encourage a wider interest in cycling among young people in a deprived area.

Other 'smarter choice' activities aimed at behaviour change and increasing use of sustainable transport in general, rather than cycling in particular, included personalised journey planning, Worksmart business support, mobile travel centres and communications and marketing programmes.

The Nottingham Large Project is managed and coordinated by Nottingham City Council staff. Other organisations involved include:

- Sustrans runs some of the Community Smarter Travel Hubs, supported active travel events, and provided BikeIT activities and cycle training
- Ucycle active travel partnership (Universities and Further Education Colleges) promoted cycling, offered ride programmes and loaned cycles to staff and students
- Ridewise, part of a charity, has provided some of the Community Smarter Travel Hubs and delivered Bikeability training for all partners, ride programmes, maintenance training and events
- SkyRide organised cycle rides
- Community speed-watch volunteer groups supporting 20mph limits in partnership with Nottinghamshire Police
- Big Wheel Business Club promotes cycling through activities at workplaces
- Greater Nottingham Transport Partnership work on bike security with Sustrans, the police, and Greater Nottingham Cycling Development Group[64].

The scale of services delivered by July 2014 is summarised in Table 13.1.

Table 13.1: Outputs aimed at increasing cycling in Nottingham (by July 2014)

Output	Number
Km of new or improved on-road cycle lane	2.03
Km of new or improved off-road cycle path	0.2
Km of new or improved off-road shared cycle/ pedestrian route	3.15
Km of 20mph roads	57.9
Cycle hire bikes in circulation	400
Ucycle bikes loaned to staff/ students	425
Cycle parking spaces introduced or upgraded	1,574
Secure cycle storage facilities in operation at interchanges	11
Weekly cycle centres providing training, advice, led rides and free hire bikes	11
Active Travel Events (Sustrans and Big Wheel Business Club)	31
Community cycle rides	236
Ucycle events	272
BikeIT events	70
Schools engaged in Bikeability training	18
Schools engaged in Lifecycle training	29

[64] Greater Nottingham Cycling Development Group is a local group of representatives from Pedals, Sustrans, Ridewise, CTC, city and county councils, Highways Agency and Nottinghamshire Police.

In addition to these activities focused on cycling specifically, two other key activities were initiated:

- Five Community Smarter Travel Hubs were set up to deliver a programme of community active travel events (including promotion, cycle skills and maintenance training and led rides); some of the funding for the hubs came from Public Health and Section 106 sources
- Personal travel planning advice was delivered to over 1,080 adults at workplaces, 663 households and 3,648 adults at events.

Some of these activities began before the LSTF programme but were extended under LSTF. For example, the Ucycle active travel partnership has been running since 2009 at the two universities and the university hospital. In 2011, LSTF funding made it possible to expand it to include three further education colleges.

The majority of the on-going activities began after LSTF:

- The cycle hire scheme was introduced in 2012 with 20 cycles and expanded to 400 cycles in 2013/14 cycles at five sites
- The cycle hub facilities with cycle storage were established initially at eight sites, with three additional sites during 2013/14
- There were eight cycle centres in operation in 2013/14 and three were launched in the summer of 2014
- A Sustrans Bike It officer began working in schools in 2013/14
- Cycle route infrastructure improvements continued in 2013/14 and the BMX track was constructed
- The first Community Smarter Travel Hub was launched in the summer of 2012 and four more were set up in the autumn of 2013
- The first 20mph limit scheme for residential roads was introduced in April 2013. Three further schemes were introduced in 2013/14.

The timing of events was as follows:

- Workplace Challenge over two months in the summer
- Annual Active Travel Events: Cycle Live weekend, Milk Race, Light Night
- Cycling For All events took place on one Sunday per month between March and October 2013.

13.4 Outcomes

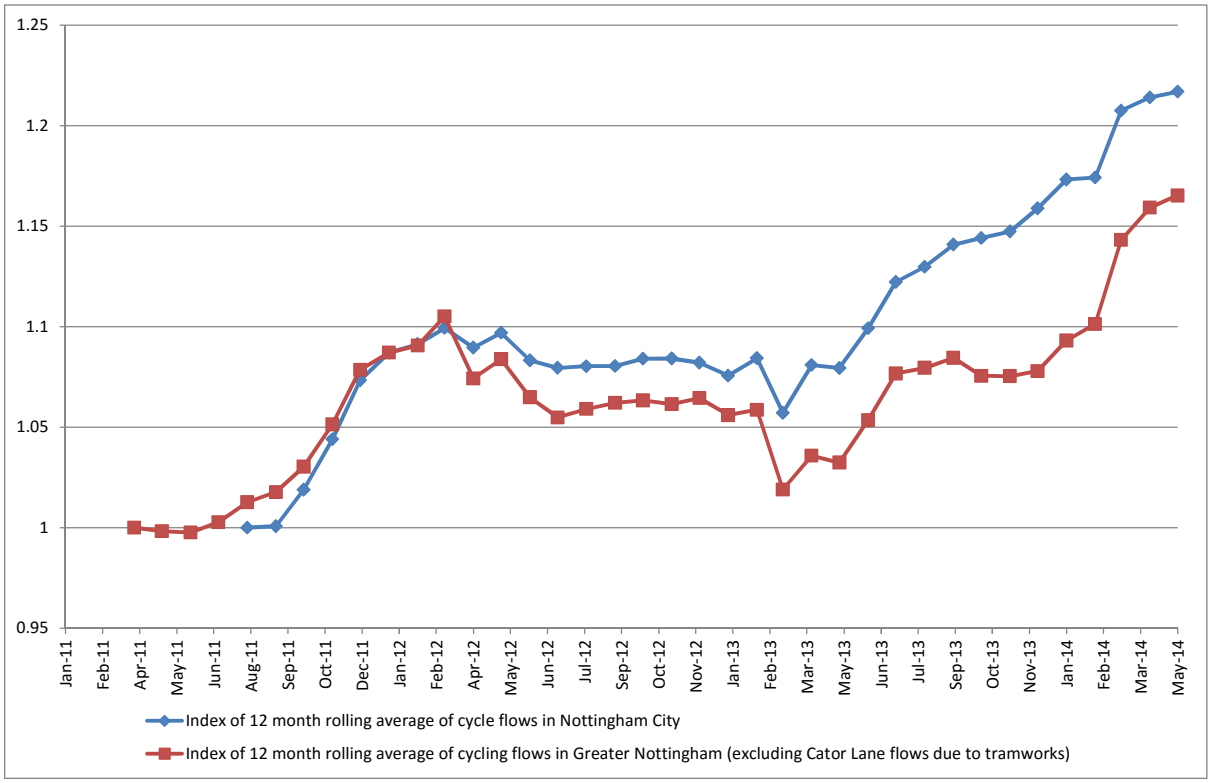
The key metric used to monitor the outcomes is the trend in cycling across Nottingham City and the wider conurbation, rather than surveys of those who have taken part in specific schemes. This is based on a network of 19 sites established in 2010 (14 automatic cycle count sites and 5 monthly manual count sites). Monthly data is compared with the 2010 baseline. An index is calculated to provide a consistent metric which takes account of alterations to the cycle counters at some locations. For the purpose of this case study, a 12-month rolling average of the indexed monthly cycle counts has been calculated for Nottingham City and Greater Nottingham.

The results are summarised in Figure 13.1 and show two periods of overall growth. These were separated by a period when the level of cycling in Nottingham City changed very little, while in Greater Nottingham it decreased[65]. The growth in cycling has been on the main cycling corridors into

[65] From inspection of monthly data (not shown here), this appears to be partly due to low counts during summer 2012, which may be due to poor weather in that summer plus alternatives to cycling during leisure time – including the Royal Jubilee, Euro Championship and Olympics.

the city centre, so the overall increase in cycling has been greater in the city than in the conurbation as a whole.

Figure 13.1: Trends in cycling levels in Nottingham (12 month rolling average)



Prior to 2010, manual counts were used to monitor cycling levels and showed very little change between 2003 and 2010. In 2010 the manual counts were replaced by the automatic counts, and changes were made in the site locations. Without comparable data prior to 2010, it is not possible to ascertain whether the increase since 2010 was a continuation of a previous trend, and therefore it is not possible to attribute the change to the LSTF specifically. Nottingham City Council attribute the increase in cycling since 2010 to a combination of factors which may include the LSTF but also include the economic downturn encouraging low cost travel, the Olympics inspiring people to take up cycling[66] and the large scale construction programme which has disrupted established travel patterns.

The impact of the activities is also being monitored by measuring participation levels. The results are summarised in Table 13.2 and show that some of the activities have reached large numbers of people. However only two of these are directly linked with the amount of cycling: the number of cycle hire bookings recorded and the use of the secure cycle parking facilities (which averages over 3,000 per month).

[66] Although this does not seem consistent with the levelling-off in cycling during summer 2012.

Table 13.2: Outcomes of cycling schemes in Nottingham (by July 2014)

Outcome	Number
Members of cycle hire scheme in 2013/14	495
Cycle hire bookings recorded in 2013/14	464*
Adults taking up cycle loans	13,166
Use of secure cycle facilities	37,716
Adults taking cycle maintenance services or classes	3,040
Adults taking cycle training	2,078
Participants in led cycle rides	714
Cycle race registrations	8,049
Attendees at Active Travel Events (Sustrans and Big Wheel Business Club)	35,000
Attendees at Ucycle events	8,189
People engaged in Ucycle programme	7,156
Pupils taking part in Bikeability training	312
Pupils taking Lifecycle training	425

* Nottingham Council has identified an error in data for cycle hire bookings reported in the 2013/14 Outputs Survey; the figure used here is for total bookings between April 2013 and March 2014. Bookings may be short-term (hour / day) or longer term (week / month).

Surveys based around the community travel hubs show some evidence of a small increase in the proportion of reported trips made by cycle from 6% (of a sample of 128) in 2012 to 8% (of a sample of 1,331) in 2014. However limitations of the sampling approach and the small size of the baseline sample mean that these results should be treated with caution[67]. One of the hubs showed a larger increase: in the Travel Right North Hub the number of people reporting that walking or cycling was their usual mode of travel increased from 27% to 39% since 2012, while the proportion who said car was their usual mode fell from 33% to 19%, but again the results should be treated with caution due to differences between the surveys.

In addition to these outcomes, the travel impacts of some specific activities were monitored:

- A Workplace Challenge which took place over two months in the summer increased active travel, with over 96,000 active travel miles travelled by 1,000 individuals, which was calculated to have saved just under 11,000kg of carbon emissions
- In the Sherwood 20mph zone in the north of the city, surveys identified that there was a 17% increase in walking and cycling a year after the scheme was introduced, compared with an average increase of 11% at the control sites. Separating out the cycling and walking data indicates that there was a 9% increase in cycling at the control sites and a 24% increase in cycling on the 20mph roads but that this was accompanied by an 11% decrease in cycling where the 30mph limit was retained. Without longer term monitoring, it is not clear whether some cyclists are diverting into the 20mph streets and then re-joining the 30mph streets, or whether the 20mph limit has encouraged an increase in cycling
- Cycle training appears to have led to a short term increase in cycling and decrease in use of motorised transport among residents in the city. In a follow up survey three months after receiving cycle training, the time spent cycling was reported to be 4.5 hours per week among 81 respondents compared with 2.6 hours per week among 150 respondents before; time spent

[67] Draft report: Travelright North Survey 2014

using motorised travel was reported as 4.7 hours per week after the training compared with 6.8 hours per week before[68].

Wider impacts have also been identified for some of the active travel interventions. The Hubs programme has generated employment for 32 individuals with roles as coordinators, staff, cycle trainers and cycle ride leaders; 18 volunteers have also been recruited carrying out cycle maintenance and recycling, three of whom then moved on to full time employment elsewhere.

At this stage in the programme it is not possible to ascertain whether the increase in the overall level of cycling can be attributed to the LSTF. However the cycle hire, cycle parking and cycle training schemes provide clear indications of positive impacts of the LSTF on cycling.

13.5 Impacts

Estimating the direct impacts of the cycling work on traffic levels (and hence carbon) is not possible, although cycling is clearly a significant mode of travel in Nottingham, since, in 2012 and 2013, the 14 automatic cycle counters were recording a total of more than 1 million cycle movements per year. Hence, the growth in cycling is one factor which is likely to be contributing to the overall trends in travel in the area. Traffic levels (as measured in million vehicle kilometres) have been falling in both Nottingham and Greater Nottingham over the last 10 years – with a steeper rate of decline since 2010. Compared to a 2009-11 baseline, according to the authority's figures, by 2013, traffic levels had fallen by 1.3% in Greater Nottingham (albeit with a small increase between 2012 and 2013), and by 3% in Nottingham City (where there has been a consistent decreasing trend). According to NRTE data, comparing 2013 data with a 2009-11 baseline, Nottingham City has experienced one of the greatest levels of traffic reduction in the country (ranking 12th out of all local authorities in England, excluding London), whilst over the same period, it experienced above average growth in both population and jobs.

13.6 Future potential

The 2015/16 programme will continue the activities which have the strongest business case, but on a smaller scale. In addition, substantial investment from the Growth Fund is being used towards the Cycling Ambition Programme which will implement cycling corridors across the city in 2015/16 and 2016/17.

The LSTF has made it possible to embed some of the activities within the partner organisations, enabling them to continue their sustainable travel programmes. For example the universities have benefited from the Ucycle project and are now better equipped to continue promoting active travel among staff and students in future.

Adult cycle training will be funded under the health budget. The success of events under the LSTF has provided leverage for securing external sponsorship through leisure and sports partners. The £35k LSTF funding for cycle events has helped to bring in £200k investment from the Dairy Council and British Cycling for a calendar of cycling events in 2015.

Alternative sources of funding are being sought for some of the LSTF activities such as the community travel hubs; in this case the delivery partners are bidding for the Reaching Communities (Big Lottery Fund) and the opportunities for support from the European Structural and Investment Fund are being explored.

[68] Details of the sampling methodology and timing of surveys were not seen by the research team, and so the possibility of seasonal effects and/or sampling bias cannot be ruled out.

PART IV: EVIDENCE ON IMPACTS

14 Carbon emissions

Key points:

All Large Project local authority areas experienced a reduction in *per capita* carbon dioxide emissions from transport in 2012, compared to a 2009-2011 baseline, based on DECC data. This was in line with the trend in other non-London English local authorities. The reduction in emissions over this time period was greater than the non-London English local authority average for five Large Project areas, and less for seven Large Project areas.

Five Large Projects used their own models to estimate total carbon dioxide emissions from transport, while four reported DECC data for total emissions. Four of the five Large Projects using their own models reported estimates up to 2013 (while one only reported baseline data). For those giving estimates up to 2013, the LSTF corridor in Bournemouth and Nottingham City showed reductions between 2012 and 2013, while Greater Nottingham, Reading and Merseyside showed an increase over that period (although the Merseyside figure was still below the 2009-11 baseline). Comparative data for the national trend to 2013 are not yet available. The four Large Projects that reported DECC data for total emissions all showed a reduction in total emissions between 2011 and 2012 (the most recent year of data available).

Five Large Projects – BDRS, Nottingham, Surrey, Telford and WEST – provided estimates of carbon reductions from individual schemes, including evidence from car sharing; public transport substituting for car journeys; a workplace challenge; ECO Stars business fleet management; eco-driver training; and the promotion of ultra-low emission vehicles.

14.1 Overview of carbon reduction objectives

The LSTF programme had two primary objectives, one of which related to reducing carbon emissions. Specifically, this objective was to:

- Reduce carbon emissions, for example by bringing about an increase in the volume and proportion of journeys made by lower carbon, more sustainable means of travelling including walking and cycling.

Many of the Large Projects reference this when outlining their own objectives. Reading adopted it as an explicit objective of its own programme. Other authorities adopted variations of this objective, including objectives to make lower-carbon means of travel more attractive; to achieve modal shift to lower-carbon means of travel; and to achieve carbon emissions reductions. BDRS is the only Large Project not to have a primary objective which explicitly relates to reducing carbon emissions, although they chose to focus on three short aims, and carbon reduction receives considerable attention when expanding on those aims. Three authorities (Bournemouth, TfGM and WEST) mention encouraging lower-carbon travel choices for commuting. CENTRO and Telford link their aim to reduce carbon dioxide emissions with the parallel intention to reduce emissions of local air pollutants. Nottingham and Surrey link their aim of reducing emissions with a parallel aim of adapting to climate change.

Table 14.1 summarises the objectives listed in the Outcomes Reports that relate to the reduction of carbon dioxide emissions.

Table 14.1: Summary of objectives relating to carbon

	Summary of carbon-related objectives
BDRS	No primary objective, but many mentions of reducing carbon emissions
Bournemouth	• Deliver a step change in the quality, attractiveness and user perception of low carbon travel choices along the corridor, which makes them more competitive with the car • Deliver modal shift to low carbon alternatives to the car, particularly for shorter distance commuting and school car trips
CENTRO	• Improve the urban realm and local environment along all transport corridors, including reductions in both CO_2 and NO_2 emissions, so as to support the regeneration of local centres
Hertfordshire	• To ensure the area is an exemplar in reducing carbon emissions from transport
Merseyside	• Achieve an overall reduction in carbon emissions
Nottingham	• Continuing downward trend in carbon emissions from transport and adapting to climate change by making low carbon travel options a realistic and attractive choice and preparing for changing weather patterns Linked target - No increase in traffic levels contributing to a reduction in carbon emissions from transport by 10% over three years by 2014/15
Reading	• Reduce carbon emissions by bringing about an increase in the volume and proportion of journeys made by lower carbon, more sustainable means of travelling including walking and cycling
Solent	• Reduce emissions (particularly carbon) from the transport sector by reducing highway vehicle kilometres
Surrey	• To reduce the emissions from transport in Surrey, especially carbon dioxide and other greenhouse gases, and manage risks posed to the transport network arising from climate change • To provide an integrated transport system that protects the environment, keeps people healthy and provides for lower carbon transport choices
Telford	• [To reduce] carbon emissions through a 10% modal shift to sustainable modes, making walking and cycling more attractive to improve personal health • [To improve] flow conditions… [to] result in reductions in concentrations of atmospheric pollutants and improvements in overall air quality
TfGM	• Connecting people with jobs… with a particular focus on local walk and cycle access to embed low-carbon travel from the outset • Supporting concentrations of business activity…with a focus on promoting low carbon commuting options • Targeting congestion for carbon and business efficiency… addressing areas where local transport congestion undermines… network carbon performance
WEST	To achieve: • Widened lower carbon access to employment and improved economic growth through reduced congestion • Reduced carbon emissions *per capita* for journeys to work

14.2 Metrics used to monitor carbon emissions

The Department of Energy and Climate Change publishes estimates of carbon dioxide emissions for local authority areas for 2005-2012[69]. Emissions are divided into a number of categories, of which one is transport. Of the emissions that are included in the total local authority estimates, 'transport' accounts for about 27%. It should be noted that certain categories of carbon dioxide emissions, such as aviation and shipping, are not included in the local authority estimates. In addition, there is a time lag in statistics production, such that the most recent data available for this interim meta-analysis was for 2012.

There are two versions of the dataset. One includes all emissions from each local authority, whilst the other represents carbon dioxide emissions deemed to be within the scope of influence of local authorities. The latter dataset excludes emissions from sites within the EU ETS (except power stations, whose emissions are indirectly included via the end-user estimates which cover electricity use); emissions from motorway traffic and diesel railways; and emissions from the Land Use, Land Use Change, and Forestry (LULUCF) sector. For both datasets, data are provided both in total, and on a *per capita* basis.

Six Large Projects (BDRS, Bournemouth, Nottingham, Surrey, Telford and WEST) quote the total and/or *per capita* emissions from this dataset in their Outcomes Reports. Telford used the dataset on emissions within the scope of influence of the local authority. The implication is that the others have all used the total local authority estimates.

A second way of calculating carbon emissions from transport is by use of the Department for Transport's Basic Local Authority Carbon Tool[70]. Hertfordshire, Surrey and Telford all state that they plan to use this tool to generate an estimation of carbon dioxide emission reductions for their final Outcomes Reports.

Some Large Projects (Bournemouth, CENTRO, Merseyside, Nottingham and Reading) have their own method for calculating carbon dioxide emissions from transport. This usually involves input information on traffic volumes (from ATC data); traffic speeds; vehicle types; and WebTAG guidance values on fuel consumption and associated emissions.

Solent and TfGM are both part of the 'Carbon Impacts and Congestion Relief' LSTF case study, which will be assessing changes in carbon emissions by a variety of methods including a comparison of postal surveys undertaken in 2013 and 2014 on travel behaviour.

Finally, various authorities, in particular BDRS, Nottingham, Surrey, Telford and WEST, report on estimates of carbon dioxide savings that have resulted from individual initiatives. These are discussed further in section 14.5. Hertfordshire mentions that scheme-specific carbon calculations are planned for its final report.

[69] See https://www.gov.uk/government/statistics/local-authority-emissions-estimates. These estimates are part of the National Atmospheric Emissions Inventory (NAEI) for 1970-2012, produced for DECC and the Devolved Administrations by Ricardo-AEA.

[70] See https://www.gov.uk/government/publications/local-authority-basic-carbon-tool.

14.3 National data and high level outcomes for carbon

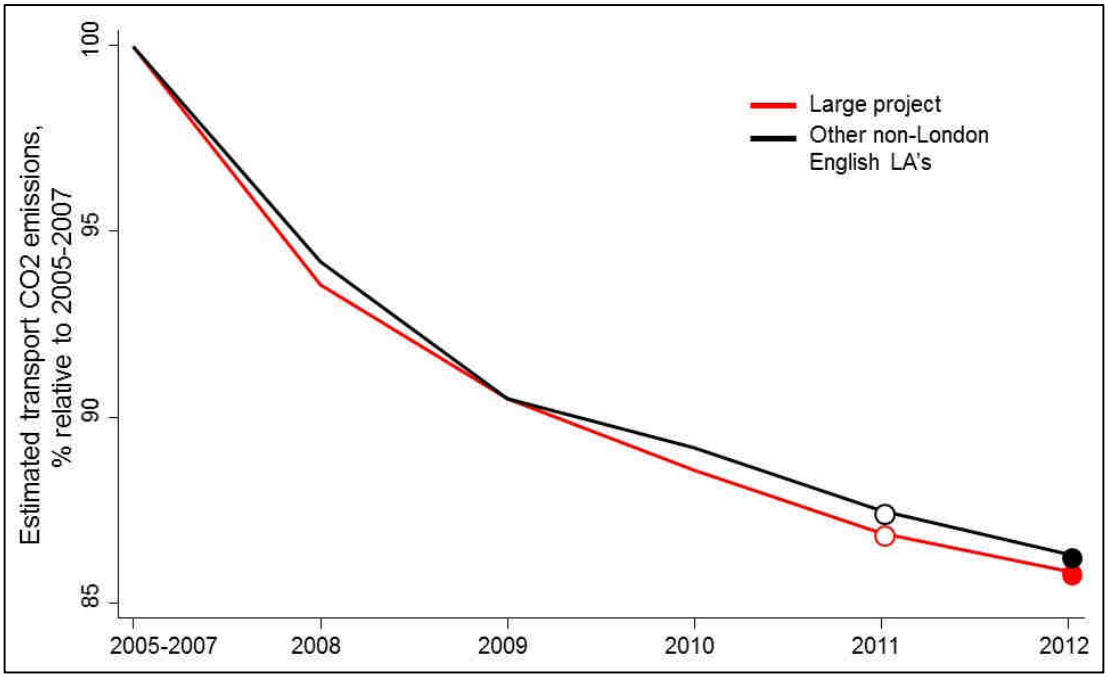
For our analysis of national trends, we have used the DECC estimates of *per capita* total emissions from local authorities. Clearly, in areas with high population growth, the trend for absolute carbon dioxide emissions could therefore be somewhat different.

National trends are given in Figure 14.1, whilst data for individual Large Projects are given in Figure 14.2.

In general, there has been a significant fall in *per capita* carbon dioxide emissions from transport since a baseline of 2005-2007, which was particularly steep in 2008 and 2009. Since that time, there is some indication that carbon dioxide emissions from transport may have fallen slightly faster in the Large Project areas than elsewhere (but with the change occurring in the period before the start of LSTF funding i.e. between 2009 and 2011).

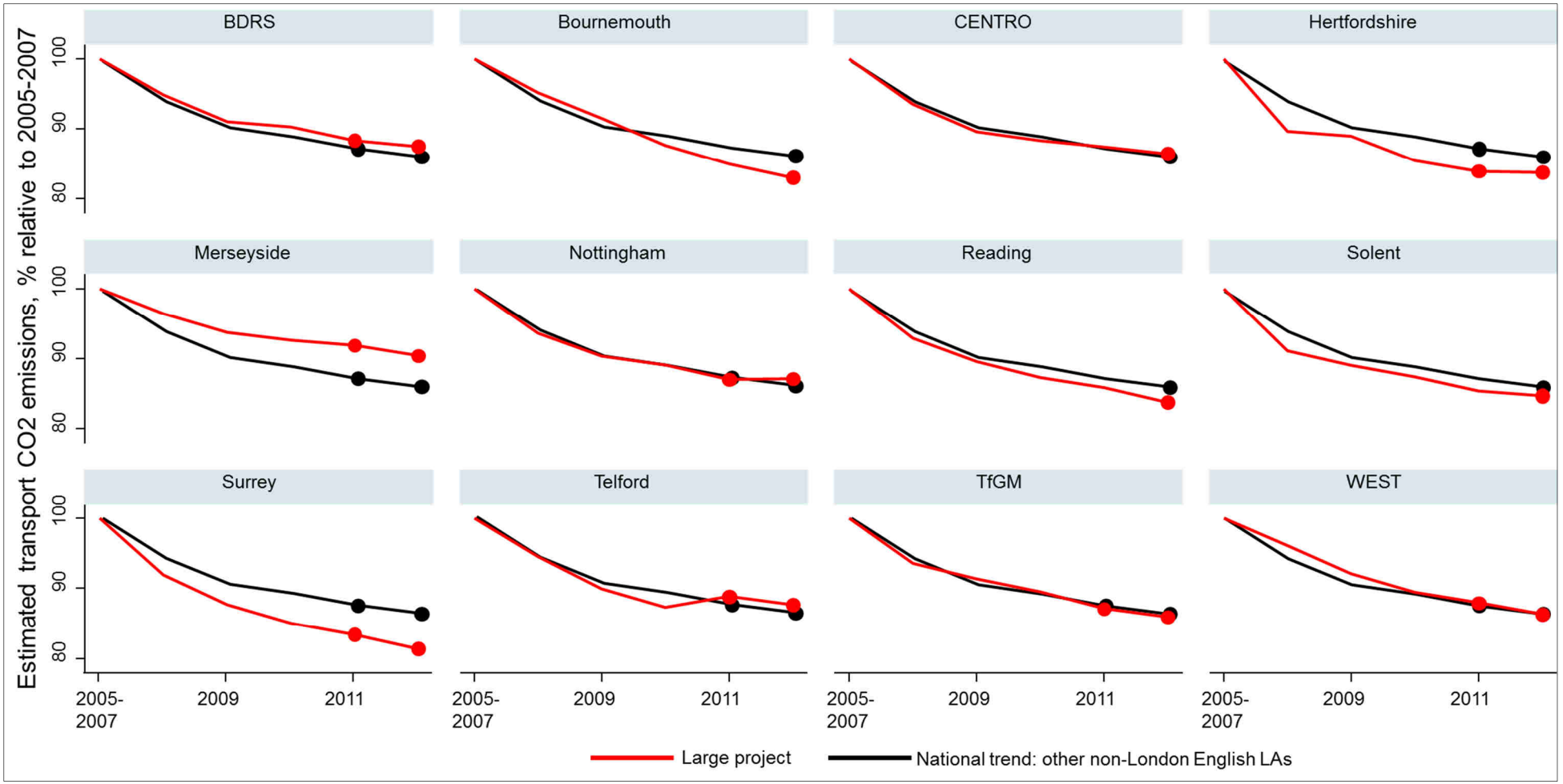
Figure 14.2 shows the trends for individual Large Project areas. These show a broadly similar pattern to the national trend. Meanwhile, Table 14.2 summarises the percentage change in carbon emissions in transport that occurred between a 2009-11 baseline, and 2012 (the most recent year of available data). All areas experienced a reduction in emissions. For other English local authorities (excluding London), that were not LSTF Large Project areas, the average reduction in carbon dioxide emissions was 3%. Five of the Large Project areas experienced a higher reduction than this (Bournemouth, Reading, Surrey, Transport for Greater Manchester and West). Seven Large Project areas experienced a lower than average reduction.

Figure 14.1: Estimated *per capita* carbon emissions from transport at the grouped local authority level



Open circles show years when some Large Projects were receiving funding; filled circles show years when all Large Projects were receiving funding

Figure 14.2: Estimated *per capita* carbon emissions from transport, relative to 2005-2007, by Large Project



Filled circles show years when Large Projects were receiving funding.

Table 14.2: Carbon data on traffic in Large Project areas, and change relative to 2009-2011 baseline

Large Project	% change between 2009-2011 baseline, and 2012	Average percentile of change (range)*, relative to all non-London local authorities
BDRS	-2.65%	47 (12 - 97)
Bournemouth	-5.70%	16 (6 - 33)
Centro	-2.30%	65 (18 - 92)
Hertfordshire	-2.73%	45 (16 - 90)
Merseyside	-2.53%	65 (20 - 88)
Nottingham	-1.89%	63 (13 - 96)
Reading	-4.36%	34 (34 - 34)
Solent	-2.97%	58 (16 - 86)
Surrey	-4.67%	38 (5 - 57)
Telford	-1.19%	87 (87 - 87)
TfGM	-3.81%	45 (6 - 95)
WEST	-3.88%	42 (14 - 89)
Other LAs in England excl London	-3.09%	Not applicable

* Range only presented if there was more than one local authority included in the Large Project area. Authorities ranked such that the lowest percentile authority experienced the greatest decrease in traffic, whilst the highest percentile authority experienced the greatest increase. Definitions of the local authorities included for each Large Project are given in Appendix 1.

14.4 Project level outcomes for carbon

Table 14.3 and Figure 14.3 provide data from the Outcomes Reports about changes in total carbon dioxide emissions from transport in the Large Project areas. Table 14.4 provides the detail behind these figures.

For four authorities (BDRS, Surrey, Telford and WEST) the data are taken from the DECC estimates. (Telford's estimates are for emissions that are within the scope of local authority influence.) All four show a reduction in emissions between 2011 and 2012.

Meanwhile, Bournemouth, Merseyside, Nottingham and Reading present data from their own models. The Bournemouth data show a small reduction on the LSTF corridor between 2012 and 2013, and the Nottingham City data show a long term downwards trend to 2013. Reading, Merseyside and Greater Nottingham show an increase in emissions between 2012 and 2013 (albeit that the 2013 value for Merseyside is still below the 2009-2011 baseline). Understanding the significance of those increases is impossible without understanding national trends, and the relevant trend data is not yet available.

Table 14.3: CO_2 emissions from transport (kilotonnes)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	% change compared to a 2009-2011 baseline
BDRS						2536	2542	2530		-0.4
Bournemouth LSTF corridor								89	88.5	
Merseyside						1746.8	1582.2	1539.1	1552.7	-6.7
Nottingham City	70	70	69	67	68	68	67	66	65	-3.9
Greater Nottingham	247	248	248	239	238	239	236	237	239	0.6
Reading			425	414	409	402	403	397	408	0.8
Surrey LSTF towns	1035	1022	1024	964	929	915	910	898		-2.2
Telford	299.3	294.7	300.6	285	272.2	265.3	261	256.6		-3.6
WEST sub-region		1479.2	1508	1474.3	1421.4	1383.4	1359.4	1325.2		-4.5

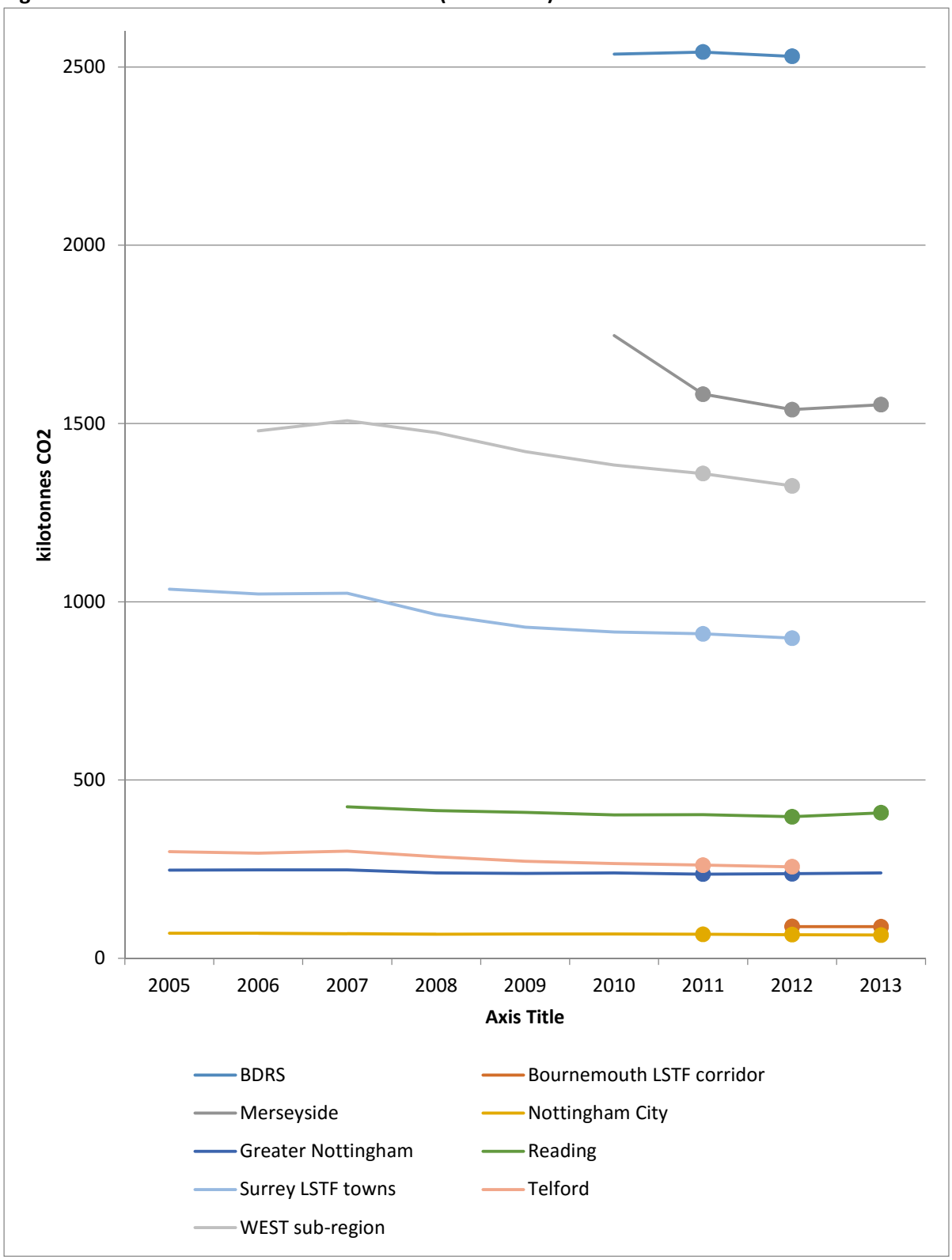
Highlighted grey cells are for years of LSTF funding, including Key Component funding in 2011/12 where applicable.

BDRS, Surrey, Telford and WEST figures are from the DECC estimates. Telford's figures relate only to emissions that fall within the scope of local authority influence.

The percentage change figures presented here are different to those given in Table 14.2, even when they are also taken from the DECC data, since they relate to changes in total emissions rather than *per capita* emissions.

Data for CENTRO are not included here. The 2013/14 Outcomes Report gives modelled emissions for each of ten LSTF corridors, for three time periods (morning peak, inter-peak and afternoon peak), for a baseline year (2011).

Figure 14.3: Trends in total carbon emissions (kilotonnes)



Data are from 2013/14 Outcome Reports; see Table 14.4 for further details. Filled circles show years when Large Projects were receiving funding.

Table 14.4: Notes on carbon data

Large Project	Notes
BDRS	The DECC estimates for total kT CO_2 emissions from transport are presented in the report in total, and *per capita*, for 2010 to 2012.
Bournemouth	Data given in Table 14.3 are estimates of emissions for the major routes on the corridor, based on a model using ATC data, information on vehicle speeds and vehicle types, and WebTAG guidance on fuel consumption and associated emissions. Bournemouth also quote the DECC data for the three authorities, which shows a reduction in total transport-related CO_2 emissions from 465.97KT (2009-11 baseline) to 450.4KT (2012). This is a reduction of 3.3% in total emissions (whilst, as shown in Table 14.2, the average *per capita* emissions for the three authorities fell by 5.7%).
CENTRO	Baseline data only are provided, from CENTRO's own 'PRISM' model for the West Midlands, which uses modelled flows and speeds by vehicle type, together with standardised proportions of vehicles by fuel type and other parameters, according to WebTAG guidance.
Hertfordshire	The Basic Local Authority Carbon Tool and scheme-specific survey work will be used to generate carbon estimates in the final Outcomes Report. Estimates have not been made at this interim stage. LTP3 indicator data on transport CO_2 emissions (annual tonnes *per capita*), derived from DECC estimates, "supplemented by local data", are given (1.73 at LTP baseline; 1.5 in 2012 and 1.4 in 2013), but these are for the whole of Hertfordshire, rather than the LSTF areas.
Merseyside	Data given are 'CO_2 equivalent' emissions in tonnes per year from vehicles, generated from a complex modelling procedure undertaken by the Merseyside Atmospheric Emissions Inventory.
Nottingham	Nottingham has its own method for generating estimates of carbon emissions across Greater Nottingham and for the City. Data given in Table 14.2 are kT CO_2 emissions from transport per year. The Outcomes Report also quotes data from DECC, stating that this shows that "Nottingham has the lowest levels of carbon emissions from transport of all the Core Cities". *Per capita* emissions for the City are reported to have dropped from 1.27 in 2009 to 1.16 in 2012.
Reading	CO_2 emissions are estimated using Reading's own model, which is calibrated using ATC data for vehicle flows, and also uses procedures from WebTAG guidance for estimating fuel consumption and associated emissions. Data given in Table 14.3 is for 12 hour CO_2 emissions from vehicles.
Solent	No discussion of carbon emissions is given in the Outcomes Report, presumably because Solent is part of the same study as TfGM, see below.
Surrey	As the main measure of the carbon impacts of the LSTF work, a project-specific calculation is planned using the DfT's Basic Local Authority Carbon Tool. Baseline figures for 2010/11 are presented. Meanwhile, DECC estimates of carbon dioxide emissions by borough are also presented for the three LSTF boroughs, and Epsom/Ewell (as a control). Total kT of CO_2 are presented for three sectors (industry and commercial, domestic and transport) and in total. In Surrey's Outcomes Report, the total values for the four areas are shown on a graph. The data given here is the combined value of the transport emissions (only) for the three relevant boroughs. It should be noted that the reduction in transport CO_2 emissions that has occurred between the 2009-11 baseline and 2012 in the boroughs containing the LSTF towns is similar in magnitude to the reduction recorded in Epsom & Ewell, and in Surrey as a whole.
Telford	In the final report, an estimate of carbon impacts is to be undertaken using the Basic Local Authority Carbon Toolkit, and the DECC estimates of road transport emissions. As part of discussions for this meta-analysis, Telford have also provided the borough DECC estimates of road transport CO_2 kT emissions, which are within the scope of influence of local authorities.
TfGM	TfGM is part of the 2 year 'Carbon Impacts and Congestion Relief' study being undertaken in conjunction with the Universities of Southampton and Loughborough, Solent Transport and Leicestershire CC. The work involves comparing the results from large scale postal surveys undertaken in the autumns of 2013 and 2014. It will also involve focus group work with people in treatment areas; and collation and analysis of secondary data sources.

Large Project	Notes
WEST	DECC data on CO_2 emissions from road transport are given for the four local authorities, and for the West of England sub-region. Data are given both for *per capita* emissions, and total kilotonnes of emissions. The figures given in Table 14.3 relate to the latter for the sub-region.

14.5 The impacts of individual initiatives on carbon emissions

Four Large Projects (BDRS, Nottingham, Surrey and Telford) provided estimates of carbon impacts from individual schemes, and WEST provided projections of potential savings from an individual scheme. These are summarised in Table 14.5.

The savings quoted from individual schemes have been explored for BDRS, given that they are one of our case studies (see Chapter 11), and hence the figures given here are different to those in the BDRS 2013/14 Outcomes Report. The savings for other Large Projects are simply quoted from their Outcomes Reports, and have not been subject to independent assessment. The types of schemes for which estimates have been made include:

- Public transport replacing car journeys (BDRS)
- Car sharing (Telford)
- A 'workplace challenge' to encourage modal shift (Nottingham)
- ECO Stars fleet recognition scheme, which encourages lower carbon business fleets (BDRS, Nottingham)
- Eco-driver training, to encourage more efficient driving (BDRS, Nottingham, Surrey)
- Promotion of ultra-low emission vehicles and associated infrastructure (BDRS, Nottingham, WEST)

Most of these schemes represented a relatively small part of the overall LSTF activity in the Large Projects concerned, and appear to have been selected because they were discreet initiatives, and relatively easy to quantify.

Table 14.5: Summary of changes in carbon from individual schemes

Large Project	Summary
BDRS	Estimates of CO_2 reductions have been made for individual schemes: • 7% of extra patrons using the X19 Jobconnector bus following service enhancements would otherwise have travelled by private car, suggesting an estimated annual saving of 28 tonnes CO_2e (see Chapter 11). • 80% of patrons using the ASOS Jobconnector bus service would otherwise have travelled by private car, suggesting an estimated annual saving of 378 tonnes CO_2e (see Chapter 11). BDRS also has a strand of work promoting lower carbon vehicles and driving. Schemes include: • ECO Stars – a fleet recognition scheme. As of June 2014, there were 83 South Yorkshire members, with a total of 6,763 vehicles. Three of South Yorkshire's bus operators (representing 81% of the South Yorkshire fleet) are members. • Eco-driving – as of December 2014, 91 Approved Driving Instructors had been trained in eco-safe driver coaching; 1,533 drivers had been trained; and 2,147 drivers were enrolled for future training[71]. • Electric Vehicles Inmotion – this is designed to encourage businesses and their staff to hire electric vehicles for shorter work journeys. So far, 43 companies have

[71] December 2014 data received as part of discussions about this project.

	signed expressions of interest, and various electric charging points are being installed. • Various bus driver training programmes have been run, involving large numbers of drivers.
Nottingham	As well as the implementation of measures designed to result in lower carbon travel (including the launch of a car club in May 2014, and various cycle improvements), specific carbon benefits are reported in relation to: • 32 fully-electric buses in operation (with more ordered) • 58 organisations have joined the national ECO Stars fleet management and driver efficiency programme, with 4,800 vehicles registered • 72 business drivers have received driving training through two companies. One of these, Wastecycle, reported a 13% fuel saving equivalent to 134 tonnes carbon emissions in 2013/14 • Over 1000 participants in a summer workplace challenge collectively saved 10,932kg of carbon emissions. Savings from Wastecycle and the workplace challenge are equivalent to slightly over 0.2% of annual CO_2 emissions from transport in Nottingham.
Surrey	One strand of project work has involved Eco Driver training sessions on a simulator. As of June 2014, 123 participants from 12 businesses had taken part. If the decreases in fuel consumption observed during the simulator training were realised in employee's actual driving, it is estimated that this training could be leading to savings of 65,670kg CO_2 per annum (equivalent to slightly under 0.01% of annual CO_2 emissions from transport in Surrey's LSTF towns), worth an estimated £37,133 in fuel costs.
Telford	An estimate of CO_2 savings from the car share scheme is given. For those members who are regular travellers, and who are in groups (596 in 2013 and 666 in 2014), an estimate has been made of the mileage travelled if they travel separately, compared to if they travel together. This suggests that the saving in CO_2 from the mileage savings generated by travelling together was in the order of 334 tonnes CO_2 in 2013 and 441 tonnes CO_2 in 2014 (equivalent to slightly under 0.2% of annual CO_2 emissions from transport in Telford).
WEST	Working with Co-Wheels, WEST has been involved in various projects to encourage the take-up of low emission vehicles. In 2013/14, activities included the installation of 15 electric charging points, and the provision of low emission vehicles through employers. Estimates of projected carbon savings from such schemes are given, and evaluation work with participants is planned. DVLA data for the South West region as a whole shows that the number of ultra-low emission vehicles registered in the region rose from 166 in 2010, to 683 in 2013.

14.6 Conclusions on outcomes related to carbon

Our analysis of DECC estimates of *per capita* carbon dioxide emissions from transport shows reductions in all the Large Project areas between 2011 and 2012, with five of the Large Project areas (Bournemouth, Reading, Surrey, TfGM and WEST) experiencing a greater reduction in carbon dioxide emissions between 2012 and a 2009-11 baseline than that which occurred nationally, and seven experiencing a lower reduction than that which occurred nationally.

Four areas (Bournemouth, Merseyside, Nottingham and Reading) provided their own estimates of carbon dioxide emissions to 2013. Reductions in emissions between 2012 and 2013 were reported for the LSTF corridor in Bournemouth, and for Nottingham City. The other areas all showed an increase between 2012 and 2013 (although Merseyside's value was still below the 2009-11 baseline). Understanding national trends will be important to understanding the significance of the local results.

Four Large Projects (BDRS, Nottingham, Surrey and Telford) also provided estimates of carbon reductions that occurred as a result of individual schemes. Annual emissions savings were in the order of 0.1 – 0.4kT CO_2, equivalent to between 0.01% and 0.2% of total carbon emissions from transport in the respective local authorities. The schemes for which estimates of carbon impacts had been made represented a small but unknown proportion of total LSTF investment, and it would therefore be expected that overall carbon savings would be greater than these figures.

Table 14.6 provides an overview of reported outcomes relating to carbon emissions.

Table 14.6: Overview of outcomes related to carbon emissions

Large Project	Over-view	Summary of change since start of LSTF project~	Attributable to LSTF?
BDRS		Data from DECC shows a downward trend. BDRS estimates that there have been CO_2 savings from some of the public transport schemes it has implemented, and is also running various schemes aimed at promoting lower carbon vehicles and/or more efficient driving.	Some
Bournemouth		An estimation of carbon dioxide emissions from transport on the main routes on the corridor shows a small reduction between 2012 and 2013. The DECC data also shows a general reduction in CO_2 emissions from transport over time.	-
CENTRO		Only baseline data are provided about carbon dioxide emissions. Various initiatives aimed at reducing car use are reported, but none include an estimate of CO_2 emission reductions.	-
Hertfordshire		Estimates for the whole of Hertfordshire show a reduction in CO_2 emissions between 2012 and 2013, though estimates of impacts in LSTF areas will only become available in the final report.	-
Merseyside		Emissions data for Merseyside shows a downwards trend, though an increase in CO_2e emissions between 2012 and 2013.	-
Nottingham		The trend in emissions data for the City is downward, and various schemes are quoted which will have had direct carbon savings. However, emissions across Greater Nottingham increased slightly between 2012 and 2013.	Some
Reading		Emissions data for Reading shows a long-term downwards trend, though an increase in CO_2 emissions between 2012 and 2013, which the report authors attribute to increases in population and jobs.	-
Solent		No discussion of carbon dioxide emissions in the report. Solent is part of the same case study as TfGM.	-
Surrey		DECC estimates of CO_2 emissions from transport show a reducing trend in the target areas, though data only goes to 2012. Data from the Eco Driver Training programme suggests direct potential emission reductions.	Some
Telford		Reductions in CO_2 emissions are quoted both for the area as a whole, and as a specific result of the car share scheme.	Some
TfGM		No results yet reported from TfGM's work as part of the 'Carbon impacts and congestion relief' case study. Our analysis of DECC data showed a reduction in emissions between 2011 and 2012.	-
WEST		The trend from DECC data is positive, and the number of ultra-low emission vehicles registered in the region is increasing. However, the DECC data only goes to 2012, and more specific feedback from schemes promoting ULEVs will become available for the next report.	Some

increase in carbon dioxide emissions; possible increase in carbon dioxide emissions although general trend is decrease; decrease in carbon dioxide emissions; **ambiguous or** insufficient data to assess changes in carbon dioxide emissions.

~ Different Large Projects treat different time periods as 'baseline'. Changes summarised here are mainly between 2012 and 2013, with some exceptions.

15 Air quality

Key points:

Six Large Projects had data on air quality, of which two (Bournemouth and Merseyside) were reporting for the project area as a whole, whilst five (BDRS, Bournemouth, Hertfordshire, Nottingham and WEST) (also) provided data relating to Air Quality Management Areas.

There are at least 16 Air Quality Management Areas that could benefit from LSTF work.

At this stage, there are insufficient time-series data to enable conclusions to be drawn about any effects of LSTF interventions on air quality.

15.1 Overview of air quality objectives

Table 15.1 summarises the objectives listed in the Outcomes Reports that relate to air quality.

Only four Large Projects had an explicit primary project objective that mentioned air quality, whilst two others mentioned reducing emissions more generally. However, three of these six (Reading, Solent and Telford) do not report on air quality data. Of the remaining six projects, only TfGM has neither an objective nor any discussion of air quality data in its Outcomes Report. The remaining five Outcomes Reports all discuss air quality issues, and several mention air quality when setting out secondary objectives.

15.2 Metrics used to monitor air quality

The most common metric which is reported for air quality in the Outcomes Reports relates to annual mean concentrations of nitrogen dioxide. In some cases (Hertfordshire, Nottingham and WEST, plus two sites in Poole), annual mean concentrations are reported for Air Quality Management Areas within the Large Project areas (presumably those which have been declared for NO_2[72]). Results are reported for a total of 16 AQMAs (counting the Bath site as one).

Bournemouth report on more general monitoring of air quality levels across the Large Project areas from a large number of sites, and in comparison to a control site. Bournemouth clarifies that their monitoring data is based on using diffusion tubes measuring over a 4-5 week period. Surrey reports on NO_2 concentrations from 42 sites within the Large Project areas (including various sites that fall within AQMAs), and nine sites in Epsom, for comparative purposes.

Two Large Projects have taken a different approach to reporting on air quality. Merseyside reports on annual emissions of NOx and PM10 from vehicles, based on outputs from the Merseyside Atmospheric Emissions Inventory. BDRS reports on data about the number of days when levels of NOx and PM10 have exceeded thresholds in their AQMAs (although there is no nationally specified objective for daily exceedance of NOx).

[72] Of the 685 AQMAs in the UK, 581 are based on NO_2 levels, according to Ricardo-AEA (2014) Air pollution in the UK 2013

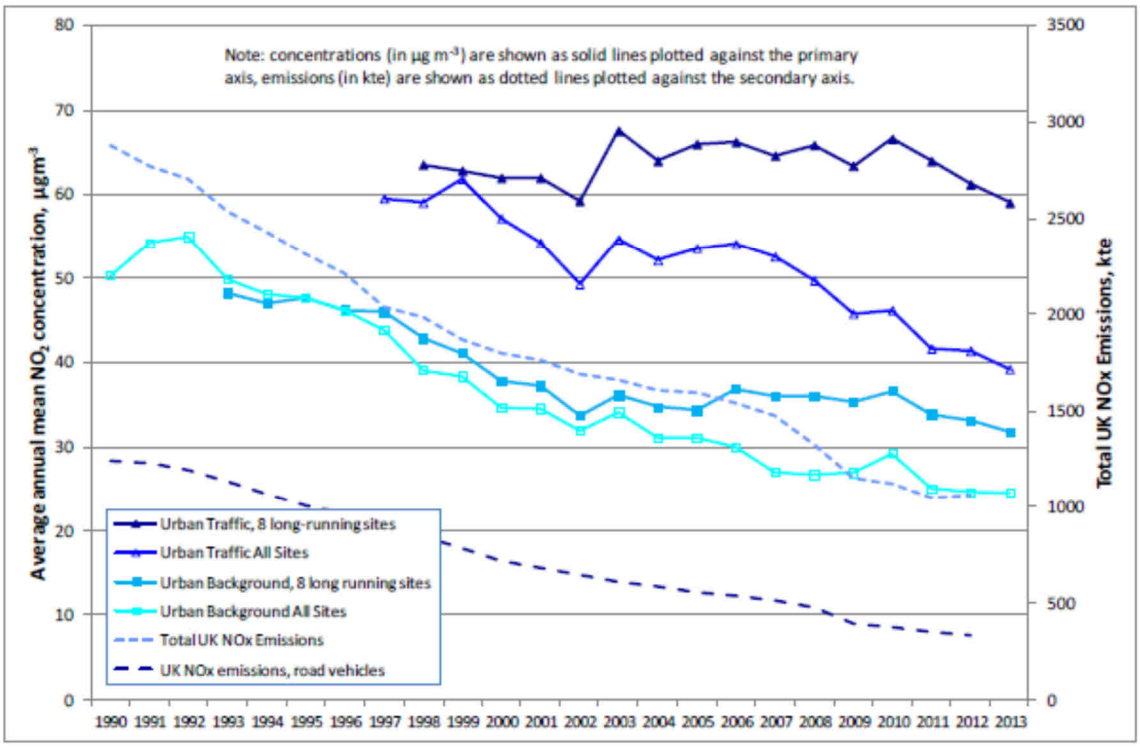
Table 15.1: Summary of objectives relating to air quality

	Air quality objective?	Summary of air quality objectives
BDRS	No	-
Bournemouth	No	No primary objective, though there is a table linking air quality to objectives to achieve reduced congestion, modal shift, car dependency and thriving and attractive centres
CENTRO	Yes	• Improve the urban realm and local environment along all transport corridors, including **reductions in both CO_2 and NO_2 emissions**, so as to support the regeneration of local centres
Hertfordshire	No	-
Merseyside	No	No primary objective, although improved environment/air quality is listed as a secondary objective
Nottingham	Yes	• Carbon and **air quality** - Continuing downward trend in carbon emissions from transport and adapting to climate change by making low carbon travel options a realistic and attractive choice and preparing for changing weather patterns
Reading	Yes	• Bring about **improvements to air quality** and increased compliance with air quality standards, and wider environmental benefits such as noise reduction
Solent	(Yes)	• **Reduce emissions** (particularly carbon) from the transport sector by reducing highway vehicle kilometres
Surrey	(Yes)	• To **reduce the emissions** from transport in Surrey, especially carbon dioxide and other greenhouse gases, and manage risks posed to the transport network arising from climate change
Telford	Yes	• [To improve] flow conditions… [to] result in reductions in concentrations of atmospheric pollutants and **improvements in overall air quality**
TfGM	No	-
WEST	No	WEST quotes the national secondary objective to "bring about improvements to air quality and increased compliance with air quality standards, and wider environmental benefits such as noise reduction", though air quality is not mentioned in the specific programme objectives.

15.3 National data and high level outcomes for air quality

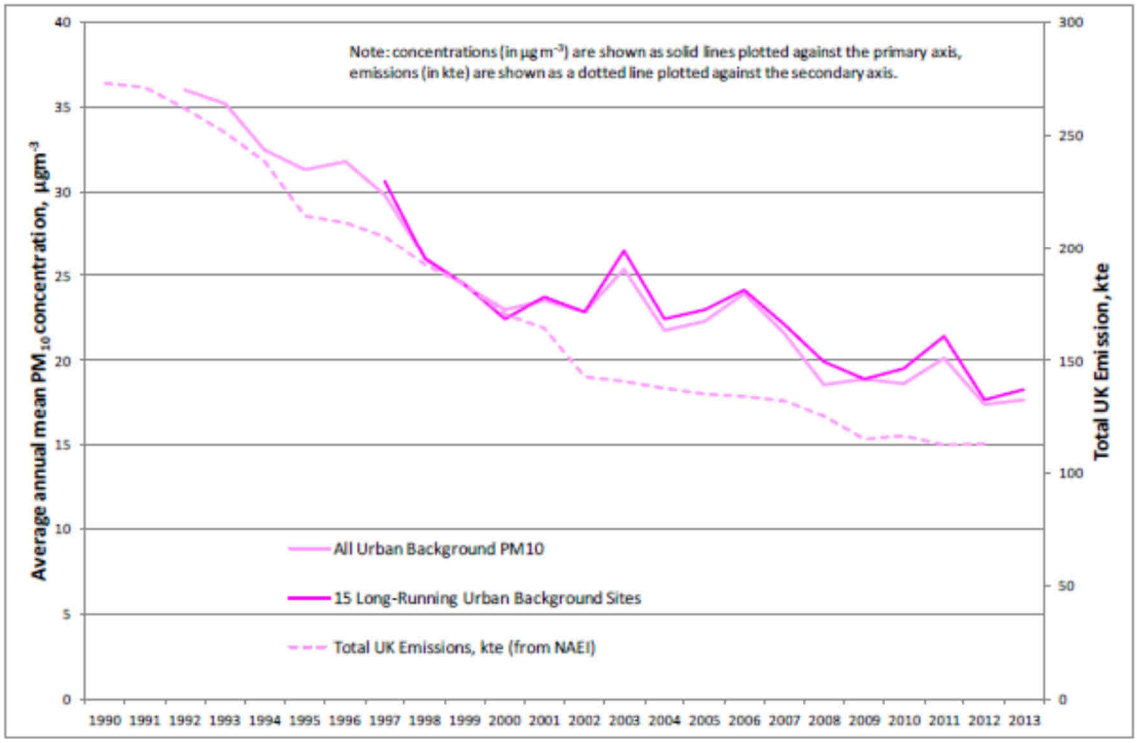
Defra produce various reports on air quality and graphs have been reproduced from those reports in order to give an indication of national trends. Specifically, Figure 15.1 provides an indication of trends in NO_2 and NOx; Figure 15.2 provides an indication of trends in PM10, and Figure 15.3 gives an indication of the number of days per year when pollution levels were moderate or high for particular pollutants. The general trend is that, since 2011, both NO_2 and PM10 emissions have been reducing. More details on the metrics and datasets used to generate these graphs are given in the original reports.

Figure 15.1: Trends in average annual mean and total NO_2 and NOx values



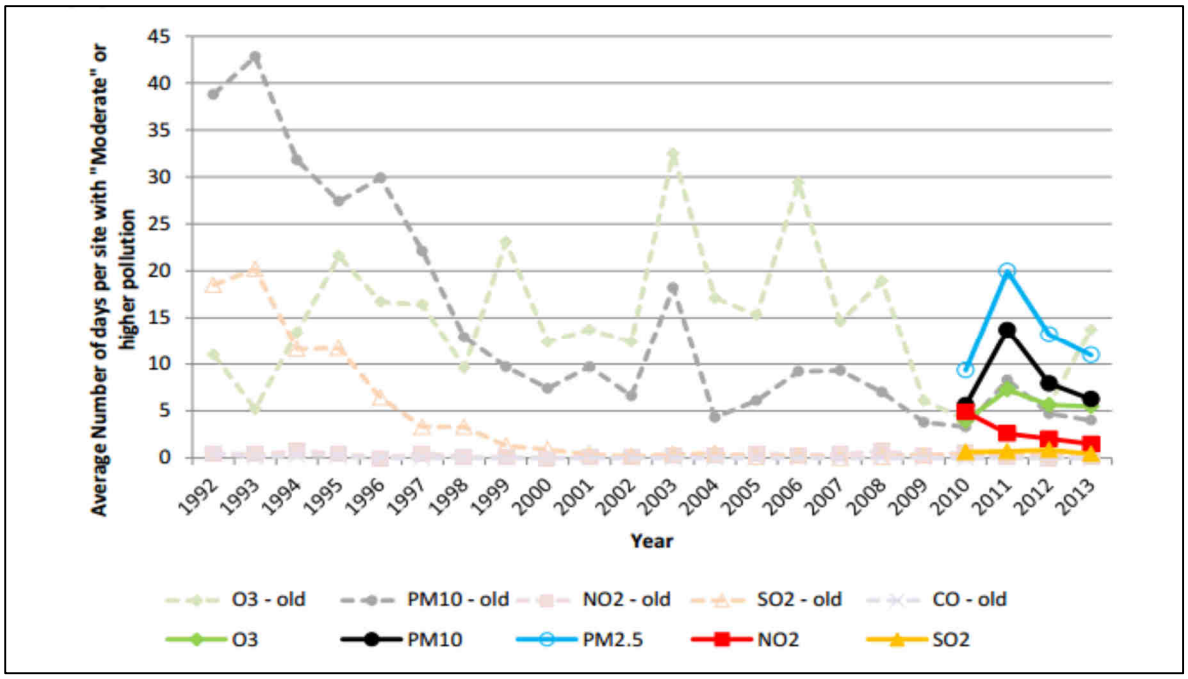
Reproduced from Ricardo-AEA (2014) Air pollution in the UK 2013 Defra, section 5.2, p44: http://uk-air.defra.gov.uk/library/annualreport/index

Figure 15.2: Trends in average annual mean and total PM10 values



Reproduced from Ricardo-AEA (2014) Air pollution in the UK 2013 Defra, section 5.3, p47: http://uk-air.defra.gov.uk/library/annualreport/index

Figure 15.3 Average number of days when levels of particular pollutants were moderate or higher at urban sites in the UK



Reproduced from Defra (2014) Air quality statistics in the UK, 1987 to 2013, Figure 3, p8: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/305145/National_Statistic_on_Air_Quality_2013.pdf

15.4 Project level outcomes for air quality

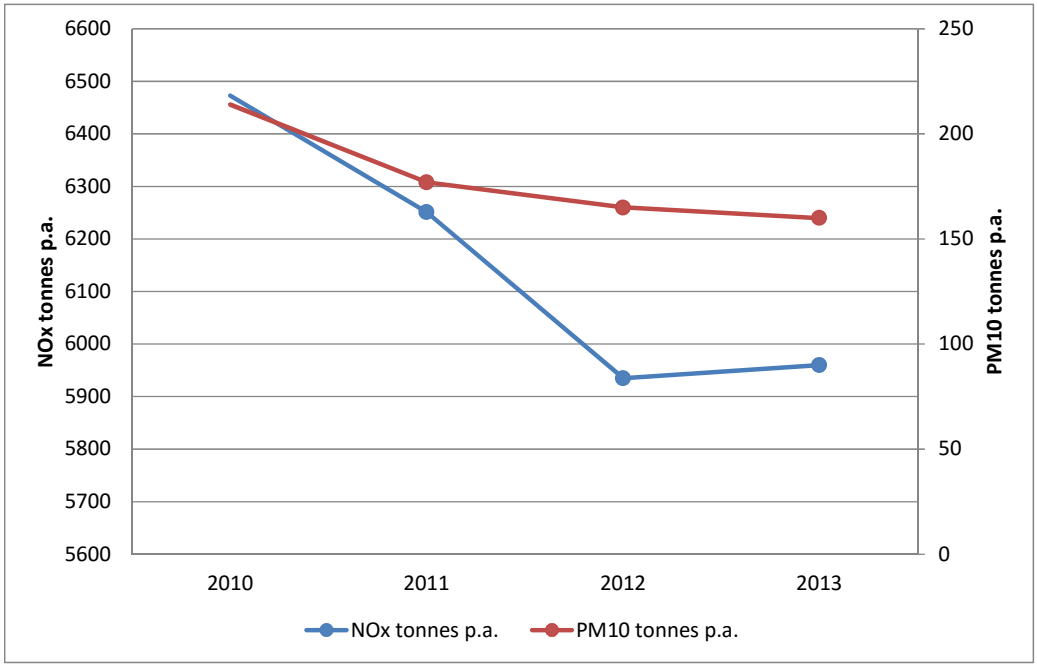
Advice from Defra is that, where air quality monitoring data (as opposed to emissions data) is being analysed, relatively long-term data series are required. At least three years of data might be needed to indicate the effects of an intervention, whilst even longer-term information would be needed to identify long term change[73]. This reduces the risk of random variation due to changes in weather and other local circumstances.

Use of three or five year time-series of air quality monitoring data to give an indication of change in emissions may therefore be possible in the final meta-analysis, but is not possible at this interim stage. For air quality monitoring data, we therefore report here only on what data are currently being collected, without attempting to draw conclusions about either background trends or recent changes during the LSTF funding period.

One Large Project, Merseyside, provided data about annual emissions (Figure 15.4). Since 2011, emissions of both NOx and PM10 have dropped, although the NOx trend between 2012 and 2013 is not one of further decline.

[73] Defra guidance states that: "It is normal practice to only consider a trend as being significant when five years' worth of data are available, although a longer timescale may be appropriate for some pollutants, for example, PM_{10}.", Defra (2009) Local Air Quality Management Technical Guidance LAQM.TG(09).

Figure 15.4: Annual emissions of NOx and PM10 in Merseyside



Filled circles show years when Merseyside Large Project was receiving funding

Four Large Projects provided air quality monitoring data. Table 15.2 and Figure 15.5 summarise data from the Outcomes Reports for annual mean concentrations of NO_2, both for particular AQMAs, and in the case of Bournemouth, for individual towns and for the whole project area.

Surrey provided data for a large number of sites, but clarified, in correspondence for this meta-analysis, that values should not be averaged. No analysis of individual site-level changes is provided in the Outcomes Report; initial indications are that a relatively complex pattern of changes has occurred.

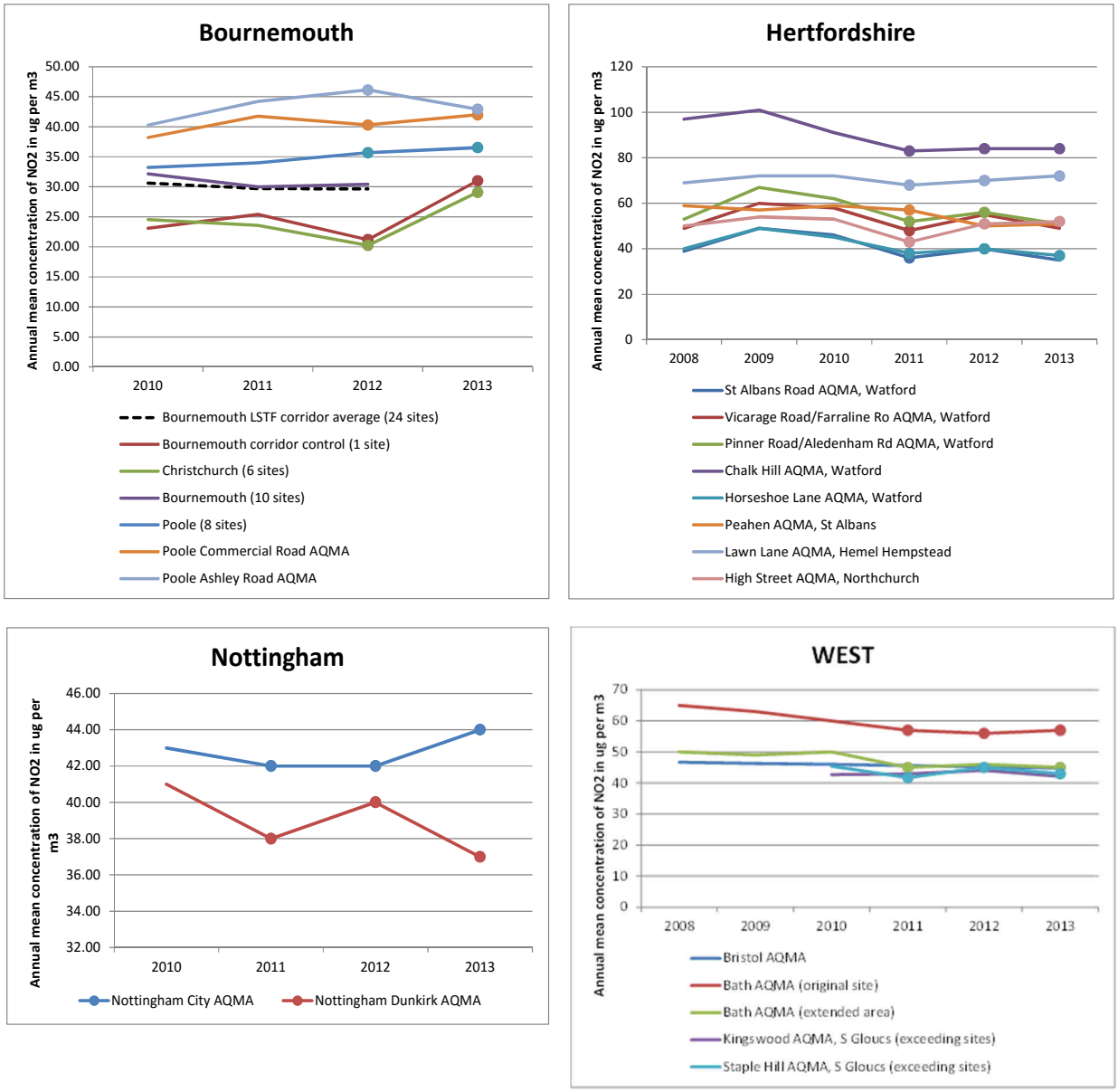
Some Outcomes Reports include evidence on specific strands of work to reduce vehicle emissions. These are generally the same as those reported in Chapter 14 in relation to carbon dioxide emissions, although there are a few other initiatives aimed specifically at reducing local air pollutants. In particular, in South Yorkshire, 41 buses operating on the X78 (Sheffield – Doncaster) and 75 (intra-Sheffield) routes will be fitted with Thermo Management Technology, which should reduce NOx emissions by 40%.

As background information, WEST report on the Bristol Quality of Life Survey, which showed that, in 2012, 56% of respondents thought that air quality and traffic pollution was a problem in their neighbourhood. (This question has subsequently been removed from the survey, so will not be available in future years).

Table 15.2: Annual mean concentrations of NO_2 (microgrammes per cubic metre)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bournemouth										
Bournemouth LSTF corridor average (26 sites)							30.6	29.7	29.6	
Bournemouth corridor control (1 site)							23.1	25.4	21.2	31.0
Bournemouth (9 sites)							32.9	30.7	31.1	
Christchurch (6 sites)							24.5	23.6	20.2	29.1
Poole (8 sites)							33.2	34.0	35.7	36.5
Poole Commercial Road AQMA							38.2	41.7	40.3	42.0
Poole Ashley Road AQMA							40.3	44.2	46.1	42.9
Hertfordshire										
St Albans Road, Watford (AQMA)					39.0	49.0	46.0	36.0	40.0	35.0
Vicarage Road/Farraline Ro, Watford (AQMA)					49.0	60.0	58.0	48.0	55.0	49.0
Pinner Road/Aldenham Rd, Watford (AQMA)					53.0	67.0	62.0	52.0	56.0	51.0
Chalk Hill, Watford (AQMA)					97.0	101.0	91.0	83.0	84.0	84.0
Horseshoe Lane, Watford (AQMA)					40.0	49.0	45.0	38.0	40.0	37.0
Peahen, St Albans (AQMA)					59.0	57.0	59.0	57.0	50.0	51.0
Lawn Lane, Hemel Hempstead (AQMA)					69.0	72.0	72.0	68.0	70.0	72.0
High Street, Northchurch (AQMA)					50.0	54.0	53.0	43.0	51.0	52.0
Nottingham										
Nottingham City AQMA							43.0	42.0	42.0	44.0
Nottingham Dunkirk AQMA							41.0	38.0	40.0	37.0
WEST										
Bristol AQMA	48	47.6	47.3	47	46.7	46.3	46.0	45.6	45.2	44.8
Bath AQMA (original site)	53	62	69	62	65.0	63.0	60.0	57.0	56.0	57.0
Bath AQMA (extended area)	40	49	55	48	50.0	49.0	50.0	45.0	46.0	45.0
Kingswood AQMA, S Gloucs (exceeding sites)								42.7	42.9	44.1
Staple Hill AQMA, S Gloucs (exceeding sites)								45.4	41.7	45.0

Figure 15.5: Recent average annual mean NO_2 levels



Note: Only one line – for Bournemouth LSTF corridor average – represents a whole Large Project area. Filled circles show years when Large Projects were receiving funding.

Table 15.3: Notes on air quality data

Large Project	Notes
BDRS	BDRS provides data about the number of days when levels of NOx and PM10 exceeded thresholds in their AQMAs. Chesterfield (which is not part of the Large Project) and Sheffield are cited as having particularly poor air quality.
Bournemouth	Data are given for 28 sites from Christchurch, Bournemouth and Poole that lie on the LSTF corridor, including two AQMAs in Poole^. Data are also given from one site on the comparator corridor. 2013 data from the Bournemouth sites are not yet available. NO_2 levels are monitored using diffusion tubes measuring over a 4-5 week period.
CENTRO	n/a

Hertfordshire	Within the Large Project area, there are eight sites where AQMAs have been declared due to exceedance of NO_2 levels. Annual mean concentrations of NO_2 are given for the eight sites, between 2008 and 2013.
Merseyside	Tonnes per year of key emissions from vehicles are generated from a complex modelling procedure, undertaken by the Merseyside Atmospheric Emissions Inventory.
Nottingham	There is a small error in the report, but further correspondence has clarified that figures given are for annual mean levels of NO_2 in µg/m3 in two AQMAs.
Reading	n/a
Solent	n/a
Surrey	Data on annual mean concentrations of NO_2 are reported for Woking (14 sites), Redhill/Reigate (14 sites), Guildford (14 sites), and the control area of Epsom (9 sites). Sites with less than 90% data capture are indicated. 2012 and 2013 data are available for the Guildford and Woking sites. Four of the sites in Woking (at Anchor Hill), and many of the sites in Redhill/Reigate fall within Air Quality Management Areas. The Surrey LSTF project team do not feel that the site values can be meaningfully averaged, since sites differ in their proximity to the carriageway, and the extent of dispersion of the traffic pollutants affecting them.
Telford	n/a
TfGM	n/a
WEST	Annual mean concentrations of NO_2 are given for AQMAs in Bath, Bristol, Kingswood (South Gloucestershire) and Staple Hill (South Gloucestershire). Two sets of figures are given for Bath (relating to both the original AQMA and the subsequently extended area). For South Gloucestershire, the figures relate to sites in the AQMA that exceed threshold levels, so the sample of sites in any one year may change, and the figures do not give a straightforward indication of the average change in the area.

^ Of the 28 sites, only 25 lie on the LSTF corridor. Two – Lymington Road, Highcliffe and Hillside Drive, both in Bournemouth - lie outside the corridor. One site – Capstone Place in Christchurch – is 450 metres from the corridor. To create the corridor total, Bournemouth's LSTF team excluded the two Bournemouth sites, but included the Christchurch site, to create their total (as well as excluding two other sites with missing data). To create our corridor average, we have simply divided their totals by 24, the number of sites included in the calculation. However, for the Bournemouth and Christchurch averages which we created separately for this report, we have also excluded the Capstone Place site.

15.5 Conclusions on outcomes related to air quality

Only six of the Large Projects had specific primary objectives relating to air quality or vehicle emissions, although three of these did not subsequently address air quality in their Outcomes Reports, whilst five of the other Large Projects did so. In total, six Large Projects had data on air quality that could be analysed, of which two (Merseyside and Bournemouth) were reporting for the project area as a whole, whilst five (BDRS, Bournemouth, Hertfordshire, Nottingham and WEST) (also) provided data relating to Air Quality Management Areas. Bournemouth and Surrey both plan to report on data for control areas.

In the final evaluation reports, indicative assessment of change should be possible, although this will only be meaningful where monitoring of air quality is undertaken in locations that would be directly affected by LSTF measures such as roadside locations where traffic reductions are thought to have occurred. However,the usually substantial contribution of background pollution to measurements in any one location, and limited time series that will be available for analysis, mean that detection of any change arising from LSTF work may be difficult. Where possible, measurement of changes in vehicle emissions of local air pollutants is likely to provide a more direct and meaningful indication of the work of the LSTF in improving air quality.

Table 15.4: Overview of outcomes related to air quality

Large Project	Over-view	Summary of change since start of LSTF project~	Attributable to LSTF?
BDRS	■	BDRS does not have an air quality objective, but is quoting days of exceedance from air quality values in its AQMAs.	-
Bournemouth	■	Although improving air quality is not a primary objective, Bournemouth is monitoring air quality at 28 sites along the LSTF corridor, including in 2 AQMAs in Poole, and at one site on the control corridor.	-
CENTRO	■	CENTRO has an objective to improve air quality, and air quality analysis is mentioned for the final report, although the current report only provides baseline data for CO_2 emissions.	-
Hertfordshire	■	Hertfordshire does not have an objective to improve air quality, but is monitoring air quality at 8 AQMAs that fall within the LSTF areas.	-
Merseyside	■	Merseyside reports on emissions of air quality pollutants from vehicles. There has been a decrease in PM10 emissions in the region since 2011. NOx emissions showed a small increase between 2012 and 2013, though it is unclear that this is meaningful, and the general trend is a decrease.	-
Nottingham	■	Nottingham has an explicit objective to improve air quality and is reporting on annual NO_2 levels in two Air Quality Management Areas.	-
Reading	■	Reading has an objective to improve air quality, but does not report on data relating to this.	-
Solent	■	Solent has an objective to reduce vehicle emissions, but does not report on data relating to this.	-
Surrey	■	Air quality data is reported but has not been analysed, given complexities associated with the data.	-
Telford	■	Telford has an objective to improve air quality, but does not report on data relating to this.	-
TfGM	■	TfGM does not have an objective on air quality, and no data are given.	-
WEST	■	WEST quotes the DfT's secondary objective to improve air quality and reports on annual average NO_2 concentrations in AQMAs in Bath, Bristol and South Gloucestershire.	-

■ **ambiguous or** insufficient data to assess changes.

16 Road safety

Key points:

Five of the Large Projects have recorded safety improvements since the start of LSTF funding. One Large Project recorded no change and one showed an increase in the number of collisions in which at least one person was killed or seriously injured (KSI).

Overall, the Large Project areas have seen a reduction in KSI casualties since 2005-2007 which began before LSTF funding and has been rather less than the reduction in other areas of England outside London.

At this interim stage, there is not enough evidence to establish whether the LSTF interventions have resulted in changes in road safety. Only five Large Projects have provided data for the LSTF areas specifically; two of these show considerable fluctuations from year to year and three are limited in scale or length of coverage of the data.

16.1 Overview of road safety objectives

Five Large Projects explicitly identified road safety as one of their objectives. In one case (Nottingham) this was indirectly through improving health and reducing transport impacts, while in Surrey and WEST, improving road safety was identified as a secondary objective. Telford and CENTRO had specific objectives related to the safety of vulnerable road users in the LSTF areas. These objectives are summarised in Table 16.1.

Table 16.1: Summary of road safety objectives

	Road safety objective?	Summary of road safety objectives
BDRS	No	
Bournemouth	No	
CENTRO	Yes	Reduce the accident rate for vulnerable road users within all LSTF corridors
Hertfordshire	No	
Merseyside	No	
Nottingham	Indirect	The 'health' objective is to create the social, cultural and physical environment to support active travel options and reduce transport impacts; a reduction in road casualties (number and severity) is one of the outcomes monitored under this objective
Reading	No	
Solent	No	
Surrey	Yes	Improving road safety is a secondary objective
Telford	Yes	The Shared Space design on Coach Central will provide a public realm which is safer and more pleasant for pedestrians and cyclists One of the key aims is to improve safety particularly for pedestrians and other vulnerable road users in Box Road
TfGM	No	
WEST	Yes	Improving safety is one of the secondary objectives

16.2 Metrics used to monitor road safety

The metrics used to monitor road safety are all based on the records of collisions involving injuries which have been reported to the police (in STATS19). However the data used is not the same across the Large Projects:

- Some were based on killed and seriously injured (KSI) casualties (Bournemouth, Hertfordshire, Nottingham, Telford) and others are based on KSI accidents (BDRS, CENTRO, Solent)
- In Merseyside, all collisions in the LSTF low speed zones were reported
- Some provided rolling averages (5 years in BDRS and Nottingham)
- In Bournemouth, CENTRO and Solent the data were for LSTF specific zones or corridors while in BDRS, Hertfordshire and Nottingham the figures were for a wider area. Telford provided time series data for one of the LSTF areas and data for the borough in 2013
- Bournemouth and CENTRO provided data by mode of travel, while Telford included figures for pedestrians and children.

No data were provided for TfGM and Reading, while in Surrey and Merseyside no 'before' data were provided.

In Telford, the time series data were for Box Road, a small area with few casualties. The time period for monitoring is not yet long enough to establish whether there has been a change.

16.3 National trends in road safety

At this interim stage it does not seem likely that the trends in Large Projects would be different from the national trends. Figure 16.1 shows the number of people killed and seriously injured in road collisions since 2005-2007 nationally and in the Large Projects. It shows that the trends were broadly similar in the Large Projects and other areas of England outside London.

Overall the numbers fell but in the Large Projects, they levelled off between 2010-2011 and 2012-2013 more than in other areas of England (outside London). The trends for car and motorcycle casualties (combined) were the same as the overall trend.

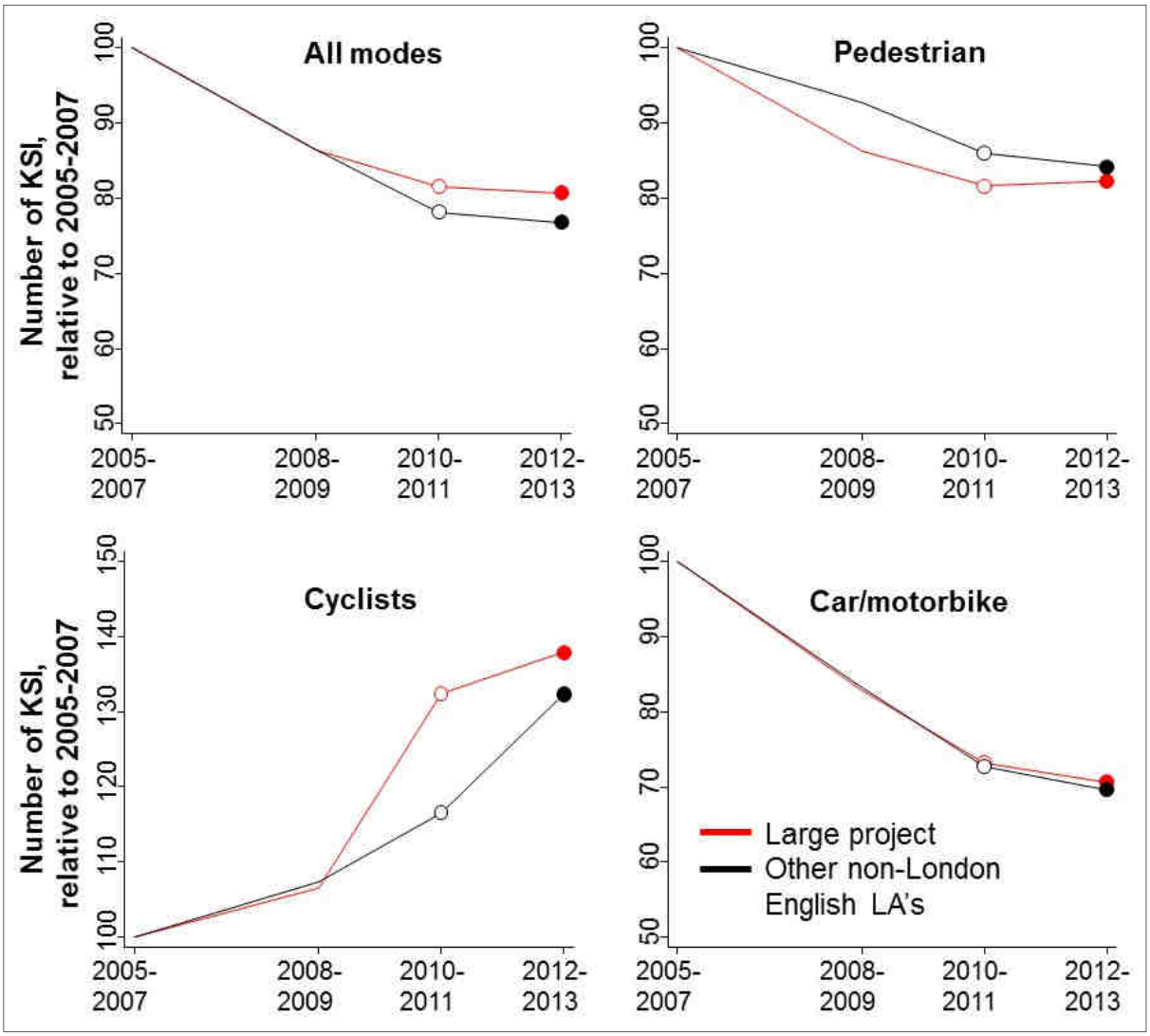
Cyclist casualties increased since 2005-2007, both nationally and in the Large Projects.

Pedestrian casualties nationally fell between 2005-2007 and 2010-2011 but this trend slowed in 2012-2013, and weakly reversed in the Large Projects.

16.4 Project-level road safety outcomes

Figure 16.2 summarises the trends in the road safety indicators for the Large Projects which have provided data for more than one year and have included data from 2011 onwards. The basis for comparison is not the same in each area, as noted above, but the figures have been indexed to 1 in 2011. The first graph shows the trends for Large Projects which provided data on KSI casualties and the second shows trends for KSI accidents. The data underlying these graphs are shown in Tables 16.2 and 16.3.

Figure 16.1: Trends in casualties killed and seriously injured by mode relative to 2005-2007

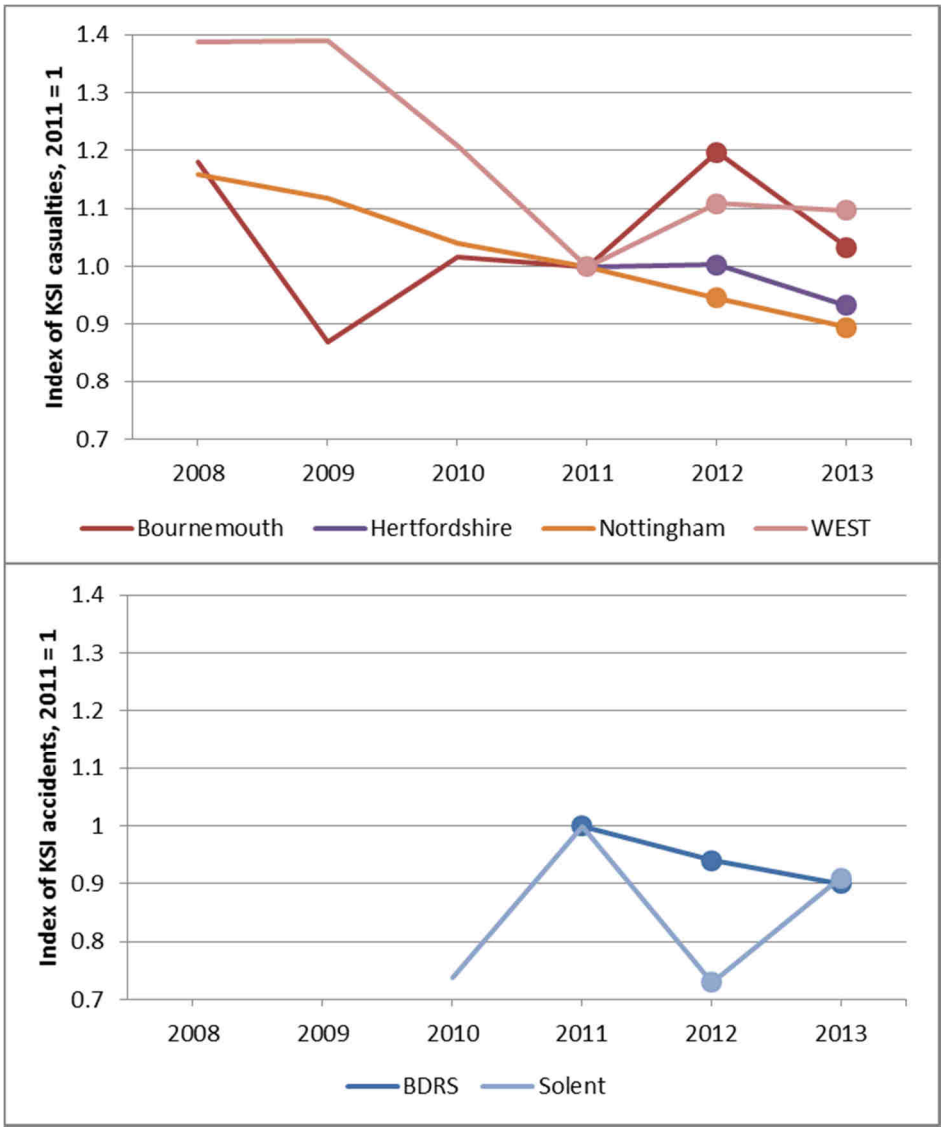


Open circles show years when some Large Projects were receiving funding; filled circles show years when all Large Projects were receiving funding. Note that trends for 'car' and 'motorbike' individually may not be the same as the trend for 'car/motorbike', as the risk profile for these modes is quite different.

The two Large Projects providing five year rolling averages (Nottingham and BDRS), show indications of an overall downward trend reflecting the national picture shown in Figure 16.1. However in the case of BDRS no figures are provided for the period before LSTF funding and in Nottingham the decrease was a continuation of the trend prior to the LSTF. In three of the other four Large Projects providing data for more than two years (Bournemouth, Solent and WEST), the overall picture is of considerable fluctuation from year to year and no clear evidence of a downward trend.

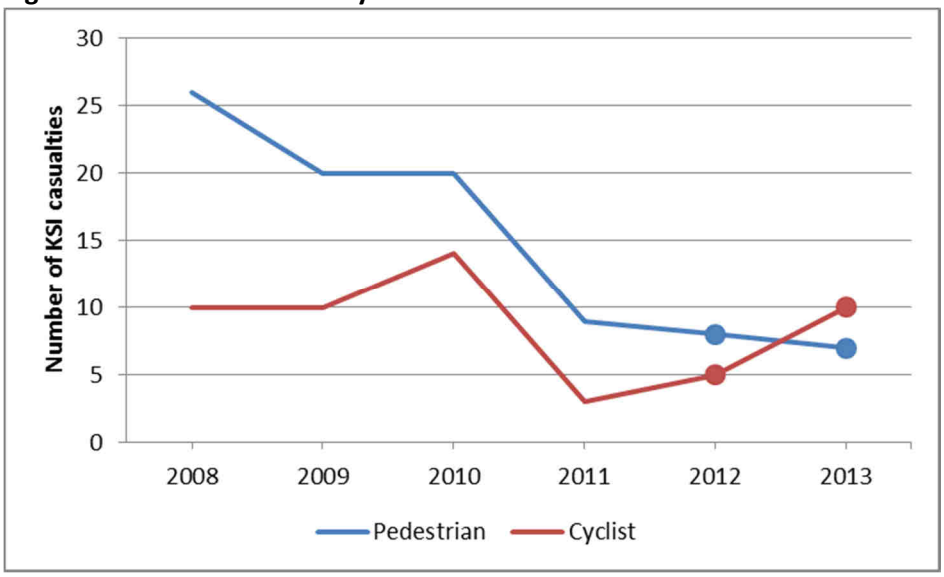
It is important to note that where LSTF interventions encourage a growth in cycling or walking, this could result in an increase in casualties among these vulnerable road users. In Bournemouth (the Large Project which provided figures for pedestrians and cyclists including the period before and immediately after LSTF funding), cyclist casualties on the LSTF corridor have shown a slight increase since LSTF funding, reversing a period of overall decline (see Figure 16.3).

Figure 16.2: Road safety trends in six Large Projects



Filled circles show years when Large Projects were receiving funding

Figure 16.3: Pedestrian and cyclist casualties in Bournemouth



Filled circles show years when Bournemouth Large Project was receiving funding

Table 16.2: Road safety statistics indexed to 2011/12: Large Projects providing data since 2011

	2008	2009	2010	2011	2012	2013	*Notes*
BDRS				1	0.93	0.90	Area wide KSI accidents 5 year averages
Bournemouth	1.18	0.87	1.02	1	1.20	1.03	LSTF corridor KSI casualties
Hertfordshire				1	1.00	0.93	Area wide KSI casualties
Nottingham	1.16	1.12	1.04	1	0.95	0.90	Area wide KSI casualties 5 year averages
Solent			0.74	1	0.73	0.91	LSTF corridor KSI accidents
WEST	1.39*	1.39*	1.21	1	1.11	1.10	Area wide KSI casualties

Highlighted grey cells are from the first year of LSTF funding onwards: either Key Component funding in 2011/12 or Large Project funding in 2012/13.
* average for 2005 - 2009

Table 16.3: Road safety statistics

	2008	2009	2010	2011	2012	2013	*Notes*
BDRS				532	500	479	Area wide KSI accidents, 5 year averages
Bournemouth	72	53	62	61	73	63	LSTF corridor KSI casualties
CENTRO					134	84	LSTF corridors KSI accidents
Hertfordshire				413	414	385	Area wide KSI casualties
Nottingham	179	173	161	154	146	138	Area wide KSI casualties, 5 year averages
Solent			90	122	89	111	LSTF corridors KSI accidents
Telford	0	0	0	2	0	0	Box Road LSTF site KSI casualties
WEST	358*	358*	312	258	286	283	Area wide KSI casualties

Highlighted grey cells are from the first year of LSTF funding onwards: either Key Component funding in 2011/12 or Large Project funding in 2012/13.
* Average for 2005 – 2009.

16.5 Conclusions on road safety outcomes

Table 16.4 summarises the findings on road safety. At this interim stage[74], it is not possible to establish whether the changes can be attributed to the LSTF interventions; only five Large Projects have provided data for the LSTF areas specifically. Of these, two (CENTRO and Merseyside) provided data for just two years and another (Telford) was for such a small area that data for a longer time period would be needed before definitive conclusions could be drawn. The remaining two (Bournemouth and Solent) show such large fluctuations that it is not yet possible to determine whether the LSTF has influenced road safety outcomes.

Five of the projects have seen an improvement in road safety since LSTF funding. However in CENTRO and Merseyside, this was only from one year to the next, so the long term trend is not clear.

Of the Large Projects with longer-term data, Nottingham reported a city-wide reduction in KSI casualties (continuing a previous trend) and Bournemouth recorded large fluctuations in KSI casualties on the LSTF corridor.

There was no clear association between road safety objectives and improving road safety after LSTF funding.

Table 16.4: Overview of outcomes related to road safety

Large Project	Over-view	Summary of change since start of LSTF project~	Attributable to LSTF?
BDRS		No specific figures are provided for the LSTF areas. Comparing 5 year averages, KSI accidents across the county fell from 532 in 2007-11 to 500 in 2008-12 and 479 in 2009-13: a reduction of 10%. This is less than for all Large Projects shown in Figure 16.1.	-
Bournemouth		Data on KSI casualties on the LSTF corridor area for individual years show variations between years, but no consistent trend.	-
CENTRO		On the LSTF corridors, KSI accidents fell by 37% between 2012-13 and 2013-14.	-
Hertfordshire		No specific figures are provided for the LSTF areas. Comparisons of KSI casualties in the Hertfordshire area show no change between 2011 and 2012, but a reduction of 7% in 2013.	-
Merseyside		The number of injury accidents for the roads in the LSTF 20mph zone fell between 2013 and 2014 by 16%.	-
Nottingham		No specific figures are provided for LSTF areas. The 5 year rolling average of KSI casualties in Nottingham City fell by 20% between 2005-09 and 2013-14; the decrease since LSTF funding continued the previous trend.	-
Reading		No information provided.	-
Solent		KSI accidents for the major roads in three groups of LSTF corridors show fluctuations since 2010. Two corridors recorded an increase of around 10%, which is similar to that for Hampshire as a whole, while there was an increase of around 60% on the group of corridors into Southampton from the west and north west.	-

[74] In order to establish whether any change is attributable to LSTF interventions, it would be necessary to have fairly long post-intervention time-series KSI data that was specific to areas or locations where road safety measures (e.g. 20mph limits) had been introduced. This information is not yet available (and may not be available until after the final meta-analysis has been completed).

Large Project	Over-view	Summary of change since start of LSTF project~	Attributable to LSTF?
Surrey	■	Data provided for 2013 only.	-
Telford	■	In the LSTF area for which figures were provided, there were so few casualties that no change could be detected.	-
TfGM	■	No information provided.	-
WEST	■	In the West of England sub-region the number of KSI casualties fell by 21% between 2005-09 and 2013, but did not decrease after LSTF funding.	-

■ decline in safety; ■ no change in safety ■ improvement in safety; ■ insufficient data to assess changes in safety.

~ Different Large Projects treat different time periods as 'baseline'. Changes summarised here are all since 2011/12 for Large Projects that received Key Component funding (BDRS, Hertfordshire, Merseyside, Nottingham, Surrey, Telford, TfGM and WEST), and since 2012/13 for Large Projects that did not receive Key Component funding (Bournemouth, CENTRO, Reading, Solent).

PART V: CONCLUSIONS

17 Key findings and lessons

17.1 Introduction

This chapter provides a summary and discussion of key findings at this interim stage, relating these back to our original research questions[75] and, where possible, relating reported outputs (activities) to observed outcomes. It is worth noting that at this stage, the full effect of some activities may not yet be apparent – that is, there may be a lag between outputs and outcomes, as certain changes in behaviour might be expected to build up over time.

The chapter then sets out some lessons for the design and monitoring of future programmes, relevant both for the final phase of data collection and reporting by the Large Projects between now and 2016, and for future local sustainable transport programmes.

17.2 Main strands of activity

Research Question 1:
What were the main strands of each Large Project's approach, and how did they relate to the objectives of the Fund? How did the Large Projects try to intervene to achieve these objectives, in terms of expenditure and outputs? How similar or different are the Large Projects in their approaches and outputs?

Inputs

Most of the Large Projects had spent about half of the total grant award by the end of 2013/14, although in Hertfordshire and Nottingham the proportion was substantially higher (roughly three-quarters) and in TfGM it was lower (roughly a quarter). This is likely to be a reflection of the fact that it typically takes 9-12 months for local authorities to recruit delivery teams for new projects, and also a reflection of the length of time taken to procure services that are delivered by external consultants. The expenditure rate during the final year of the project (i.e. 2014/15) is likely to have been substantially higher, although this will not be confirmed until Large Projects complete their 2014/15 Outputs Surveys.

This means that we might expect that the outcomes reported at this interim stage will be substantially less than the final outcomes of the Large Projects – an important point to keep in mind as we look at what has been achieved so far, and also as we consider the extent to which observed outcomes can credibly be attributed to LSTF activities at this stage.

Approaches and outputs

Although the main strands of each Large Project's approach differed in terms of the detail, and in terms of the proportion of funding allocated to different types of intervention, there were some common themes:

- Several of the Large Projects had adopted a **'corridor' approach**, in which infrastructure, such as bus priority measures and cycle paths, and behaviour change activities, such as household-based

[75] Findings are reported in the same order as the chapters in sections I, II and IV of the report, incorporating key points from the case studies in section III where appropriate. Research questions as originally defined followed a slightly different order, and hence appear here out of strict numerical sequence.

personalised travel planning or workplace travel planning, were concentrated along a limited number of main routes.

- A number of Large Projects had adopted **innovative approaches to travel behaviour change** that went beyond the activities that are now quite well established as part of workplace travel planning, school travel planning and household personalised travel planning. For example, Large Projects had experimented with workplace-based personalised travel planning and workplace-based free bus ticket offers; marketing along public transport corridors (including distribution of free bus tickets to households); neighbourhood-based approaches such as virtual 'community smarter travel hubs'; and engagement with people at times of transition (e.g. from school to college or the workplace). While none of these types of activity are entirely new, the scale on which they were being delivered is probably larger than in the past.

- Reflecting the Fund's core focus on supporting the local economy while reducing carbon, several Large Projects had expended considerable effort in improving access by sustainable modes to **'hard-to-reach' car-dependent employment sites**[76] – with the dual aims of improving access to jobs and widening the workforce pool available to employers. While some of these initiatives had been successful (for example, the support for new bus services to ASOS in the BDRS Large Project), others had proved very challenging because of the difficult location (peripheral and close to major roads) of the sites in question. In a sense, the LSTF investment was having to 'work uphill' to try to redress the legacy of past land-use planning decisions.

- Also reflecting the Fund's core focus on the local economy and carbon reduction, a number of Large Projects had tried to develop a **suite of workplace travel behaviour change services**. These tended to feel quite different to workplace travel planning programmes in the past, in that the emphasis was on the local authority providing services directly to employees (e.g. travel information, cycle training, discounted bus tickets), with the employer apparently playing a less active role. Initial signs were that this approach was resulting in rather smaller reductions in car use than have been observed from more comprehensive site-based approaches in the past.

- A number of Large Projects had focussed considerable effort on **supporting job-seekers and those who had been offered a job**, through a suite of services that were tailored to the needs of the individual. These included free one month travel passes, free bicycles and cycle training, and personalised travel information or 'travel training'. This was clearly pertinent to the Fund's focus of supporting the local economy. It is also interesting because the time of transition from being out of work to being in work may be a particularly opportune moment to influence future travel patterns towards lower-carbon choices – that is, this group might be expected to be easier to engage and possibly also more receptive than existing employees, although we do not have clear evidence of this.

- Turning to the secondary objectives of the Fund, all the Large Projects were **promoting active travel** (cycling and walking) to some degree, with seven projects doing so quite intensively. While Large Projects varied in their approach, those for which this was a major focus tended to be implementing a wide range of measures to address all the barriers to active travel, ranging from infrastructure (cycle paths, cycle parking) to new services (e.g. free adult cycle training, loans of bicycles, cycle 'hubs' with secure parking and storage lockers) and promotion (e.g. led walks and cycle rides, cycle challenges, 'Beat the Streets' walking challenges).

[76] For example, ASOS and Sheffield Advanced Technology Park (BDRS); Maylands Business Park (Hertfordshire); Surrey Research Park (Surrey); Bristol North Fringe (WEST).

- The Fund's secondary objective of delivering wider **accessibility and inclusion benefits for the community** figured less prominently in the outputs and activities described by the Large Projects. However, this objective was a major focus for Merseyside, which had a 'grass roots' approach in which voluntary organisations worked with communities that had been identified as having narrow travel horizons. It was also evident in TfGM's 'Local Link' community transport services to employment sites; one-to-one travel training funded by a few Large Projects; and the support offered to job-seekers by a number of the Large Projects.
- The Fund's secondary objective of **improving safety** also featured less prominently. However, it was a significant focus for Nottingham and WEST Large Projects, who were in the process of designating area-wide 20mph zones across most roads in the cities of Nottingham and Bristol. Cycle training for adults and children, child pedestrian training and road safety education, and safe routes to schools schemes, also figured in some Large Projects although these probably represented a small proportion of total expenditure and effort.
- Finally, the Fund's secondary objective of **improving air quality and reducing noise** was not a significant focus of activity, except in so far as schemes to reduce traffic might be expected to lead to lower emissions and noise. One specific example of activity relevant to this objective is the BDRS work to promote eco-driving and their ECO Stars fleet recognition scheme.

17.3 Traffic and car use

Research Question 2:

In each Large Project separately, and across the 12 Large Projects as a whole, did traffic volume / levels of car use improve (pre-post comparison)? Can any changes in traffic volume be attributed to LSTF interventions?

Outputs

All the Large Projects had undertaken a wide range of interventions that might be expected to influence overall traffic volumes, including measures to improve public transport services and walking and cycling facilities, and behaviour change programmes designed to encourage modal shift towards sustainable travel choices. There was relatively little evidence, however, of restraint measures designed to discourage car use (with Nottingham being a notable exception where a workplace parking levy, although not directly related to the LSTF programme, was an important part of the overall transport strategy).

Outcomes

Using NRTE data at the local authority level, all of the 10 Large Projects for which data were available showed a decrease in traffic in 2013 (the most recent year for which data were available), relative to a 2009-2011 baseline. **The overall change in these 10 Large Projects was a reduction of -1.06%.** Traffic also decreased by a slightly smaller amount over this period (by -0.75%) in our national comparator local authorities (all non-Large Project English local authorities outside London).

This reduction in traffic in the Large Project local authority areas occurred despite increases in population in all Large Project areas (with nine out of 12 Large Project areas showing a greater rate of population increase than in the national comparator local authorities). It also occurred despite increases in the number of jobs in nine Large Project areas (in every case greater than the increase in jobs in the national comparator local authorities).

Thus the general picture in the Large Project areas is one of traffic volumes going down by about the same amount as in other parts of the country (or slightly more), despite greater increases in

population and the number of jobs than elsewhere. Nottingham stands out, with a reduction in traffic of -2.4%, over the same period as an increase in population of +2.3% and an increase in jobs of +2.4%. Also of note are Bournemouth and Reading, with bigger traffic reductions than in other parts of the country despite bigger increases in population and jobs.

Trends in traffic at the project level – that is, using count sites selected to be relevant to the areas of intervention – were reported in eight Annual Outcomes Reports, using a variety of metrics[77]. The general picture for most of these is of declining traffic volumes, consistent with the NRTE evidence, and starting before the beginning of LSTF intervention.

It is not possible to say to what extent the observed recent reductions in traffic may be attributable specifically to LSTF interventions. All the Large Projects have undertaken a very wide range of initiatives, both before and during the period in question, that might be expected to influence traffic volumes, and it was not possible for this meta-analysis to gather full data on these wider initiatives. Given the contrasting trends shown by traffic as compared to population and jobs, it is clear that the fall in traffic is not due to reduced activity. It seems at least plausible that an ongoing programme of sustainable transport interventions, taking place over a number of years, and of which the LSTF programme forms just the latest manifestation, has been one cause of the observed traffic reductions. However, a contribution from other factors cannot be ruled out – most notably the declining trend in per capita car use ('peak car') that is evident nationally and internationally.

17.4 Economy: congestion

Research Question 6:

In each Large Project separately, and across the 12 Large Projects as a whole, what were the economic impacts, particularly in relation to congestion relief [and support for job-seekers]? Can any economic effects be attributed to LSTF interventions?

Outputs

At this interim stage, few Large Projects had completed significant measures that would be expected to have an effect on congestion for general traffic. Three were carrying out preparatory work to improve their ability to monitor traffic flows and manage congestion; three had carried out modest measures to improve bus reliability at specific locations or to improve information to drivers about congestion they might face ahead; one had carried out a large number of road and junction infrastructure alterations on the targeted corridor.

Outcomes

DfT congestion data for locally-managed 'A' roads (average vehicle speeds in the morning peak) shows a similar trend for the Large Projects overall as for our national comparator local authorities. Looking at the period since 2007/08, average vehicle speeds peaked in 2011/12, and have since then declined (i.e. congestion has worsened). This trend closely mirrors the economic cycle.

For four Large Projects where LSTF activity was concentrated on a limited number of corridors, average vehicle speeds on locally-managed 'A' roads within the targeted corridors were compared with average vehicle speeds at the local authority level (i.e. including both the targeted corridors and areas that were not the focus of activity). The pattern on the targeted corridors is fairly similar to the pattern at the local authority level.

[77] With seven providing data that was suitable for analysis for this report.

Four Large Projects reported data on bus punctuality in their Annual Outcomes Reports. These showed modest improvements in punctuality, although it is not clear to what extent these may be attributable to LSTF interventions.

17.5 Bus use

Research Question 4:
In each Large Project separately, and across the 12 Large Projects as a whole, did public transport use increase (pre-post comparison)? Can any changes in public transport use be attributed to LSTF interventions?

Outputs

Most Large Projects had completed some interventions intended to increase bus use. However, most network-wide improvements, such as new smart card schemes, were yet to come into operation, and hence would not be expected to show any effect at this stage. Other improvements, such as bus priority measures, improvements to waiting facilities, and real time passenger information, were also in general only partially completed and hence unlikely to show a discernible effect at this interim stage. There were a few exceptions, however, in which works were well advanced, concentrated in key corridors, and supported by operator investment.

Seven Large Projects had funded increases in bus services on specific routes, and these might be expected to already show a discernible effect on patronage on those routes.

Outcomes

Bus patronage changes across entire Large Project areas since the start of the LSTF programme are small. Nearly all Large Projects show a small rise in patronage for the last reported year, but this cannot confidently be attributed to the LSTF interventions.

For those Large Projects that had concentrated their activity on a limited number of corridors, data at the corridor level should provide a greater chance of detecting any uplift in patronage as a result of interventions. However, none of the Outcomes Reports were able to provide information at the corridor level at this stage, for a range of reasons.

Six Large Projects provided route-specific patronage data for new or improved bus routes. This covered 19 bus routes in total. Detailed scrutiny of all 19 routes was undertaken to assess the amount of patronage uplift and the extent to which any uplift could be attributed to LSTF intervention. In all but one case, it was clear that patronage uplifts could be attributed to the interventions, based on an assessment of timing and nature of the intervention, the timing of the change in patronage trend, comparison with pre-existing patronage and comparison with other routes where no investment had taken place. Of these routes, 13 were likely to continue beyond the end of LSTF funding, either because they had reached commercial viability or because they were part of a longer term strategy for the local authority concerned. **These 13 routes had together resulted in an estimated annual patronage uplift of 1.3 million trips, replacing an estimated 6.8 million car kilometres per year, and avoiding an estimated 1,300 tonnes CO_2e per year**. Some 90% of these car mileage and carbon savings were due to routes that appeared fully commercial at the new level and hence likely to continue indefinitely.

The BDRS case study found clear evidence that linked outputs (new bus services or enhanced bus service frequencies) to positive outcomes (increased patronage). It also illustrated the potential for a time-limited injection of revenue funding to achieve patronage growth to the point that bus services become commercially viable. While most of the new or enhanced BDRS Jobconnector bus services

have been successful, one unsuccessful service (which was subsequently disbanded) also highlighted the importance of establishing commuter public transport services as soon as a new employment site is occupied, as was done at the ASOS site.

17.6 Active travel: cycling

Research Question 5:

In each Large Project separately, and across the 12 Large Projects as a whole, did active travel increase (pre-post comparison)? Can any changes in active travel be attributed to LSTF interventions?

Outputs

All Large Projects had delivered some interventions intended to increase cycling, and in seven Large Projects there had been many interventions. The Nottingham case study illustrated the range and scale of interventions, including, amongst other things, 58 km of roads designated with 20 mph limits; 400 cycle hire bikes in circulation; 425 bikes loaned to staff and students at the universities; and 1,600 cycle parking spaces introduced or upgraded.

Outcomes

There is so far insufficient evidence to identify overall (i.e. area-wide) changes in cycling that are clearly attributable to LSTF interventions.

Area-wide evidence on changes in cycling is available from the Active People Survey, but the data currently only covers the period to 2012/13; this is likely to be too early for any effect attributable to LSTF interventions to be apparent, since few interventions would have been completed by that early stage in the programme.

The Active People Survey does however provide information on the context within which cycling investment was taking place. Between 2010/11 and 2012/13 (that is, in the period leading up to the LSTF programme and its early days) the Active People Survey shows cycling increasing in three Large Project areas, Reading, Merseyside and WEST. Levels of cycling were decreasing in two Large Project Areas, and stable in the other Large Project areas.

Only five Outcomes Reports included data from automatic cycle counters that enables an assessment of changes in cycling levels during the period of the LSTF programme (Bournemouth, Hertfordshire, Merseyside, Nottingham and WEST). All show cycling levels increasing between the start of the LSTF programme and 2013/14 or 2014/15. For the three Large Projects where earlier data are available this is a continuation of a previous upward trend.

Surveys to measure the effect of individual cycling interventions show some promising results in a number of Large Projects. For example, in Nottingham, the 11 cycle hubs providing secure cycle parking at interchanges were accessed by over 3,000 people per month; and in BDRS, 70% of the 1,300 people who registered to lease cycles had previously commuted by car and 65% committed to cycling at least once a week.

The Nottingham case study found that there was clear evidence that the cycle hire, cycle parking and cycle training schemes had encouraged cycling, so that although it was not possible to say how much of the overall growth in cycling was directly attributable to the LSTF programme, it did appear that the LSTF measures had contributed to the observed growth.

Thus the general picture is of a significant amount of activity to encourage cycling, but rather limited evidence at this stage of the effect of this activity on overall cycling levels. Nevertheless, accepting the limitations of the data, it is worth noting that **six of the seven Large Projects that had implemented many cycling interventions have shown some indications of increases in cycling since the start of the LSTF programme**, measured either by automatic counts, or cordon counts, or using evidence from individual interventions.

17.7 Active travel: walking

Research Question 5:
In each Large Project separately, and across the 12 Large Projects as a whole, did active travel increase (pre-post comparison)? Can any changes in active travel be attributed to LSTF interventions?

Outputs

Seven Large Projects had delivered some interventions intended to increase walking, and in four Large Projects there had been many interventions. A few Large Projects were making significant public realm improvements – for example, Telford's redesign of the town centre Box Road as a shared space (partially complete). Other interventions included 20mph zones, pedestrian route improvements, and behaviour change measures such as a programme of led walks in disadvantaged communities as part of the 'Travel Solutions' initiative in Merseyside.

Outcomes

As with cycling, there is so far insufficient evidence to identify overall changes in walking that are clearly attributable to LSTF interventions.

Evidence from the National Travel Survey suggests that walking in urban areas of England outside London has been in decline since 2005-2007. This is the case whether measured in terms of trips, distance, or mode share. This provides a context against which the evidence from the Large Projects should be considered.

Seven Outcomes Reports included evidence from manual counts of pedestrians. There was limited evidence for an increase in walking into Reading town centre; an increase in walking into the urban centres in TfGM; and an increase in walking and cycling (combined) in one of the low speed limit zones in Nottingham. However, pedestrian counts indicated a decrease in levels of walking in three of the BDRS towns (Barnsley, Doncaster and Sheffield) as well as in Bournemouth and Merseyside. There was no change in Telford and an inconclusive result in Rotherham, the fourth BDRS town.

Surveys to measure the effect of specific walking interventions show some promising results in a few Large Projects. For example, in one of the 'Walkboost' schemes in BDRS, 740 people had taken part in walks. In TfGM, 12% of people who had received personalised travel planning reported walking more, mostly due to personal travel planning at least to some extent (while less than 1% reported walking less).

The general picture is therefore of **some activity to encourage walking, but with a less strong focus than for cycling.** Some intervention-level monitoring data demonstrates that specific schemes have resulted in increased levels of walking (or reported increases), although these are small in scale.

17.8 Economy: support for job-seekers

Research Question 6:
In each Large Project separately, and across the 12 Large Projects as a whole, what were the economic impacts, particularly in relation to [congestion relief and] support for job-seekers? Can any economic effects be attributed to LSTF interventions?

Outputs

Across all 12 Large Projects, **the total number of job-seekers helped so far (to March 2014) is approximately 35,000.** This is equivalent to 7% of the number of people in the 12 Large Project areas who were unemployed during 2013/14.

Merseyside and Nottingham in particular have developed large-scale support programmes for job-seekers, reaching a substantial proportion of unemployed people and offering a comprehensive range of services. The Merseyside case study illustrated the range and scale of interventions, including approximately 6,000 people offered free travel passes for the first month of new employment; 3,600 people offered personalised journey plans; and 760 people offered a free bicycle to get to work, as well as an extensive programme of activities in disadvantaged communities to engage people who were quite distant from the job market.

Outcomes

At this stage in the programme, there is no clear indication that the various forms of travel support offered to job-seekers have resulted in lower overall levels of unemployment than would otherwise be the case.

However, small-scale surveys suggest that the various support services are helpful in enabling people to get jobs. For example, evidence from BDRS, Bournemouth, Nottingham and Solent shows that between 5% and 43% of people who were offered free or discounted public transport tickets or cycle vouchers to help in their job search subsequently succeeded in gaining work. While the figures at the higher end of this range are unlikely to be directly attributable to the interventions, the figure of 5% in BDRS is for people who gained employment as a result of work placements accessed using their free tickets, and hence appears attributable to the intervention.

From CENTRO, there is evidence that over three-quarters' of people who were offered free bus travel for the initial period in a new job were likely to still be in work six months later, and a similar proportion were still travelling to work by bus.

Other evidence suggests that the job-seeker support programmes are enabling job-seekers to make trips that they would not otherwise make to interviews, training and work placements, hence intensifying their job search; that they are enabling people to accept job offers that they would not otherwise be able to take up; and that having accepted a job offer, they are enabling people to stay in work.

17.9 Mode shift

Relevant to several Research Questions:

Research Question 2:

In each Large Project separately, and across the 12 Large Projects as a whole, did traffic volume / levels of car use improve (pre-post comparison)? Can any changes in traffic volume be attributed to LSTF interventions?

Research Question 4:

In each Large Project separately, and across the 12 Large Projects as a whole, did public transport use increase (pre-post comparison)? Can any changes in public transport use be attributed to LSTF interventions?

Research Question 5:

In each Large Project separately, and across the 12 Large Projects as a whole, did active travel increase (pre-post comparison)? Can any changes in active travel be attributed to LSTF interventions?

Outputs

All the Large Projects delivered a range of behavioural change programmes designed to encourage mode shift away from single occupancy car use to more use of public transport, walking and cycling. There was a strong focus on engagement with workplaces, which were a significant focus for nine Large Projects, with nearly 1500 businesses receiving some form of support.

Household personalised travel planning projects were implemented on a fairly large scale by four Large Projects, and on a medium-scale by two, with more than 80,000 households overall receiving personalised travel planning information, incentives or advice. Seven Large Projects have also delivered large- or medium-scale projects to provide personalised travel information or incentives to people in other contexts (at workplaces and other locations), with nearly 65,000 adults receiving this. There were also a range of initiatives with schools, universities, at railway stations and through community hubs.

Outcomes

Across five Large Projects, 61 workplaces had useable data from baseline and follow-up employee surveys before and after involvement in workplace travel initiatives. Of these, 37 showed a decrease in car mode share and 24 showed an increase. Using random effects meta-analysis, car modal share decreased on average in absolute terms, with a pooled effect size of -2.5 percentage points (95%CI -4.3%, -0.7%), p=0.007. The meta-analysis suggests that the observed reduction was not simply due to chance, but it is possible that lower response rates in some follow-up surveys may have introduced a bias. The reduction in car use achieved at the workplaces was comparable to results reported from a previous town-wide engagement programme (in Peterborough). However, it was small compared to previous evidence of the effects that can be achieved under ideal conditions.

Three Large Projects cited evidence of outcomes of individual workplace initiatives. The BDRS Busboost project appeared to have resulted in a significant modal shift from car to bus amongst participants; and surveys by Reading and WEST of workplace-PTP recipients or people engaged via roadshows at various locations suggested that these services had influenced between a quarter and a third of participants to change how they travelled.

Evidence of the outcomes of non-workplace initiatives was more limited, though positive results were still reported, including from surveys of schools and residential PTP recipients.

17.10 Longer-term impacts

Relevant to two Research Questions:

Research Question 3:

In each Large Project separately, and across the 12 Large Projects as a whole, did carbon emissions reduce (pre-post comparison)? Can any changes in carbon emissions be attributed to LSTF interventions?

Research Question 7:

In each Large Project separately, and across the 12 Large Projects as a whole, did road traffic casualties (KSIs) go down (pre-post comparison)? Can any changes in the number of casualties be attributed to LSTF interventions?

Carbon emissions

Per capita carbon emissions from transport were declining in all 12 Large Projects in the six years prior to the start of the LSTF programme, as they also were nationally, according to DECC local authority estimates (available for the period to 2012 but not yet released for more recent years).

Four Large Projects made their own estimates of overall changes in carbon emissions from transport for the period to 2013 (that is, including part of the LSTF programme period). Reported figures are totals rather than per capita, and hence influenced by changes in population. Data for the LSTF corridor in Bournemouth and for Nottingham City showed reductions between 2012 and 2013. Data for Greater Nottingham, Reading and Merseyside showed an increase over that period.

Five Large Projects had made estimates of the carbon impacts of individual schemes, including car sharing; public transport substituting for car journeys; a workplace challenge; ECO Stars business fleet management; eco-driver training; and the promotion of ultra-low emission vehicles[78]. These used a range of assumptions, not always fully described, and unlikely to be consistent with one another. However, quoted annual emissions savings were in the order of 0.1 – 0.4kT CO_2 per Large Project, equivalent to between 0.01% and 0.2% of total carbon emissions from transport in the respective local authorities. The schemes for which estimates of carbon impacts had been made represented a small but unknown proportion of total LSTF investment, and it would therefore be expected that overall carbon savings would be greater than these figures.

In addition, the study team carried out its own estimations of carbon savings from bus service enhancements in BDRS, and from a small part of the Travel Solutions project on Merseyside. To a first order of magnitude, these were consistent with the estimates made by the Large Projects. For BDRS, boosts to bus services to the point of commercial viability were estimated to have delivered annual ongoing carbon savings of approximately 0.4 kT CO_2e, for roundly 5% of total LSTF project expenditure. If other BDRS project expenditure were, on average, similarly effective, this would mean that the BDRS Large Project would deliver annual savings of the order of 8 kT CO_2e, roughly equivalent to 0.3% of the BDRS local authorities' total annual carbon emissions from transport. We emphasise that these figures are highly indicative. Nevertheless, they suggest that we should not rule out the possibility that there may have been worthwhile carbon savings from the Large Projects.

[78] Most of these schemes were selected because they were discreet initiatives, aiming to achieve one particular behaviour change, and relatively easy to quantify. In practice, the biggest carbon savings from the programmes may come from larger scale changes in travel behaviour, including more efficient travel patterns, and modal shift, as a result of a range of reinforcing interventions. These may only become evident towards the end of the programmes when the full behavioural impacts of the work can be properly assessed.

It would be worthwhile for the Large Projects to undertake further work to estimate 'from the bottom up' (i.e. by estimating the contributions from individual schemes) the magnitude of carbon savings attributable to LSTF interventions[79]. The LSTF carbon case study may also provide insights on this issue.

Air quality

Improvements to air quality were not a direct focus of activity for the Large Projects, although air quality was mentioned by many Large Projects as one issue of local importance.

There is some evidence on trends in air quality from the Annual Outcomes Reports. Six of the projects had data on air quality that could be analysed, of which two (Bournemouth and Merseyside) were reporting for the project area as a whole, whilst five (BDRS, Bournemouth, Hertfordshire, Nottingham and WEST) (also) provided data relating to Air Quality Management Areas. There are at least 16 AQMAs that could benefit from the LSTF work.

At this stage, there are insufficient time-series data to enable conclusions to be drawn about any effects of LSTF interventions on air quality.

Road safety

The Large Projects had carried out a range of interventions, such as 20 mph speed limits, cycle infrastructure, cycle training, and child pedestrian training and road safety training, which might be expected to offer road safety benefits. However, the scale of these was modest at this stage in the programme.

Six of the Large Projects have recorded safety improvements, five since the start of LSTF funding. One Large Project recorded no change and one showed an increase in the number of accidents in which at least one person was killed or seriously injured (KSI).

Overall, the Large Project areas have seen a reduction in KSI casualties since 2005-2007 which began before LSTF funding and has been rather less than the reduction in other areas of England outside London.

At this interim stage, there is not enough evidence to establish whether the LSTF interventions have resulted in changes in road safety. Only five Large Projects have provided data for the LSTF areas specifically; two of these show considerable fluctuations from year to year and three are limited in scale or length of coverage of the data.

After the end of the LSTF programme, it will be important to examine any evidence on road safety in Nottingham and WEST, as both these Large Projects are in the process of designating city-wide 20mph zones as part of their LSTF programmes. Unambiguous evidence on the effect of these schemes may not emerge for several years, given the variability of road casualty numbers from year to year.

[79] A number of Large Projects plan to use the DfT's Basic Local Authority Carbon Tool as part of their work for their final Outcome Reports to generate an estimation of carbon dioxide emission reductions from individual schemes.

17.11 Lessons for the design and monitoring of future programmes

Research Question 8:
What lessons can be learnt for the design and monitoring of future programmes?

Recommendations for the design of future programmes

At this interim stage, it is premature to draw firm conclusions about which aspects of the Large Projects' activities have been successful and which less so. Most Large Projects had spent only about half of their grant allocation during the period covered by this meta-analysis, and it is therefore likely that results will be significantly different by the end of the programme.

However, it is already clear from our review of Annual Outputs Surveys and Annual Outcomes Reports that the programme has been successful in encouraging innovation. In some cases the innovation has been to expand tried-and-tested activities to a much larger scale than attempted previously. Some new approaches that have been tried appear to be worth in-depth evaluation and possible wider adoption in future programmes. These include:

- **Comprehensive travel support programmes for job-seekers**
- **Corridor treatment programmes** (combining infrastructure changes, better bus services and behaviour change activities on a single route)
- **City-wide 20mph areas**
- Neighbourhood approaches such as **community smarter travel hubs** or **community active travel officers**.

Although not new, it is also clear that **pump-priming of new commuter bus services** has been a significant success for several Large Projects.

Some generic lessons about the design of the LSTF programme that may be valuable to consider are set out here for debate and further exploration as part of the ongoing *What Works* evaluation of the LSTF programme:

- The objectives of the Fund were very wide-ranging. As a result of this, some of the secondary objectives were given little attention when Large Projects designed their programmes – and indeed, it would have been almost impossible to address all of them. The high-level nature of the objectives also meant that in practice, almost any transport project could be included (including some that are likely to have had negative consequences in relation to the Fund's core objective of reducing carbon). While accepting that the six high-level objectives are all worthwhile and that it is important to give local authorities a wide range of options to design programmes suited to their local circumstances, there could be merit in promoting a more focussed approach. Thus, future funding programmes could identify a set of **focussed sub-sectors,** so that Large Projects would be encouraged to concentrate their efforts. These sub-sectors might be modal e.g. 'Cycling Towns', 'Better Bus Areas'; or related to just one objective e.g. reducing carbon, improving air quality, increasing active travel; or related to a particular journey purpose e.g. sustainable commuting; or related to a target audience of special interest e.g. getting job-seekers into work.
- The short-term nature of the programme means that a significant proportion of time will have been in the 'start up' and 'wind down' phases, reducing the period during which Large Projects will have been operating at full capacity and with a fully experienced delivery team. This is

evident from our analysis of both Outputs Reports and Outcomes Reports[80]. This inevitably introduces substantial inefficiencies. Some Large Projects had less than three years of funding (July 2012 – March 2015). For projects of this scale and complexity, involving many partners, multiple local authorities within each Large Project, and many different schemes, a **significantly longer funding period (possibly with the same amount of grant spread over more years)** would probably lead to more effective implementation and better value for money.

- It was a major strength of the programme that it included **both revenue and capital funding.** It is evident that the combination enabled Large Projects to develop complementary schemes: for example, combining construction of cycle lanes in a particular neighbourhood with cycle training and led cycle rides aimed at encouraging residents to take advantage of the new infrastructure.

Recommendations for monitoring of future programmes

During the course of this meta-analysis of the Large Projects' various monitoring reports, the research team has identified some weaknesses of the approach to monitoring, as well as some important strengths. Some of the weaknesses are inherent in the way the monitoring approach was set up at the outset, and are not possible to remedy at this stage in the LSTF programme, but are outlined here to help improve future monitoring practice. Others, which *can* be addressed as part of this programme, are discussed in the next section.

Key lessons are that it would have been fruitful to:

- Design an **approach to data collection and reporting in which outputs and outcomes were much more closely linked**. An evaluation of whether change can be attributed to a specific set of interventions requires a detailed understanding of the nature, timing and scale of those interventions. The separation of outputs reporting (in Annual Outputs Surveys) from outcomes reporting (in Annual Outcomes Reports), with no consistent linkage between the two, has made it difficult to draw conclusions about the extent to which positive trends in, for example, bus patronage, levels of cycling, or congestion may be attributable to the activities that have been undertaken.

- Further **standardise reporting of scheme elements** within Annual Outputs Surveys. Large Projects adopted different approaches to defining scheme elements: in some cases they related to the type of intervention, in some cases to the modes of transport affected, and in other cases to geographical location. This made it difficult to disaggregate overall expenditure in a consistent way across the 12 Large Projects, and hence introduced significant uncertainties about the relative emphases of the different Large Projects.

- Ensure **better coordination between Large Projects at the outset, and on an ongoing basis, to ensure greater comparability between Annual Outcomes Reports**. In practice, Large Projects have adopted widely varied approaches to their Outcomes Reports, and in some cases have expended considerable effort in collecting and reporting data that is of limited value. Large Projects were helpful in making a number of changes to their 2013/14 Outcomes Reports in response to recommendations from the meta-analysis research team at the end of the scoping phase of the research, but there were limits to the extent to which this was feasible and, even so, the nature and content of Outcomes Reports was such that a very large amount of checking and clarification was required (amounting to over 100 individual clarification queries). A more

[80] For example, significantly less activity is reported in the first year of each Large Project than in the second and third years.

coordinated approach from the outset would have saved time and enabled more comparison and aggregation of results[81].

- Provide **more detailed guidance to Large Projects specifying the data characteristics required to ensure reported outcomes are attributable to the LSTF interventions**. Indications from reporting to date are that guidance should, *inter alia*, emphasise the importance of sufficient time-series information to assess changes against prior trends, comparator data for non-intervention areas and supportive descriptive material that shows the relationship between the timing and nature of the activity and the putative associated outcome. A greater understanding of the 'height' at which the DfT sets the evidential 'bar' could also help both in-house and outsourced evaluation personnel protect the requirements of dispassionate evaluation from the inherent pressures from project managers to present the upside of project achievements.

- Require that **all unsuccessful initiatives are reported in Outcomes Reports**. Some initiatives have been discontinued for very good reasons and monies diverted to other measures where more could be achieved. These initiatives naturally then fall out of Outputs Reports for subsequent years and also tend to get lost from Outcomes Reports. They may however, provide significant learning power, as shown, for example, in the BDRS case study (Chapter 11).

- **Focus data collection on metrics that would be expected to show observable change** as a result of the schemes being implemented. Some Large Projects reported very high-level metrics such as Gross Value Added, employment levels, life expectancy, child obesity, town centre vitality (e.g. retail vacancy rates), air quality data (including for sites unaffected by LSTF, but with no distinction made), aggregated traffic flows over a large area such as the whole local authority (including substantial areas unaffected by LSTF), and travel behaviour as reported in county-wide travel surveys (including probably insufficient sample sizes in the areas affected by LSTF). While it is accepted that some of these metrics may provide useful context, they are on their own insufficient, since it is highly unlikely that the magnitude of effect from LSTF schemes will be such as to be observable against the 'noise' of many other influences.

- Ensure at the outset of the programme that Large Projects with a significant focus on cycling had a **comprehensive network of automatic cycle counters, all fully functional,** and specifically allocate funds in the programme to ensure that these are maintained for the duration of the programme and several years afterwards. Similarly, ensure at the outset that Large Projects with a significant focus on walking consider how changes can be monitored effectively, since this is an area where the evidence base is weak.

- Require all bus operators in receipt of public money via LSTF to share with the relevant Large Project **detailed patronage data, disaggregated by route**.

[81] The approach to monitoring and evaluation of LSTF was established in the context of a view that DfT's involvement should be 'light touch', with the corollary that 'local authorities know best'. The LSTF Monitoring and Evaluation Framework sought to encourage consistency in the approach to data collection and reporting by the Large Projects, but in practice this proved to be difficult to achieve. In order to enable strong statements to be made by meta-analyses of multi-local authority programmes in future, some additional monitoring and evaluation support for local authorities may be required, especially given the local constraints on analytical capacity. For example, in addition to providing initial guidance and identifying key monitoring parameters, this might include engaging with Large Projects individually on a regular basis to check monitoring is proceeding as planned, and providing structured and regular information-sharing meetings to enable Large Projects to share good practice.

- **Standardise attitudinal and travel surveys.** A number of Large Projects have carried out surveys of attitudes, perceptions and behaviour, or household or workplace travel surveys. In most cases, only baseline surveys are available at this stage, but post-intervention surveys are planned. In future, it would be worth developing sets of standard questions, from which local authorities would be able to select questions relevant to them. This would reduce duplication of effort, and would also increase the potential for comparison and aggregation of results.

- **Avoid artificial boundaries in evaluation based on the funding source**. All the Large Projects were undertaking many activities to encourage sustainable travel, of which those funded by LSTF were just a part. For the purposes of evaluation and attribution of change, it would be valuable for future outputs monitoring to gather information on *all* activities of a particular type (e.g. those intended to increase cycling, or to support job-seekers), regardless of funding source, rather than only to gather information on those activities funded by one specific grant programme.

It has been a strength that:

- Large Projects have where possible sought to provide **long time-series data** (going back around eight years) for key metrics, taking on board the recommendations made at the scoping phase of this meta-analysis. The approach initially adopted by some Large Projects of simply reporting high-level outcome data for a 'baseline' year against which figures for subsequent years were compared did not provide sufficient evidence to be able to make judgments about attribution.

- Large Projects have sought where possible to identify **comparator areas** that have not benefitted from LSTF investment. During the course of the meta-analysis we have sometimes questioned whether the particular areas chosen as comparators are sufficiently similar to intervention areas in terms of socio-demographics, traffic flow, and number of monitoring sites etc. to provide robust non-intervention controls. However, in principle, the identification of comparator areas should strengthen the conclusions that can be drawn in the final meta-analysis.

- All Large Projects have been extremely helpful in providing **additional data and clarifications** to the meta-analysis team in a timely way.

Recommendations for the final phase of monitoring of LSTF Large Projects

We now outline our recommendations for actions by the Large Projects and DfT to strengthen the final monitoring and evaluation of the LSTF Large Projects (and specifically to provide a good basis for the final meta-analysis). These recommendations are additional to the tailored recommendations made to each Large Project in September 2015, which are not repeated here.

- It will be helpful for all Large Projects to **estimate in approximate terms the magnitude of car traffic reduction and carbon savings arising from individual schemes,** based on the scale and effectiveness of the individual schemes, **and to compare this with overall changes in car traffic and carbon**. This will be important to provide a cross-check of the extent to which any overall changes in car traffic and carbon are credibly attributable to the LSTF programme. An example of a good approach to this is summarised in Box 17.1, based on evidence being collected by the LSTF Congestion Relief and Carbon Reduction Case Study. Carbon estimations might make use of the Basic Local Authority Carbon Tool.

Box 17.1: Solent: Relating the effect of interventions to observed changes in traffic

Surveys of personalised journey plan recipients in Gosport suggest that they have achieved reductions in car driver trips of 10-19% for different journey purposes. Based on evidence on average car driver mileage according to journey purpose*, this suggests that the 2,128 participants in the Gosport PJP project have reduced their overall annual car mileage by 1.35 million miles.

The Sub Regional Traffic Model (updated by comparison with AADT counts) suggests total daily vehicle movements in Gosport in 2013 were about 131,000. The recent survey data suggests an average of 1.73 single car driver trips per adult per day in Gosport, which is equivalent to around 116,000 vehicle movements per day. This means over 89% of vehicle movements in Gosport are attributable to car driving by local residents – a high degree of self-containment reflecting Gosport's peninsular nature.

The recent Gosport survey data suggests an average distance per car driver trip of 10.5 miles. This suggests that total annual car mileage by Gosport residents is about 445 million miles. Thus the effect of the PJP (1.35 million miles) is a total traffic reduction of 0.3%.

AADT count data indicates that there was a 2.7% reduction in the Gosport area between 2012 and 2013.

This means that only 11% of the traffic reduction observed in AADT counts between 2012 and 2013 can be attributed to PJPs. The remainder could be attributed to a range of factors, including:

- Transport interventions *internal* to LSTF (e.g. workplace travel planning)
- Transport interventions *external* to the LSTF, such as the launch of the Eclipse bus rapid transit system in 2012. In 2013, the Eclipse routes carried around 1.9 million passengers of which 14% were abstracted from car. The route (between Fareham and Gosport) is around 7 miles long, suggesting that at most this intervention would abstract 1.9 million vehicle miles per annum – 0.4% of the Gosport total
- Transport interventions external to the local policy domain (e.g. fuel prices)
- Non-transport factors such as changes in population, employment and income.

Thanks to John Preston, University of Southampton, for this example.
* From recent surveys in Gosport as part of the Congestion Relief and Carbon Reduction Case Study.

- Large Projects could possibly make greater use of DfT experimental statistics for **average vehicle speeds on locally-managed 'A' roads** to compare recent changes in congestion on individual roads which *have* benefitted from significant traffic management measures, to speeds on roads which have *not* had traffic management measures. The DfT experimental statistics use the same data source as that used by a number of Large Projects (Trafficmaster data), but DfT appears to have access to more recent data.

- It would be valuable if all Large Projects with a significant programme of travel support for job-seekers were to undertake **follow-up surveys of a sample of job-seekers who have received support**, on a consistent basis, to establish what types of support were most useful; how significant this support was in enabling recipients to obtain or retain a job; why the support was effective (e.g. because it enabled job-seekers to attend more interviews, or to get to a training course, or to widen their job search area); and whether recipients subsequently stayed in employment. It might be efficient for one Large Project (or DfT) to take the lead in managing this, rather than several Large Projects independently developing different surveys.

- Large Projects could helpfully consider including three or four **in-depth analyses of outcomes of specific types of intervention** in their final Outcomes Reports. These would each focus on a particular area of activity, for example new bus services for commuters, 'hot spot' treatments to

reduce congestion, or workplace personalised travel planning. Ideally, the interventions selected would reflect a significant proportion of total programme expenditure, of the order of 20-30%, when taken together. Each analysis would describe inputs, outputs, outcomes and future plans in some detail, comparable to the case studies in chapters 11-13 of this report. The chosen interventions might be agreed in advance with DfT in order to give a good representative range reflecting the activity across all Large Projects.

- Large Projects with a significant focus on workplace and / or school travel planning could usefully identify a **consistent cohort of workplaces / schools with repeat survey data** that can be tracked through the course of the programme.
- There should be ongoing collaboration between DfT, the Large Projects, their consultants, universities involved in monitoring and evaluation of individual Large Projects and in case studies, and the organisation responsible for delivering the final meta-analysis, to ensure that the data collection and reporting approaches in the final Annual Outcomes Reports are such as to provide the best possible evidence base for the final meta-analysis. This implies that a contract for the final meta-analysis, and for the work in preparation for it, should be let sooner rather than later.

17.12 Conclusions

At this interim stage, with Large Projects having spent about half of their total grant award, it is too early to say what the final effect of the LSTF investment will be.

However, we are able to make some preliminary comments about the contribution of the LSTF programme in the Large Projects to the high-level policy objectives of reducing carbon and supporting the economy.

With regard to carbon, we can say that traffic volumes are declining in Large Project areas by about the same amount as in other parts of the country, or slightly more, despite greater increases in population and the number of jobs than elsewhere. It is not yet clear what fraction of this decline in traffic, and hence carbon, may be attributable to the LSTF investment or to other transport projects, or to other factors, but there are some individual pointers suggesting that LSTF projects are making a contribution. Evidence being assembled by the Large Projects for the final Outcomes Reports should enable further assessment of the magnitude of this contribution during the final meta-analysis.

With regard to support for the local economy, this meta-analysis has focussed on two main dimensions on which a reasonable amount of information was available from multiple Large Projects: congestion relief and support for job-seekers. By March 2014, few Large Projects had completed significant measures that would be expected to have an effect on congestion for general traffic, but by the end of March 2015 more traffic management measures will have been completed, such that it is expected that the final meta-analysis will be able to assess the effects of these. There is more progress on support for job-seekers, where substantial numbers have already received assistance (35,000 by March 2014), with surveys and other evidence pointing to the conclusion that this support has been helpful in enabling job-seekers to intensify their job search, accept job offers that they would not otherwise be able to take up, and stay in work.

Interventions to improve public transport and cycling options, and to encourage a mode shift from driving to walking, cycling, public transport and car-sharing, have been implemented on a significant scale. Our analysis suggests that new or improved bus routes have achieved a substantial uplift in patronage, clearly attributable to the investment, and likely to result in ongoing benefits in about two thirds of the examples examined (because the new routes were commercially viable or likely to

continue beyond the end of funding for other reasons). Somewhat less positive are the initial signs from workplaces engaged in travel initiatives: although nearly 1500 businesses have so far received some form of support, evidence from the small sample where there are both 'before' and 'after' travel surveys suggests that the reduction in car use has been small, compared to previous workplace engagement programmes, possibly because of an emphasis on easy but less effective measures within the tight time-frame of the programme. Cycling has been increasing during the course of the LSTF programme, in those Large Projects for which we have recent data. In at least some cases, this is a continuation of a previous trend. Although we cannot say at this stage to what extent the uplift in cycling is attributable to LSTF investment, it is clear from inspection of data related to individual interventions that some of this uplift is attributable.

Taken overall, it is clear that there has been very substantial activity across the Large Projects during the first part of the LSTF programme. There are some early indications of positive effects as a result of certain individual activities, and some positive signs in terms of overall trends. Although at this stage it is not possible to draw general conclusions about what amount of any overall improvement is attributable to LSTF, further data in the final Annual Outcomes Reports should enable the final meta-analysis to draw more definitive conclusions about this.

Glossary of acronyms

AADT	Annual average daily traffic
AAWD	Annual average weekday traffic
AQMA	Air quality management area
ERDF	European Regional Development Fund
LSTF	Local Sustainable Transport Fund
NEET	Not in Employment, Education or Training
NRTE	National Road Traffic Estimates
NTS	National Travel Survey
PTP	Personalised Travel Planning
RTPI	Real Time Passenger Information