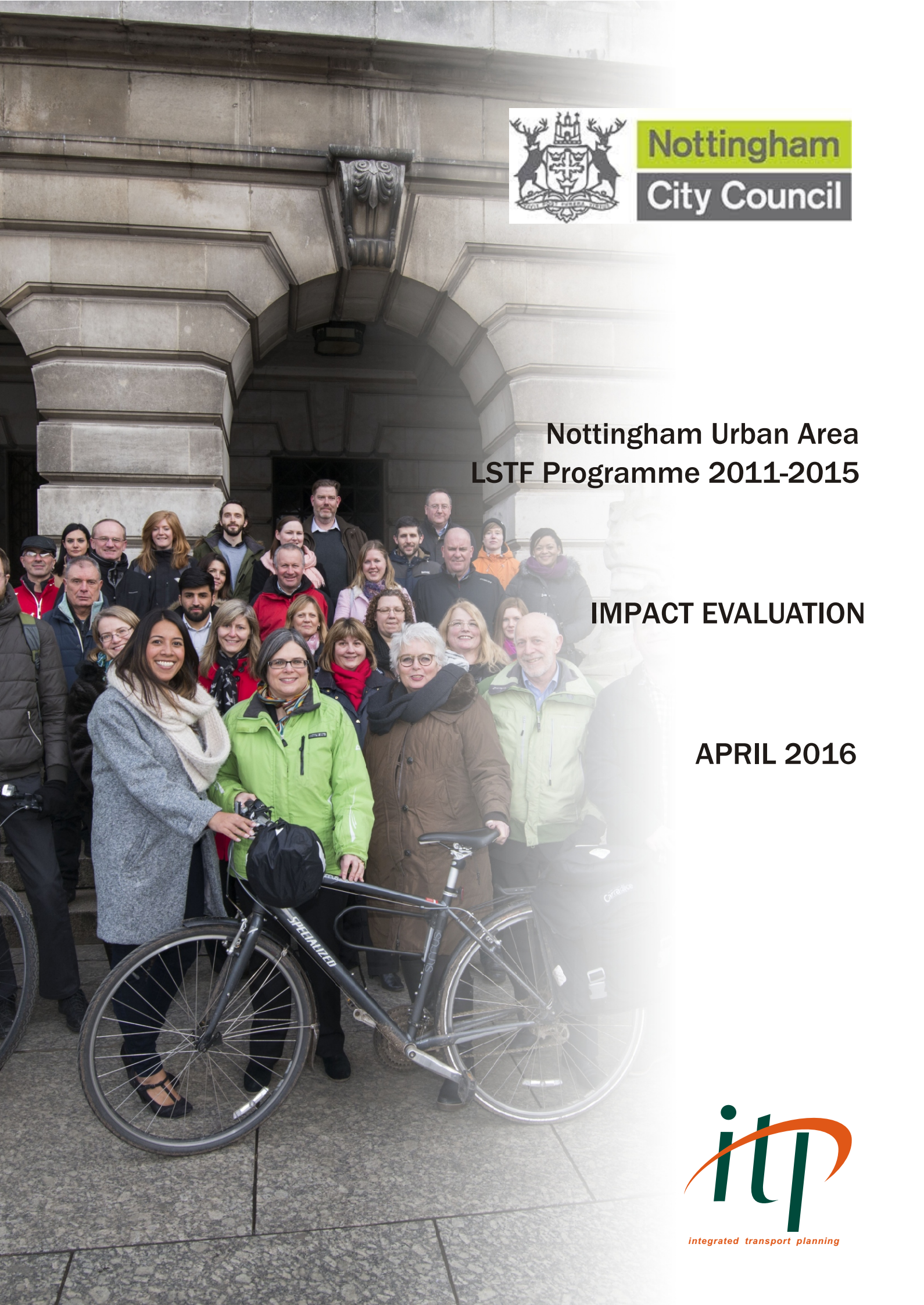


Nottingham City Council

Nottingham Urban Area LSTF Programme 2011-2015

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Impact Evaluation

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EXECUTIVE SUMMARY

Overview

The Nottingham Urban Area LSTF programme was led by Nottingham City Council (NCC), on behalf of a local partnership that included Nottinghamshire County Council, Derbyshire County Council, the Greater Nottingham Transport Partnership (GNTP) / Big Wheel, Sustrans, and NHS Nottingham City. The partnership was supported by a range of public, private, and third sector stakeholders. Successful Key Component and Main Bid applications meant the Nottingham Urban Area received a total of £16.196 million of LSTF funding from the DfT to fund local transport initiatives during the period 2011-15.

The interventions which constituted the Nottingham LSTF programme were delivered between April 2011 and March 2015, and addressed four objectives that are summarised in Table A:

Table A: LSTF programme objectives, workstrands and key interventions

Workstrand	LSTF intervention	Link to LSTF objectives			
		Growth	Carbon and Air Quality	Accessibility	Health
A	Enhanced smartcard	✓	✓	✓	
	Citycard cycle hubs and cycle hire	✓	✓	✓	✓
	Personalised journey planning (PTP)	✓	✓	✓	✓
	Inclusive accessibility			✓	
B	Neighbourhood smarter travel coordinators	✓		✓	✓
	Smarter travel services programme	✓	✓	✓	✓
	20mph limits programme		✓	✓	✓
	Small-scale infrastructure improvements in neighbourhoods		✓	✓	✓
C	Worksmart enhanced business support package	✓	✓	✓	✓
	Low carbon transport (Ecostars, Electric buses)	✓	✓		
	Cycle commuter corridors network infrastructure	✓	✓		
	Nottingham car club	✓	✓		
D	Ucycle scheme in universities and colleges		✓	✓	✓
	Cycling promotion in schools		✓	✓	✓
	Annual active travel marketing and events	✓			✓
	Cycling for all			✓	✓

The headline outcome targets, defined for achievement by the end of March 2014/15 were:

- 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
- Increase in the number of people supported to employment and training by 2014/15.
- Double levels of cycling in key intervention areas from baseline levels by 2014/15.

Evaluated programme outputs and legacy of delivery

A total of over 250,000 people were engaged in some way through the Nottingham LSTF programme, of whom 100,000 were beneficiaries of services, personalised information, and/or targeted marketing. Table B summarises the key outputs delivered between 2011 and 2015:

Table B: Key outputs delivered through the Nottingham LSTF programme 2011-15

Revenue Measure	Beneficiaries
Multi-operator smartcard and e-purse for Nottingham Urban Area	~800,000
Households consulted through the 20mph programme	123,750
People engaged through FE and HE education active travel activities and initiatives	39,115
Individuals receiving PTP through: Community Hubs, community and workplace events, mobile travel centre + support for new-starters	13,488
People engaged through in-school active travel activities and initiatives	11,482
Jobseekers receiving personal travel planning advice to help them get a job or gain access to a new job	9,725
16-19 year olds in full-time education receiving free Kangaroo smartcard public transport passes	9,266
Bike maintenance services or classes	6,443
Jobseekers receiving half-price Kangaroo smartcard public transport passes to get a job or gain access to a new job	4,377
Led walks delivered through Community Smarter Travel Hubs	4,237
New starters receiving 1 month's free travel when starting a new job	1,967
Adult cycle training delivered through Community Smarter Travel Hubs	1,775
Led cycle rides delivered through Community Smarter Travel Hubs	1,516
People benefitting from bikes loaned through the Ucycle initiative	1,189
Workplace support including: developing travel plans, travel surveys, bespoke advice, implementation of sustainable transport improvements	92
Schools where new services, facilities or activities have been provided to reduce car use for the 'school run'	88
Capital Measure	**Output**
Bike parking spaces introduced/upgraded at 14 secure Cycle Hubs, Universities, FE Colleges and on-street in the city centre	1,642
Extent of 20mph speed limit introduced in residential areas	580km
Smartcard on-street retail network	20 vending machines
Off-road shared cycle/pedestrian routes	4.67km
On-road cycle lanes	2.03km
Electric Vehicles	6 vehicles
Off-road cycle paths	0.2km
New pedestrian or cyclist road crossings	2
Car club parking bay sites in the Nottingham Urban Area	18

As a result of LSTF funding and effective programme delivery, the Nottingham Urban Area can now point to:

- Full coverage of city residential areas by 20mph speed limits, which are estimated to have resulted in 28 fewer serious road incident casualties between 2011 and 2015.
- A multi-operator public transport smartcard that has been joined by the city's three main public transport operators (NCT, Trent Barton, Tramlink Nottingham), making it easier and cheaper for people to use most buses and trams in the Nottingham urban area.
- A car club, citywide bicycle hire service, and public network of secure cycle parking hubs. These complement forthcoming improvements to arterial and cross-city cycle routes that are being constructed as part of the Local Growth Fund-supported Cycle City programme and broaden the range of multi-modal transport options available locally.
- The demonstrable impact of removing travel barriers for jobseekers and young people not in employment, education or training. A total of 919 jobseekers were supported into local employment through half price public transport incentives and free bike loans while looking

for work, along with one month's free public transport travel to bridge the gap to their first pay cheque.

- A new mechanism for delivering local, community-focused travel advice in the form of the Community Smarter Travel Hubs established in five locations across Nottingham.
- A number of local cycle and walking infrastructure improvements that create traffic-free routes alongside the new NET tram lines and close to local schools.
- An off-road cycling track for traffic-free recreational and sports cycling at the Harvey Hadden sports centre in Bilborough.
- The successful Ucycle bike loan system delivered at HE and FE institutions as well as the city's two hospitals. Almost 1,200 bikes were loaned through this initiative between 2011 and 2015, with qualitative and quantitative evidence of significant increases in cycling activity as a result.

The body of evidence delivered through this independent impact evaluation is also part of the LSTF delivery programme's legacy. The insights into what worked, and the scale of quantifiable benefits arising from different initiatives, can be contrasted with earlier reported process evaluation findings to highlight which initiatives should be sustained over a longer time-frame (and how they can be delivered effectively). This may be used to inform future funding bids and sustainable transport intervention delivery planning.

Monitored outcomes of LSTF initiatives in Nottingham

The outputs from the Nottingham LSTF programme resulted in significant shifts in travel behaviour – predominantly through increases in active travel modes and reductions in car use. A modest increase in public transport use was recorded across all LSTF beneficiaries; however this masked reductions in public transport travel among several cohorts that reported switching to walking and cycling from bus and tram modes for some trips.

Table C: Key outputs delivered through the Nottingham LSTF programme 2011-15

Measure	Outcome	Impact (2011-15)
Total beneficiaries	246,263	• 933,299 net increase in trips made in Nottingham Urban Area (primarily walk & cycle)
Change in cycling behaviour	87,424 people changed cycle behaviour	• 9.2 mins average increase cycling/day • Average increase of 144km cycled / annum / person • 1.4m additional cycling trips • 12.5m net additional km cycled • 2,824 more people cycling regularly
Change in walking behaviour	63,288 people changed walking behaviour	• 1.1 mins average increase walking/day • Average increase of 58km walked / annum / person • 1.6m additional walk trips • 2.3m additional km walked
Change in public transport use	66,234 net additional public transport trips	• -136,437 bus trips following LSTF projects • 277,824 more tram trips by LSTF beneficiaries • -75,152 fewer in train trips by LSTF beneficiaries
Change in car use	-2.18m fewer car trips	• -28.4m car kilometres travelled

Aggregated impacts of the Nottingham LSTF programme

The aggregated impacts of the delivered Nottingham LSTF programme were considered in relation to the three core LSTF objectives (Table D). Although it is not possible to disentangle the impacts

of LSTF funded initiatives from other local transport projects and socio-economic changes; local corroborative datasets indicate the programme delivered between 2011 and 2015 made a positive contribution to sustained local economic growth, improved public health and physical activity levels, reduced carbon emissions, and improved local air quality.

Table D: Aggregated impacts arising from LSTF-funded initiative outcomes

Measure	Outcome	Impact (2011-2015)
Growth & Accessibility	-28.4m car km travelled	• £3.2m of WebTAG marginal external benefits
	+2,824 new cyclists	• £0.045m of absenteeism benefit from cycling
	14.5 LSTF jobs	• £1.3m of Gross Value Added
	509 volunteer hours	• £1.07m of volunteering benefits estimated
	618 additional FTE jobseekers placed into work	• £3.1m of Gross Value Added for positions filled • £581,280 saving in Job Seekers Allowance claims • £44,000 of additional income tax
	325,245 bus trips generated	• £2.42m of additional public transport revenues for local bus and tram operators. • £2.9m of social value from generated bus trips
Carbon & air quality	-23,529 fewer Tonnes CO2e emitted	• £1.47 million of carbon reduction (DECC values) • £0.31m of net estimated WebTAG benefit • £0.37m saving in fuel costs to bus and HGV fleet operators
Health	Estimated long-term health savings for NHS and society	• -28 serious road incident casualties on average across LSTF-funded 20mph zones • £5.6m estimated net-saving in casualty reduction
	Increases in physical activity	• £3.0m of health economic benefits attributable to increases in walking and cycling activity.

Growth and accessibility impacts

Growth and accessibility outcomes account for around £14.6m of monetised economic benefits during the LSTF programme delivery period. These were derived from aggregated contributions to the following local trends observed in corroborative monitoring datasets covering the LSTF delivery period:

- A 2.5% overall reduction in local traffic levels in Greater Nottingham City area and stable public transport patronage and mode share. LSTF projects have helped to create capacity on existing public transport networks by encouraging a greater proportion of people to travel by active modes.
- Increased public transport, walk and cycle accessibility to local employment centres and greater public satisfaction with their local neighbourhoods (up from 81% citing satisfaction in 2010 to 87% in 2014).
- A 10% increase in Gross Value Added economic output across Greater Nottingham between 2010 and 2014.
- A 5% increase in employment levels and a 10% reduction in worklessness across Greater Nottingham between 2011 and 2014.

Carbon and air quality impacts

Approximately £1.5m of net monetised economic benefits were derived from LSTF-funded initiatives' contributions to carbon reduction and air quality improvements, which included a headline reduction of 23,529 tonnes of CO2e emissions during the LSTF delivery period. This was

achieved through a combination of mode-shift resulting in 2.18m fewer car trips and efforts to de-carbonise HGV and bus fleet operations in the local area. Evidence from corroborative datasets suggests that LSTF projects made a positive contribution to the following carbon and air quality trends observed in the Nottingham Urban Area over the same timeframe:

- The 1.2% average reduction in estimated annual car kilometres travelled by the 63,000 LSTF beneficiaries who reported making changes their car travel (an average of 163km per person per year) is likely to have contributed to the 2.5% reduction in area traffic levels across Greater Nottingham.
- A measured 2.5% reduction in carbon emissions from transport in Greater Nottingham has been supported by carbon reduction and mode-switching outcomes of LSTF projects. The estimated carbon reduction achieved through LSTF initiatives equates to around 2.5% of all the carbon emitted in Greater Nottingham between 2011 and 2015, or ~0.6% per annum.
- An average 9.5% reduction in Nitrogen Oxide levels recorded at the Nottingham AQMA monitoring sites since 2010. Car trip reductions recorded through LSTF initiatives are likely to have made a modest contribution to this trend

Health impacts

Approximately £9.6m of net monetised economic benefits were derived from LSTF-funded initiatives' contributions to public health. These were generated by the 1.4m additional cycling trips and 1.6m additional walking trips reported through project monitoring, as well as 28 fewer serious road incident casualties in 20mph speed limit areas. Corroborative data from secondary sources suggests these LSTF-funded impacts have supported:

- A 20% reduction in Killed and Seriously Injured road incident casualties in Greater Nottingham.
- ~30% growth in local cycling levels (50% in LSTF intervention areas), exceeding the national average of 20% over the same period.
- A 19% increase in the proportion of the population undertaking 30 mins of physical activity at least 3 times per week.
- A 25% reduction in the percentage of adults classed as overweight or obese.
- An average 9.5% reduction in Nitrogen Oxide levels recorded at the Nottingham AQMA monitoring sites

Because the WHO HEAT tool cannot be used to estimate the economic value of physical activity undertaken by people under the age of 16, the health impacts arising from LSTF initiatives that engaged with young people (11,500 under 16's were engaged through the Bike It, Bikeability, and Lifecycle initiatives) are under-stated in relation to those which involved adult populations. It is therefore considered likely that the health impacts of the whole LSTF programme are higher than those stated above.

Performance against LSTF targets

As summarised in Table E, all of the targets defined at the beginning of the LSTF programme have been met to some degree, with the greatest success achieved in relation to supporting a greater number of people into employment and training. It was challenging to monitor performance against the non-motorised travel mode and cycling intervention area targets, since they were defined in a way that were not directly comparable against available secondary sources of data.

Table E: LSTF programme performance against defined outcome targets

Target	Extent achieved?	Supporting data
Increase sustainable travel modal share by 10% from 2010 levels by 2014/15	✓✓	• Public transport mode share increased by 1.85% in Nottingham City. • Non-motorised trip mode-share not captured by cordon counts. • Cycle mode share increased by an estimated 50% in key intervention areas.
No increase in traffic levels contributing to a reduction in carbon emissions from transport by 10% over three years by 2014/15	✓✓	• Traffic levels fell by 2.5 % in Greater Nottingham. • Traffic levels fell by 5.4% in Nottingham City. • 2.5% reduction in carbon emissions from transport across Greater Nottingham as a whole. • 21% reduction in total carbon emissions per capita in Nottingham City.
Increase in the number of people supported to employment and training by 2014/15	✓✓✓	• 5% increase in the number of people employed in Greater Nottingham (9% in Nottingham City). • 10% reduction in Jobseeker Allowance claimants in Greater Nottingham (> 10,000). • 14.5 FTE posts created through LSTF delivery. • 919 jobseekers supported into 618 FTE positions (569 FT + 250 PT).
Double levels of cycling in key intervention areas from baseline levels by 2014/15	✓✓	• Cycle mode share increased by an estimated 50% in key intervention areas, based on most robust before and after monitoring datasets. • Exceeds the local average (~30%) and national average (~20%) over the same time period.

Value for money assessment

By applying the WebTAG appraisal methodology to out-turn monitoring and evaluation data it is possible to estimate a Benefit:Cost Ratio of between 3.8 and 4.8 for the Nottingham Urban Area's LSTF programme delivered between 2011 and 2015. As shown in Table F, this reflects high to very high value for money according to DfT's guidance on valuing the transport investments.

Table F: Value for Money assessment of LSTF delivery programme

Conservative scenario	Optimistic scenario
Total LSTF programme delivery costs, irrespective of whether individual project benefits were captured effectively	Total LSTF programme delivery costs, minus spending and benefits associated with Robin Hood multi-operator smartcard
• £64.2m of estimated monetised benefits	• £60.4m of estimated monetised costs
• £16.99m of programme delivery costs	• £12.69m of programme delivery costs
• BCR = 3.8	• BCR = 4.8
• High value investment	• Very high value investment

These evidence-based BCR calculations suggest the Nottingham Urban Area LSTF programme, considered as a whole, has delivered **a considerable return on the investment of public funding received.**

While the contribution of programme workstrands was uneven, the BCR values reported above are considered a fair reflection of overall programme's impact, taking into account the mix of different types of project delivered and challenges with capturing and estimating quantifiable benefits.

What worked?

Although less robust than the workstrand-by-workstrand value for money assessment, comparing the value of benefits generated by each individual project indicates which ones yielded the greatest benefits. Table G indicates 20mph speed limit areas, Jobseeker Kangaroo, Community Smarter Travel Hubs, Kangaroo free public transport travel for 16-19 year olds, and the Robin Hood smartcard projects generated the highest benefit values. As well as being the most impactful projects, they were also more costly to deliver.

Table G: Indication of highest and lowest impact LSTF initiatives

Highest Impact	Lower Impact	Unsure of Impact
20 mph speed limit areas £27.4m of benefits	Citycard cycle hire £0.5m of benefits	Bikeability BikeIt
Jobseeker Kangaroo £12.3m of benefits	1 month free pass jobseekers £0.4m benefits	Cycling for All Cycle infrastructure spend
Smarter Travel Hubs £7.6m of benefits	Workplace challenge £0.2m benefits	Lifecycle Workplace engagement
16-19 Kangaroo £4.2m of benefits	City Car Club £0.1m benefits	Small scale infrastructure
Robin Hood Smartcard* £4.2m of benefits	Benefits from some projects were hard to quantify due to: • Younger beneficiaries (HEAT not valid for under 16s) • Lack of longer-term behaviour change data • Small numbers of beneficiaries • Short intervention periods • Impacts cannot be unpicked from other initiatives	
Ucycle £2.1m of benefits		
Ecostars £1.9m of benefits		
Electric Buses £1.4m of benefits		
Citycard Cycle Hubs £1.0m of benefits		
Cycle Live Events £0.9m of benefits		

*Robin Hood Smartcard benefits estimated over a 10yr period based on anticipated impact

Lower impact projects were typically those which had:

- Smaller numbers of beneficiaries (City Car Club, Cycling for All, Bikeability, Citycard Cycle Hire).
- Younger beneficiaries engaged in physical activity which could not be monetised using the HEAT tool because of their age (Bikeability, Bike It).
- Shorter intervention periods, with limited longer-term outcome monitoring (Cycling for All, City Car Club, 1 month free travel pass for new job starters).

This insight into relative project costs and benefits may be beneficial when devising future sustainable transport projects and bid packages.

Recommendations for future initiatives

Taking on-board the findings from this evaluation, it is possible to identify a number of recommendations that could improve the design and implementation of local sustainable travel initiatives in the future. These are identified throughout this report, and have been summarised in Table H.

Table H: Recommendations for improving future local sustainable travel initiatives

Programme design
• Draw on the evidence of impact from LSTF to refine the scale of proposed behaviour change for future sustainable transport initiatives. With hindsight, proposing a 10% increase in sustainable travel mode share and 100% increase in cycling was ambitious in the context of the four year delivery timeframe.
• Consider the size and overlap of individual projects when designing sustainable travel programme bids. The disparate nature of some smaller initiatives meant they were hard to monitor and evaluate. In reality they were often part of joined-up delivery mechanisms (e.g. the initiatives delivered through Community Smarter Travel Hubs). For future programmes it may be more efficient to pre-empt this issue by considering how individual projects will be delivered when developing initial funding bids and designing monitoring and evaluation frameworks.
• Use the Workstrand BCR values and impact estimates from this evaluation to shape future programme design and delivery. The findings suggest that initiatives which mix capital and revenue spending, and direct people to new sustainable transport infrastructure through personalised information and incentives, have been most effective. Initiatives to remove cost and information barriers for jobseekers also deliver very high value for money when wider economic benefits of individual's employment are included in the evaluation of impacts.
Data collection and monitoring
• Fully consider available monitoring datasets when defining programme objectives to help ensure progress against all targets can be evaluated during and following programme delivery.
• Performance Indicator data collected and held by Nottingham City and Nottinghamshire County Council over a long period of time proved most useful when evaluating LSTF programme impacts. While a lot of data are available for the Nottingham City area, a much smaller range is held for the Nottingham Urban Area - increasingly a focus for transport funding and delivery. A greater volume of data on cycling levels would also have been beneficial, and is required to evaluate impacts of the Cycle City projects underway in Nottingham.
Data collection and monitoring (continued)
• Applying SLAs to all external suppliers and issuing mandates to internal delivery teams could achieve greater consistency and relevance of monitoring data for post-implementation evaluation.
• With hindsight not collecting sufficient project-specific baseline data for specific target objectives was a missed opportunity for the LSTF programme, since it was always likely NCC's officers and Council members would need to demonstrate the programme's impact post-implementation, irrespective of DfT requirements.
Evaluation approach
• For major programmes such as LSTF, establishing an independent monitoring and evaluation team at the programme outset ensures that a baseline of travel behaviour and physical activity levels is determined for relevant intervention areas. This can inform target setting/monitoring across individual projects (negating the need for project-level data collection), and improve the quality of subsequent impact analyses.
• As a rule of thumb it would be appropriate to allocate 5-10% of similar future programme budgets for ongoing monitoring and evaluation activity. Such datasets are necessary if NCC wishes to determine the impact of projects and initiatives that are delivered through large-scale behaviour change programmes like LSTF.
• Future project teams could better support the monitoring effort by receiving more streamlined templates that make it easier for them to complete, and simpler for NCC to extract specific data and information they needed to meet reporting requirements.

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Appendix A: LSTF impact evaluation spreadsheet model guide

Appendix B: Spreadsheet model underpinning Value for Money impact evaluation

1 INTRODUCTION



1.1 The Department for Transport's (DfT) Local Sustainable Transport Fund (LSTF) programme was established to support local authorities with their delivery of sustainable transport initiatives that support economic growth and reduce carbon emissions.

1.2 Nottingham's LSTF programme was led by Nottingham City Council (NCC), on behalf of a local partnership that included Nottinghamshire County Council, Derbyshire County Council, the Greater Nottingham Transport Partnership (GNTP)[1]/Big Wheel, Sustrans, and NHS Nottingham City. The partnership was supported by a range of public, private, and third sector stakeholders. Successful Key Component and Main Bid applications meant the Nottingham Urban Area received a total of £16.196 million of LSTF funding from the DfT to fund local transport initiatives during the period 2011-15.

Purpose of the output, outcome and impact evaluation

1.3 In February 2015 Integrated Transport Planning Ltd. (ITP) was commissioned by NCC to undertake an independent evaluation of the Nottingham Urban Area LSTF programme's delivery and impact from its inception in 2011 to the end of March 2015. This report sets out our findings in respect of the delivered outputs, and subsequently measured outcomes and impacts. It is supplemented by a separate process evaluation report (completed in August 2015) which documented the approaches that proved effective over the course of the LSTF programme's delivery. This was deliberately delivered in advance of the wider evaluation report so as to inform Nottingham's 2015-16 LSTF programme implementation.

1.4 The purpose of this report is to set out a meta-analysis of the programme-wide impacts across all documented Nottingham LSTF initiatives and projects. Underlying analyses drew on the following sources of data and insight:

- Out-turn reports documenting the numbers of beneficiaries from each project
- Project outcome monitoring documents and surveys completed by project teams
- Independent surveys and focus group discussions undertaken by ITP's team to plug identified gaps in the LSTF programme's evidence base
- Qualitative case studies captured by project teams, and independently by a third party, to add personal-level detail and anecdotal evidence to the quantitative data
- High-level secondary data from NCC sources, such as Key Performance Indicators on road traffic levels and the incidence of obesity within the local population

[1] The Greater Nottingham Transport Partnership (GNTP) is a strategic advisory body who provide advice and support on transport planning and represents both public and private sectors

1.5 By drawing these datasets together and analysing them in the context of the corroborative secondary data; it has been possible to record, document, and provide aggregated estimates of the inputs, outputs, outcomes, and impacts delivered through the LSTF programme. Table 1-1 summarises what we mean by each of these evaluation terms:

Table 1-1: What we mean by inputs, outputs, outcomes and impacts

Metric	Description	Example
Inputs	Staff time, costs and implementation budgets allocated to a project	£2.25m was spent in total on the 5 Community Smarter Travel Hubs, which included 5 new posts during the implementation period
Outputs	Activities delivered through each of the local programme's four workstrands	5,893 people benefitted from Personal Travel Planning delivered via Community Smarter Travel Hubs
Outcomes	What occurred as a direct result of the interventions delivered	Beneficiaries increased their annual walking and cycling activity by an average of 24 and 28 km respectively and over 2 million fewer car kilometres travelled helping to
Impacts	The wider effect of immediate project outcomes when aggregated and considered over a longer timeframe	Limit local traffic growth, reduce carbon emissions, and improve health and air quality

1.6 In conducting this activity we have reflected on NCC's Monitoring and Evaluation plan, defined at the start of the LSTF programme, and feedback received from Transport for Quality of Life in their role as DfT's appointed meta-analysis advisers. The primary focus of our evaluation has been on outcomes and impacts, and trying to determine which observed trends can be attributed to LSTF-funded activities. These have not previously been covered by NCC's annual output reports prepared for DfT.

Structure of this report

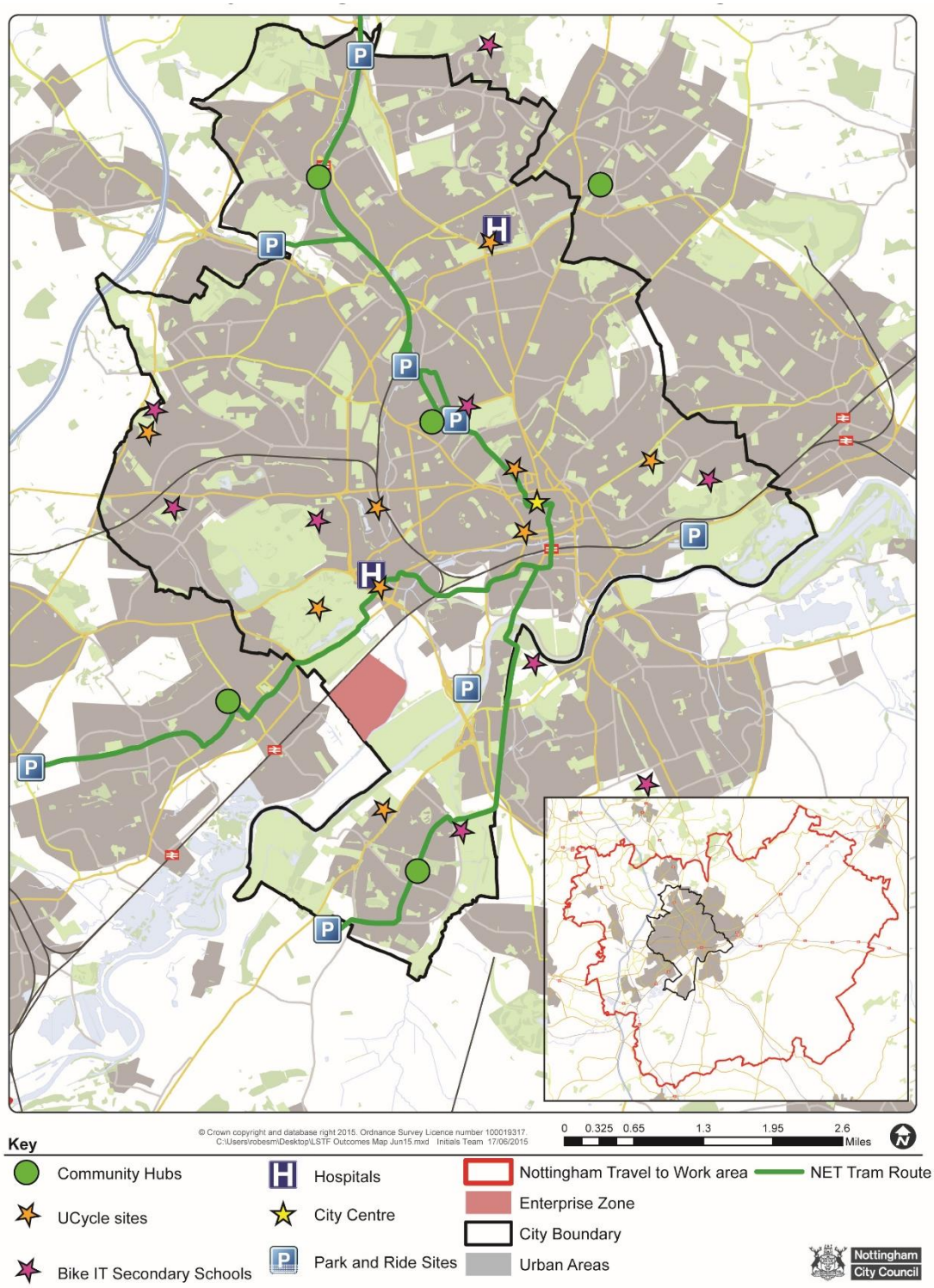
1.7 To succinctly communicate the findings from our evaluation, the remainder of this document has been structured as follows:

- Chapter 2 reviews the Nottingham Urban Area LSTF programme and its objectives
- Chapter 3 outlines the methodology used by ITP to conduct this evaluation
- Chapter 4 sets out key outputs and outcomes measured across the LSTF programme
- Chapter 5 presents our impact evaluation findings, framed around the objectives
- Chapter 6 presents an ex-post economic evaluation of reported impacts which have been calculated using webTAG principles to determine the value for money of the Nottingham Urban Area LSTF programme
- Chapter 7 concludes the report by summarising key findings and highlighting 'what worked' most effectively

2 PROGRAMME OVERVIEW

2.1 The delivery of the Nottingham LSTF programme was focused on the built-up area of the Nottingham conurbation. Figure 2-1 shows that this area covers the administrative areas of Nottingham City Council, the urban areas within the boroughs of Broxtowe, Gedling, Rushcliffe in Nottinghamshire, Hucknall town centre in Ashfield District (also in Nottinghamshire), and the boroughs of Erewash and Amber Valley in Derbyshire.

Figure 2-1: Area covered by the Nottingham Urban Area LSTF Programme



Strategic programme objectives and targets

2.2 The four defined objectives for the local LSTF programme were:

1) Growth: 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.
2) 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.
3) Accessibility: Linking people to jobs by reducing barriers to accessing services and opportunities, particularly in terms of affordability and low travel horizons.
4) Health: Creating the social, cultural and physical environment to support active travel options and reduce transport impacts.

2.3 Headline outcome targets, defined for achievement by the end of March 2014/15[2], were:

- 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.
- Increase in the number of people supported to employment and training by 2014/15.
- Double levels of cycling in key intervention areas from baseline levels by 2014/15.

Programme workstrands

2.4 To aid delivery, the Nottingham LSTF programme was divided into four workstrands:

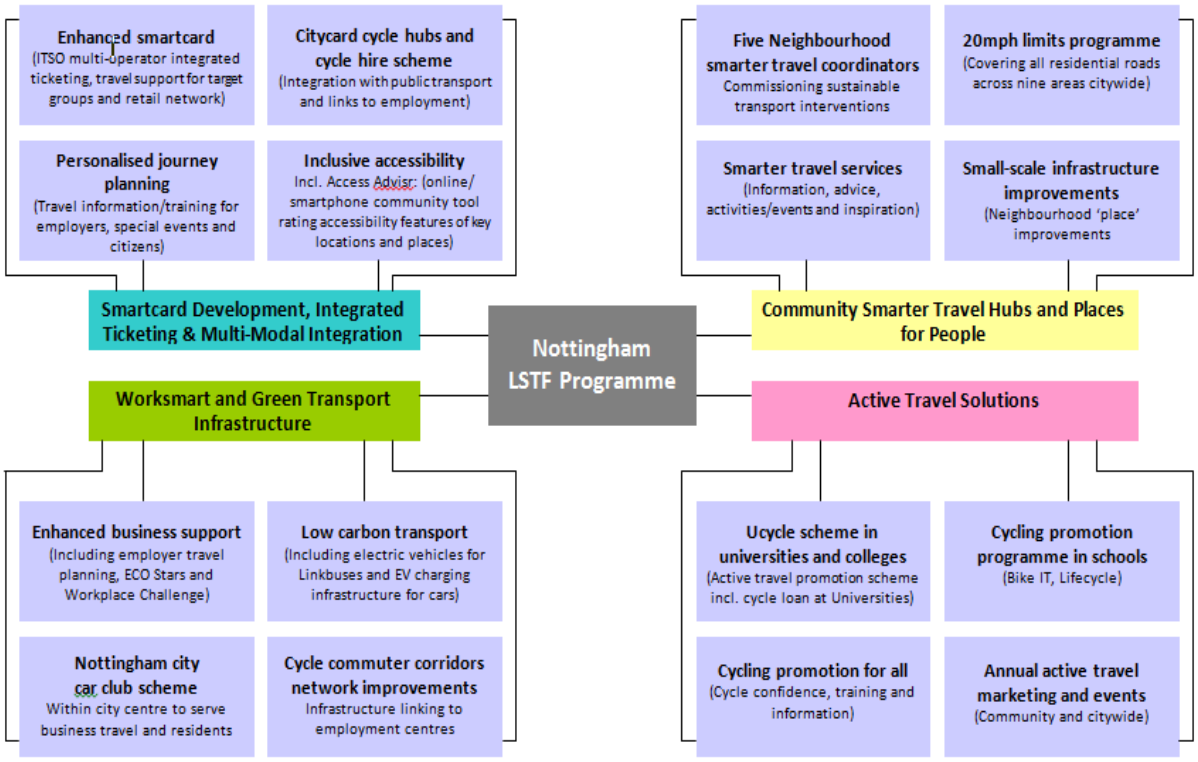
Table 2-1: Key features of Nottingham LSTF programme workstrands

Workstrand	Key features
A) Smartcard development, integrated ticketing and multi-modal integration	• Supporting access to employment and training • Improving integration and unlocking travel opportunities • Increased use of low carbon transport
B) Community smarter travel hubs and places for people	• Integrated smarter travel services at neighbourhood level • Help local people choose low carbon, active travel options • Address identified travel barriers
C) Worksmart business support activities & green transport infrastructure	• Supporting the needs of the business community • Smarter travel advice and support services • Developing the low carbon transport network
D) Active travel solutions	• Comprehensive programme of active travel marketing • Promotional activities and events • Make walking and cycling the norm for local journeys

2.5 Each workstrand contained a number of individual elements, illustrated in Figure 2-2, and was supported by a programme-wide marketing and communications strategy.

[2] Nottingham Urban Area Local Sustainable Transport Fund, Outcomes Update Report 2013/14. Nottingham City Council, October 2014

Figure 2-2: Nottingham LSTF Programme Interventions



2.6 Table 2-2 provides further details on the individual projects that were delivered within each workstrand. Given the large number of projects implemented through the Nottingham Urban Area LSTF programme, ITP's impact evaluation has been focused at a workstrand level. Within this framework we have been able to identify 'what worked' in respect of individual projects to reveal the higher and lower performing LSTF funded initiatives.

LSTF funding and delivery programme

2.7 The £15.424m awarded to NCC by the DfT for its LSTF Programme was made up of:

- £4.925m confirmed in July 2011 through the Key Component bid;
- £10.320m confirmed in July 2012 from the Main bid; and
- £178,825 secured in a final 2014-15 settlement from DfT (also related to the Main bid).

2.8 Total expenditure on the LSTF programme was £16.196 million, which included some additional funding (from the LTP and Sustrans) to supplement the monies from DfT. Table 2-3 shows how this was allocated across the LSTF workstrands. A further £2.55m of tangible local authority and third party contributions were secured and used to augment the LSTF programme budget. When the value of wider complementary programmes is considered, the Nottingham Urban Area's LSTF programme was part of a local sustainable transport investment that totalled almost £35m.

2.9 Table 2-4 summarises the tangible third party cost contributions to the LSTF programme, while Figure 2-3 provides a timeline of when the various elements of the Nottingham LSTF programme were delivered.

Table 2-2: Nottingham LSTF Projects and Delivery Partners

Workstrand	Project Name	Description	Delivery lead
A) Smartcard development, integrated ticketing and multi-modal integration	ITSO smartcard multi-operator ticketing	Development of multi-operator smartcard products	NCC Public Transport Team
	Smartcard retail network	On-street and in-store smartcard top-up mechanisms	
	Citycard Cycle parking hubs	Secure public cycle parking at key locations	
	Citycard Cycles	By the hour public bike hire service	
	Inclusive accessibility (Access Advisr)	Online public accessibility information and rating tool	
	Travel support for jobseekers, students & new starters + Personalised Travel Plans	½ price public transport day ticket for jobseekers & students + 1 month's free multi-operator travel for new job starters	
	Jobseeker cycle provision	Loaning bicycles to jobseekers in Nottingham	
B) Community smarter travel hubs and places for people	Community Smarter Travel Hubs	Staffed neighbourhood centres promoting sustainable travel	Sustrans & TravelRight
	Travel advice at community events	Ad-hoc support for community events via the Hubs	
	Jobseeker travel planning surgeries	Support for jobseekers, promoting Kangaroo ticket offers	
	20mph limits programme	City-wide 20mph speed limits introduced in residential areas	NCC/Notts CC Road Safety
	Small-scale infrastructure improvements	Enhanced active travel facilities and routes to schools	
C) Worksmart and green transport infrastructure	Employer Travel Plan support	Advice to employers looking to influence staff travel patterns and encourage use of active and sustainable travel options	Big Wheel
	Travel advice at business events		
	Nottingham ECO Stars	Eco-driving/fleet management training course & recognition	TTR Ltd
	Workplace challenge	Annual challenge to reward sustainable workplace travel	Big Wheel
	Electric Link buses	Funding supported roll-out of electric Link bus network	NCC
	Nottingham City Car Club	Public on-street vehicle hire-by-the-hour service	City Car Club
	Cycle corridor infrastructure	Resurface Victoria Embankment and new River Leen route	NCC
	Mobile travel centre	Bus-based travel info service that visits local communities	NCC
D) Active Travel Solutions	Cycling promotion & training for all	Adult cycle training and advice, including for disabled people	Ridewise
	Cycle maintenance training	Teaching core cycle maintenance skills at Hubs and events	
	Ucycle – Universities and FE Colleges	Bike hire, events, cycle training and facility improvements	Sustrans
	Cycle promotion & training in schools	BikeIT, Bikeability & Lifecycle training for local school children	Sustrans / NCC Road Safety
	Active travel marketing and events	Annual programme of promo activities, events & ongoing comms	Big Wheel

Table 2-3: LSTF key component and main bid programme funding allocations (in £000s)

LSTF Bid and Workstrands	2011/12		2012/13		2013/14		2014/15*		Total	
	Rev	Cap	Rev	Cap	Rev	Cap	Rev	Cap	Rev	Cap
Key Component funding allocations										
A: Smartcard Development, Integrated Ticketing and Multi-modal Integration	812	224	709	235	237	367	152	33	**1,910**	**858**
B: Community Smarter Travel Hub Pilot (Bulwell)	14	0	135	0	226	0	200	0	**574**	**0**
C: Worksmart and Green Transport Infrastructure (Business Support)	102	0	143	0	136	0	111	0	**493**	**0**
D: Active travel Solutions	53	25	247	75	200	0	217	117	**717**	**217**
E: Programme monitoring and partnerships	20	0	0	0	95	0	42	0	**157**	**0**
Key component sub totals	***1,001***	***249***	***1,234***	***310***	***894***	***367***	***722***	***150***	***3,851***	***1,075***
Main Bid funding allocations										
A: Smartcard integration			398	0	859	0	1,792	0	**3,049**	**0**
B: Community Smarter Travel Hubs and Places for People (20mph projects)			0	323	520	389	754	1,214	**1,274**	**1,926**
C: Worksmart and Green Transport Infrastructure			206	383	239	1,338	444	1,265	**889**	**2,985**
D: Active travel Solutions			185	33	320	0	339	0	**844**	**33**
E: Programme coordination			47	0	42	0	181	0	**270**	**0**
Main bid sub totals			***836***	***739***	***1,980***	***1,727***	***3,510***	***2,479***	***6,326***	***4,944***
Grand total		**1,250**		**3,119**		**4,968**		**6,861**		**16,196**

This table reflects the total LSTF expenditure, made up of £15.424 million DfT funding plus £772,777 of funding from the LTP, Sustrans and other NCC sources.

Table 2-4: Local authority and third party funding contributions to LSTF 2011-15

Workstrand	Item	Local Authority Contribution (£)	Third Party Contribution (£)
A - Smartcard Development, Integrated Ticketing and Multi-modal Integration	East Midlands Trains contribution to Citycard Cycle Hubs at stations		£68,000
	Nottingham City Transport half price jobseeker travel contribution		£600,000
	LTP funding contribution to 16-19 smartcard support	£750,000	
	DfT Smartcard Fund support for development		£300,000
B: Community Smarter Travel Hubs and Places for People (20mph projects)	Broxtowe & Gedling BC Section 106 funding for Smarter Travel Hub coordinators	£140,000	
	Public health contribution to Smarter Travel Hub coordinators	£140,000	
	Public health contribution to Cycling for Health project	£40,000	
C: Worksmart and Green Transport Infrastructure	Workplace Parking Levy contribution to business engagement	£120,000	
	Sustrans funding for new cycling infrastructure		£111,000
	LTP cycle infrastructure funding contributions	£250,000	
D: Active travel Solutions	Nottinghamshire Police Ucycle security events and support		£5,000
	Sports & Leisure contribution to British Cycling supported events	£26,000	
Total value of contributions		**£1.466m**	**£1.084m**
Grand Total		**£2.55m**	

Figure 2-3: Nottingham LSTF Programme timescales

Programme Workstrands / Projects		2011/2012			2012/2013				2013/2014				2014/2015			
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
A) Smartcard development, integrated ticketing and multi-modal integration																
Enhanced Smartcard	Smartcard Development															
	Travel Support Scheme															
	Retail Network															
Citycard Cycle hubs																
Citycard Cycle hire																
Personalised journey planning																
Access Advisr																
Mobile Travel Centre																
B) Community Smarter Travel Hubs and Places for People																
Five Neighbourhood smarter travel coordinators	Establish and deliver North Community Hub															
	Community hub expansion and delivery (x4)															
	Active Travel Champion Volunteers															
20mph limits programme	Pilot project in Sherwood															
	Other areas															
Small-scale infrastructure improvments at schools																
C) Worksmart and Green Transport Infrastructure																
Enhanced business support	Business engagement															
	Workplace challenge															
ECO Stars																
Cycle infrastructure improvements																
Low carbon transport	Electric buses															
	Electric vehicle charging															
Nottingham City Council car club																
D) Active Travel Solutions																
Ucycle in Universities and Colleges	Cycle loan and cycle promotion															
	Small scale infrastructure improvments															
Annual active travel events programme																
Cycling for All																
Cycling programme in schools	Bike IT in schools:															
	Lifecycle															
	Bikeability Training															
Programme Management and Coordination																
Programme coordination																
Marketing and communications activities																

3 METHODOLOGY

3.1 ITP's approach to evaluating the outcomes and impacts attributable to the Nottingham Urban Area LSTF programme was guided by NCC's monitoring and evaluation plan, approved by DfT. This was supplemented by our team's independent analysis of potential gaps in the evidence base being collected across the various LSTF projects. The programme management and coordination costs (Workstrand E) have been spread across all programme workstrands for the purpose of later analyses of impacts and costs.

Collating evidence of inputs and outputs

3.2 Evidence of the inputs and outputs delivered through the LSTF programme was collated from a combination of annual output monitoring reports submitted to DfT by NCC, and a desk-based review of the individual project monitoring reports produced each year. We also conducted a high level audit of programme financial statements and quarterly progress meeting minutes in order to develop a broad understanding of the programme timeline, and specifically 'what' was delivered 'when'.

3.3 Through this process we were able to identify the specific LSTF projects for which it would be feasible to define outcomes and impacts, and those projects where the directly attributable outcomes and impacts would be less evident:

- Smaller projects (e.g. cycle maintenance training, AccessAdvisr) were considered unlikely to influence tangible travel behavioural changes in their own right, but complemented wider school and community based initiatives intended to improve accessibility and uptake in sustainable modes of travel.
- Some higher profile projects, such as the active travel marketing and promotion initiatives led by the Big Wheel team, had outcomes and impacts that were hard to quantify. This reflected their complementary nature to all of the LSTF projects and that they were applied at a programme, rather than project-specific, level.
- Several infrastructure-focused measures were either completed during the later stages of the LSTF programme (Smartcard on-street ticket machines and electronic Kangaroo product) or of a relatively small scale (resurfacing of Victoria Embankment cycle route, and 580m of cycle path delivered along the River Leen). Consequently their outcomes and impacts were expected to be either too intangible to measure, or impossible to capture within the available timescales. The anticipated future impacts of the Robin Hood smartcard initiative were estimated based on historic local data.

3.4 In all cases the costs and outputs associated with these initiatives were included in our evaluation, supported by an assumption that the travel behaviour change outcomes measured in relation to the other LSTF-supported projects would not have been achievable without the contribution of the less-measurable initiatives.

Identifying and measuring outcomes

3.5 Most of the key LSTF project service providers signed up to a monitoring and evaluation framework as part of their Service Level Agreements. This was particularly true for the initiatives delivered by external providers to NCC and Nottinghamshire County Council. Consequently almost all the outcomes data needed to inform the analyses underpinning

this evaluation report were derived from final project reports documenting survey results and trends. Where necessary the ITP team requested raw data from the project team leaders, to allow for verification and further analyses.

3.6 Our independent review of the monitoring and evaluation framework, completed in January 2015, revealed a need for supplementary data collection and analyses to aid robust outcome and impact monitoring for several projects. This particularly related to understanding the behavioural responses of local beneficiaries to the different LSTF-funded services. Table 3-1 summarises the data sources which have informed the outcome and impact evaluation set out in the remainder of this report:

Table 3-1: Sources of outcome monitoring data used to inform evaluation

Workstrand	Project Name	Data Source(s)
A) Smartcard development, integrated ticketing and multi-modal integration	ITSO smartcard multi-operator ticketing	3 months of usage data available at time of report. Behavioural impacts estimated using historic local data
	Smartcard retail network	
	Citycard Cycle parking hubs	User surveys and parked bike counts. Hub and cycle hire usage data from NCC
	Citycard Cycles	
	Inclusive accessibility (Access Advisr)	Website hits and user searches
	Travel support + PTP for jobseekers, students & new starters	User surveys and focus groups. Kangaroo pass usage data.
	Jobseeker cycle provision	N/A – No outcome monitoring data available
B) Community smarter travel hubs and places for people	Community Smarter Travel Hubs (PTP / walks & rides /cycle training)	PTP beneficiary survey data. Community Hubs travel surveys.
	Travel advice at community events	N/A – Limited measurable travel behaviour impact
	Job seeker travel planning surgeries	Jobseeker PTP beneficiary surveys
	20mph limits programme	Traffic speed, road safety incident monitoring & local public surveys
	Small-scale infrastructure improvements	N/A – Contributed to wider measured changes in travel behaviour
C) Worksmart and green transport infrastructure	Employer Travel Plan support	N/A – No outcome monitoring data available
	Travel advice at business events	
	Nottingham ECO Stars	Fleet monitoring data & biz surveys
	Workplace challenge	Data from Challenge software tool
	Electric Link buses	Fuel usage and emissions data
	Nottingham City Car Club	Usage data and user surveys
	Cycle corridor infrastructure	N/A – Behavioural impacts are complementary to other projects
	Mobile Travel Centre (Info Bus)	PTP beneficiary survey data
D) Active Travel Solutions	Cycling promotion & training for all	Event participation data
	Cycle maintenance training	N/A – Behavioural impacts are complementary to other projects
	Ucycle – Universities and FE Colleges	Ucycle hire/loan data and user surveys
	Cycle promotion & training in schools	BikeIT, Bikeability and Lifecycle survey data
	Active travel marketing and events	Cycle Live event participation data

3.7 Where possible, outcomes were assessed on a project-by-project basis and aggregated to each of the four LSTF programme workstrands. We acknowledge the total measured outcome of all LSTF-funded projects is likely lower than our estimate that has been based on summing together individual project outcomes. This is because some people may have benefitted from more than one service, resulting in potential for double-counting of outcomes and impacts. However, it is also important to recognise that outcomes have not been captured for all of the LSTF-funded projects, most notably for the significant investment in the Kangaroo multi-operator smartcard service and accompanying on-street Smartcard purchase and top-up infrastructure. Furthermore, the overlapping nature of the LSTF projects means there are likely to have been some (unquantifiable) agglomeration benefits that arise from delivering these projects simultaneously.

3.8 Overall, we are content that the stated outcomes and impacts lie within a reasonable range of the true impact of the whole LSTF programme.

Estimating and quantifying the impacts

3.9 The impact evaluation was divided into two separate packages of analyses:

- **Micro-level:** Impacts were calculated across each of the LSTF programme workstrands in relation to the four programme objectives defined at paragraph 2.2 and summarised in Figure 3-1. This task involved using WebTAG appraisal techniques and standardised transport impact accounting values and tools (such as those published by DfT, DECC, English Partnerships and World Health Organisation) to quantify the value of observed travel behaviour changes, cost savings, jobs and emission reductions delivered through Nottingham's LSTF-supported projects between 2011-15. A detailed spreadsheet model, with documented assumptions, was developed to account for these micro-level impacts, and consider them in relation to the overall LSTF programme's delivery cost – thereby enabling an estimated ex-post Benefit:Cost Ratio (BCR) to be produced.
- **Macro-level**: Impacts were observed using a mix of short-medium term, and long-term Key Performance Indicators that are monitored by Nottingham City Council in relation to the Nottingham Urban Area's Local Transport Plan. This task involved collating the Annual Performance Review (APR) data from Nottingham City Council as it became available. Each data item related to one, or more, of the four LSTF programme objectives; as illustrated in Table 3-2. ITP's evaluation team used the short-medium term datasets as a means of corroborating the micro-level impacts calculated through the process above.

3.10 A key challenge common to both the micro and macro impact analysis is that it is not possible to unpick the measured outcomes and impacts of individual LSTF funded projects, or the programme as a whole, from the wider context of change in the Nottingham Urban Area. It is therefore important to recognise that Nottingham's LSTF programme was delivered against a backdrop of ongoing recovery from economic recession, falling oil prices reflected in the average pump-price for petrol and diesel, major local roadworks associated with the A453 dualling and ring road capacity expansion, and the NET Phase 2 tram system extension works. However, it was not feasible to develop a meaningful counterfactual from another similarly-sized UK city given all core cities received LSTF funding to implement similar smarter travel initiatives.

3.11 A guide to the spreadsheet model used to quantify the micro-level impacts of the LSTF Programme has been included in Appendix A to this report.

Figure 3-1: LSTF interventions and links to programme objectives

Workstrand	LSTF intervention	Link to LSTF objectives			
		Growth	Carbon and Air Quality	Accessibility	Health
A	Enhanced smartcard	✓	✓	✓	
	Citycard cycle hubs and cycle hire	✓	✓	✓	✓
	Personalised journey planning (PTP)	✓	✓	✓	✓
	Inclusive accessibility			✓	
B	Neighbourhood smarter travel coordinators	✓		✓	✓
	Smarter travel services programme	✓	✓	✓	✓
	20mph limits programme		✓	✓	✓
	Small-scale infrastructure improvements in neighbourhoods		✓	✓	✓
C	Worksmart enhanced business support package	✓	✓	✓	✓
	Low carbon transport (Ecostars, Electric buses)	✓	✓		
	Cycle commuter corridors network infrastructure	✓	✓		
	Nottingham car club	✓	✓		
D	Ucycle scheme in universities and colleges		✓	✓	✓
	Cycling promotion in schools		✓	✓	✓
	Annual active travel marketing and events	✓			✓
	Cycling for all			✓	✓

Table 3-2: Summary of Nottingham LSTF Outcome and Impact Indicators

Objective	Outcome indicators (short-medium term)	Impact indicators (long-term)
Growth	PI 1: Area wide traffic levels PI 2: Public transport patronage PI 3: Journey time & speed variations PI 4: Mode share of public transport	PI 14: Nottingham economy GVA PI 15: Employment levels PI 16: Examples of inward investment
Carbon and Air Quality	PI 1: Area wide traffic levels PI 4: Mode share of public transport PI 5: Carbon emissions from transport PI 6: NO_x levels within AQMA areas	PI 17: Reduced carbon emissions per head of population PI 6: Improvements to air quality
Accessibility	PI 7: Access to service and facilities PI 2: Public transport patronage PI 8: Satisfaction and perceptions of local transport PI 4: Mode share of public transport	PI 18: Reduced levels of worklessness PI 8: Greater accessibility to jobs and training Resident satisfaction & wellbeing
Health	PI 9: Road casualty rates/severity PI 10: Overall cycling levels PI 11: Network (km) with 20mph limits PI 12: Adult physical activity levels PI 13: % of adults overweight/obese	PI 19: Increase in life expectancy PI 20: Reduced health inequalities (between most affluent and most deprived wards)

4 OUTPUTS AND OUTCOMES BY LSTF WORKSTRAND

4.1 This section begins with a high level summary of the programme-wide outputs of the Nottingham Urban LSTF programme. It then provides a more in-depth assessment of the outputs and outcomes of the four workstrands, both at a workstrand level and an individual project level.

Overview of key project outputs

4.2 Table 4-1 summarises the number of beneficiaries of the Nottingham LSTF programme while Table 4-2 provides an overview of the capital outputs.

Table 4-1: Programme-wide outputs – Revenue measures

Measure	Beneficiaries
Multi-operator smartcard and e-purse for Nottingham Urban Area	~800,000
Households consulted through the 20mph programme	123,750
People engaged through FE and HE education active travel activities and initiatives	39,115
Individuals receiving PTP through: Community Hubs, community and workplace events, mobile travel centre + support for new-starters	13,488
People engaged through in-school active travel activities and initiatives	11,482
Jobseekers receiving personal travel planning advice to help them get a job or gain access to a new job	9,725
16-19 year olds in full-time education receiving free Kangaroo smartcard public transport passes	9,266
Bike maintenance services or classes	6,443
Jobseekers receiving half-price Kangaroo smartcard public transport passes to get a job or gain access to a new job	4,377
Led walks delivered through Community Smarter Travel Hubs	4,237
New starters receiving 1 month's free travel when starting a new job	1,967
Adult cycle training delivered through Community Smarter Travel Hubs	1,775
Led cycle rides delivered through Community Smarter Travel Hubs	1,516
People benefitting from bikes loaned through the Ucycle initiative	1,189
Workplace support including: developing travel plans, travel surveys, bespoke advice, implementation of sustainable transport improvements	92
Schools where new services, facilities or activities have been provided to reduce car use for the 'school run'	88

Table 4-2: Programme-wide outputs – Capital measures

Measure	Output
Bike parking spaces introduced/upgraded at 14 secure Cycle Hubs, Universities, FE Colleges and on-street in the city centre	1,642
Extent of 20mph speed limit introduced in residential areas	580km
Smartcard on-street retail network	20 vending machines
Off-road shared cycle/pedestrian routes	4.67km
On-road cycle lanes	2.03km
Electric Vehicles	6 vehicles
Off-road cycle paths	0.2km
New pedestrian or cyclist road crossings	2
Car club parking bay sites in the Nottingham Urban Area	12
Car club vehicles available for hire	9

4.3 The outcomes of some of the 'citywide' LSTF projects, which offer benefits to multiple-sections of the Greater Nottingham residential and business community, are not truly captured within this Impact Evaluation. Given this, it is positive to note that it is these measures which exhibited the greatest levels of awareness and use amongst the representative sample of respondents surveyed as part of the 2015 Big Idea[3] research. As shown in Table 4-3, the Kangaroo smartcard, electric buses and cycle hire were the most visible LSTF schemes according to the Big Idea survey of Nottingham residents and businesses. Over half of the survey respondents were aware of these initiatives. Similarly it was the electric buses, Kangaroo smartcard and on-street retail network which had been used by the most respondents.

Table 4-3: Public Awareness of LSTF interventions (Big Idea Survey)

LSTF intervention	Awareness		Experiencing of using	
	N	%	N	%
Kangaroo smart card	1,118	61%	326	29%
Electric buses	1,068	58%	376	33%
Citycard cycle hire	1,049	57%	70	6%
On-street PT retail network	888	49%	191	17%
New residential 20mph limits	866	47%		0%
Citycard cycle hubs	776	42%	29	3%
Cycle Live / Great Notts Bike Ride	484	26%	71	6%
Electric vehicle charging	371	20%	27	2%
Ucycle bike loans	244	13%	13	1%
Workplace travel planning / Challenge	231	13%	16	1%
City Car Club	173	9%	2	0%
Community Smarter Travel Hubs	129	7%	3	0%
Total responses	**7,397**	**-**	**1,124**	**-**
Total respondents	**1,830**	**-**	**-**	**-**

Workstrand A – Smartcard development, integrated ticketing & integration

Inputs

4.4 Table 4-4 summarises the LSTF expenditure allocated to Workstrand A. In total £5.8 million was allocated to this workstrand, of which £4.95 million was spent on revenue measures, with a small amount (£0.86 million) available to support the implementation of capital measures.

Table 4-4: Workstrand A funding allocations (in £000s)*

Bid element	Revenue	Capital	Total
Key component	1,910	858	2,768
Main bid	3,049	0	3,049
Total	4,959	858	5,817

*Values exclude Workstrand E: Programme Coordination, in relation to which some funding is attributable to Workstrand A.

[3] The Greater Nottingham Transport Partnership, Nottingham City Council and Nottinghamshire County Council, periodically undertake a piece of research called the Big Idea survey. This research looks at trends and attitudes to sustainable transport.

Outputs and outcomes

4.5 As shown in Table 4-5, Workstrand A involved the implementation of a range of initiatives, which have been discussed in the remainder of this section. In combination they aimed to:

- Support access to employment and training
- Improve integration and unlock travel opportunities
- Increase use of low carbon transport

4.6 **Kangaroo Smartcard and on-street retail network**: A key focus for this workstrand was its contribution to the development and implementation of an ITSO compliant smartcard multi-operator ticket covering the Greater Nottingham Area. The Greater Nottingham multi-operator public transport ticket (Kangaroo) has existed for over 10 years as a paper-based day ticket, pre-purchased scratch-card, or season ticket. It enables passengers to use all public transport services, across all operators, within the defined Greater Nottingham Area boundary[4] for a fixed price (currently £4.50 per day). The ticket reduces the financial penalty associated with making trips using multiple public transport services run by different operators. It is valid for use on most buses, trams and trains within the boundary.



4.7 LSTF funding contributed to the work needed to establish a Kangaroo smartcard fare product that could be loaded onto the Nottingham Citycard – the main tool for accessing leisure and library services in areas that fall under Nottingham City Council's administrative control. Key outputs included the introduction of 20 on-street ticket machines, and installation of back-office systems and interoperability updates to on-bus ticketing systems required to accommodate the Kangaroo smartcard fare product. A total of 78,623 smartcard Kangaroo tickets were issued between 2012 and 2015, representing 73% of all Kangaroo tickets sold over the same period.

4.8 The development of infrastructure and back-office systems that facilitated both the Kangaroo and Robin Hood smartcards was considered to be one of the key successes of the LSTF programme in Nottingham. Stakeholders interviewed through the Process Evaluation highlighted the long-term vision of this initiative, and its potential as a platform for supporting multi-modal journeys now / mobility-as-a-service in the future, as the reasons why it was so highly valued. Kangaroo smartcards were also among the most widely recognised elements delivered through the LSTF programme, as highlighted in Table 4-3.

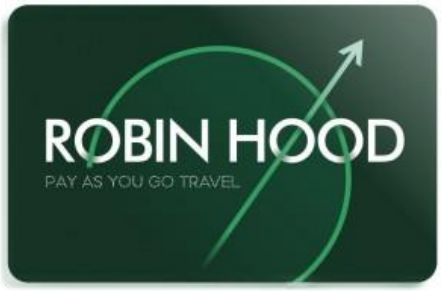
[4] Nottingham City Council (2013) *Kangaroo: How to use & operator boundary*. Available online at: http://www.kangaroo.co.uk/how-to-use-boundary-map.html, last accessed: 18/01/16.

Table 4-5: Workstrand A – Cumulative outputs and outcomes

Project Name	Cumulative Outputs	Cumulative Outcomes
ITSO smartcard multi-operator ticketing and on-street retail network	• Develop and launch Kangaroo and Robin Hood smartcard software, systems and fare products • 20 on-street ticket vending machines installed	• 78,623 Kangaroo smartcards were issued, representing 73% of all Kangaroo passes in use in the Nottingham Urban Area
Citycard Cycle parking hubs	• 14 secure cycle parking hubs • Used 28,772 times by 1,246 unique users • Primarily used by commuters	• Average increase in cycling by hub users: 5.8min per day • 38,447 extra cycle trips equalling 199,238 more cycle km • 62 new cyclists and a reduction in car km of 92,107km
Citycard Cycle Hire	• 500 hire bikes available at 28 on-street locations • 6,089 bike hires by 1,833 unique users • Total of 98,720 hours of cycle hire	• Average of 12mins additional cycling per month per user • 715 people started cycling due to bike availability • 814,416 additional cycle km in total (>50,000 hours) • 1,037,426 fewer car km travelled
Inclusive accessibility (Access Advisr)	• New inclusive mobility website created for use by disabled and older people in Greater Nottingham • Engaged with 24 local disabled people's groups	• 1,600 hits and 220 searches over LSTF period from Nottingham Urban Area residents • Low level of usage of the website
PTP + Travel support for jobseekers, students & new job starters	• 9,266 students received a free Kangaroo ticket that they could use to access education and training. • 4,377 jobseekers received discounted Kangaroo tickets, with 93% using it at least once a week. • 1,967 new starters received one month's free travel when starting their new job • 500 new employees at the new ASDA Home Delivery Centre received a PTP pack[5].	Jobseeker Kangaroo resulted in: • 167,277 additional trips • 444,155 additional tram trips • 618 (FTE) jobseekers placed into work (569 FT / 350 PT) 16-19 Kangaroo resulted in: • 141,463 bus additional trips • 16,244 tram additional trips

[5] Outcomes/benefits of the 500 PTP packs issued to 500 new Asda staff are captured within the PTP offered through the Workstrand B Community Hub

4.9 **'Robin Hood' smartcard E-purse:** The second phase of the smartcard project involved the development of an 'Oyster-style' public transport smartcard for Nottingham. Branded as the 'Robin Hood' card, the electronic purse functionality allows users to load value onto the card (using the-street retail network). The cost of any public transport trips they make is automatically deducted from value saved on the smartcard when the user 'taps on' to board local tram and bus services. Passengers using a Robin Hood card benefit from up to a 10% reduction against the equivalent cash fare, with the system automatically calculating the optimum fare for multiple trips made with the same operator (capping at a reduced day fare of £3.15) or multiple trips made with multiple operators (capping at £4.00 per day). The Robin Hood card is not yet a like-for-like replacement for the Kangaroo Smart Card, but Kangaroo season ticket products will gradually be added to the Robin Hood platform. Over time, Robin Hood will come to represent better value travel for occasional public transport users[6].



4.10 The Robin Hood smartcard is one of the first of its kind outside of London. It recognises that passengers are often unconcerned which operator's services they are using, provided they meet their travel needs. As such it enhances the range of local public transport options open to cardholders. From an operational perspective it also minimise the extent of cash-handling required by local public transport operators, speeds-up journey times (through faster boarding) and encourages mode-shift.

4.11 While the bulk of the work to develop the Robin Hood e-purse was completed during the LSTF 2014-15 period, it did not launch in Greater Nottingham until December 2015. As such it has not been possible to capture related outcomes/impacts as part of this evaluation. Instead an estimate of likely future impacts, predicated on reversing a previously recorded reduction in public transport trips (in 2011/12 when a change in the NET tram operator resulted in NCT CityRider tickets no longer being accepted), has been made. An overall LSTF programme Benefit:Cost ratio is presented with, and without, this estimate in Chapter 6 of this report.

4.12 **Jobseeker Citycard:** From April 1st 2013, any Nottingham city resident who had been unemployed for 13 weeks or more was eligible to apply for a Jobseeker Citycard under a DWP-funded pilot project. From October 2014 the Jobseeker Citycard scheme was extended to residents living in the Gedling and Broxtowe Borough Council areas, and became funded through this LSTF programme workstrand. The Jobseeker Citycard enables holders to buy a Kangaroo ticket at half the standard adult fare, and was well-used by the 4,377 individuals who received the benefit (see Figure 4-1).

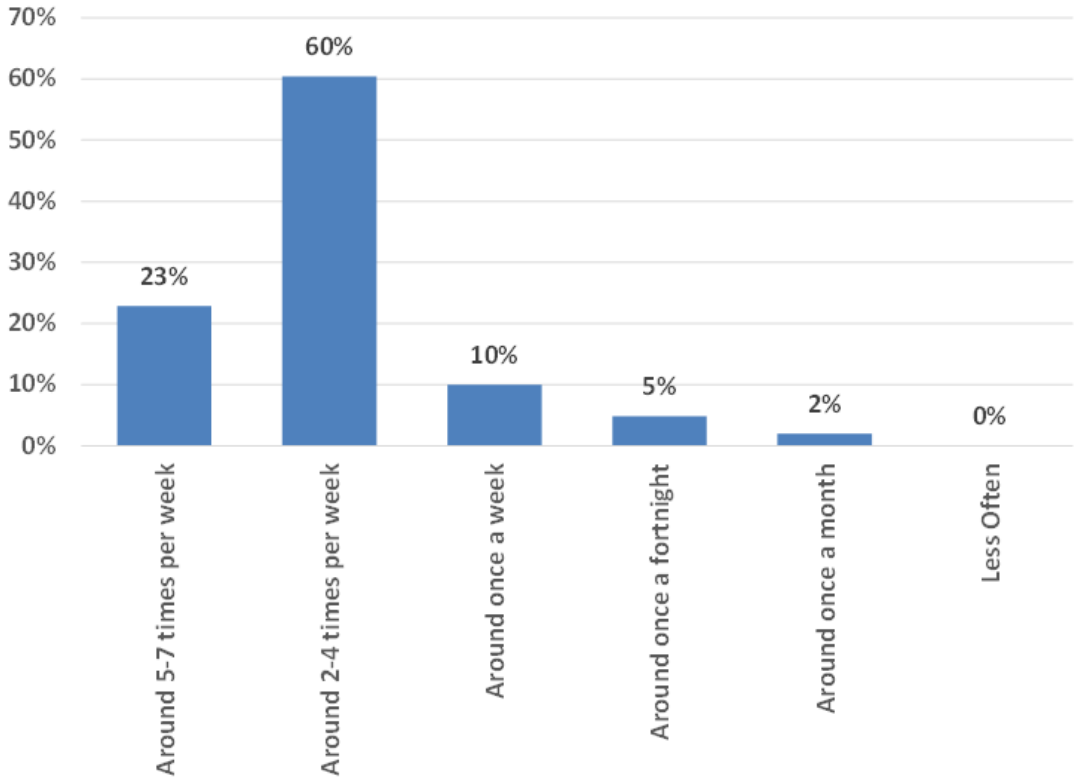
4.13 Key outcome findings from evaluation of the initiative are that:

- 93% of cardholders used it to purchase a half-fare Kangaroo ticket at least once a week.
- Cardholders completed an average of 3.1 trips per half-fare Kangaroo ticket purchased.

[6] Nottingham City Council (2015/16) Where can my Robin Hood Smartcard be used? Available online at: http://www.robinhoodnetwork.co.uk/where-can-i-use.html, last accessed: 09/01/16

- Over half of all trips made related to accessing job centres, interviews, education, or employment opportunities.
- Almost three quarters (74%) of Jobseeker Citycard recipients had used the benefit to access an average of 4 job interviews. Roughly one in five (19%) had used it to access more than 10 interviews.
- Over a third of jobseekers reported that they would travel slightly or significantly less without the opportunity to purchase the half-fare Kangaroo travel passes.

Figure 4-1: Jobseeker Citycard holders' frequency of Kangaroo pass purchasing



4.14 Overall, 81% of Jobseeker Citycard holders stated that being able to buy half price Kangaroo tickets enabled them to search for employment in a wider area, indicating the initiative had expanded their travel horizons and opportunities.

> "It's widened my [job] search area, so I have more opportunities."
>
> Focus group attendee from jobseeker trial

4.15 The aim of the initiative was to minimise travel cost as a potential barrier for accessing training and employment opportunities. Over 4,300 jobseekers took up the offer, which was accessed through a combination of the Jobcentre Plus, A4E, Ingeus, and the Community Smarter Travel Hubs. The scheme resulted in around 165,000 additional bus trips and almost 445,000 extra tram trips that would not otherwise have been made. The Jobseeker Citycard helped 919 beneficiaries to fulfil 618 (FTE) employment opportunities (569 full time, and 250 part time roles), which they would otherwise not have been able to afford to travel to.

4.16 **Support for new job starters:** The Jobseeker Citycard offer was complemented by local Employability Support packages delivered and funded via the Community Smarter Travel Hub interventions as part of their overall PTP support for jobseekers. 1,967 people received a free public Kangaroo smartcard when taking up a new job in the Nottingham Urban Area. This benefit lasted for 1 month, and was intended to bridge an identified public transport affordability gap in the weeks before a first pay check is received. A total of 64,747 Kangaroo trips were made by beneficiaries, representing an average of 33 trips per pass-holder. The bulk of these trips (58,708) were made by bus, with the remainder completed by tram. It is estimated that 21% of these trips would not have been possible without the benefit, on affordability grounds.

> "Getting a month of free travel to my new job really helped me out whilst I was waiting for my first pay cheque. I'd definitely recommend it to other new starters."
>
> Leen Valley resident

4.17 In addition to the discounted travel benefit, the Community Smarter Travel Hubs also offered jobseekers Personalised Travel Planning support. This complementary initiative encouraged jobseekers to maximise the benefit of their half-price public transport travel, by providing information about the services that exist in their local area.

4.18 The final element of Workstrand A's new starter support package was the offer of bespoke one-to-one sustainable travel support to businesses relocating to/within the Nottingham Urban Area. The quote below shows how the PTP packs distributed to staff at a new Asda distribution centre proved beneficial to their 500 new staff.

> *"Before we relocated to our new site in Bulwell we had some concerns about the local transport links and how this might impact on our recruitment process. We were pleased with the level of support provided by Nottingham City Council and we valued the Personal Journey Planning packs they produced for each of our new staff members. The feedback we received from staff was very positive and we believe that they have helped employees discover more convenient, quicker and cheaper ways of travelling to work".*
>
> Operations Manager, ASDA Home Distribution Centre

4.19 **16-19 Kangaroo discount:** Free Kangaroo tickets were offered to 16-19 year olds from low income households who were attending FE College courses, with the costs met by a combination of Nottingham City Council and local Colleges. Like the Jobseeker Citycard, the initiative sought to remove cost as a barrier to young people accessing training. Through this scheme 9,266 students received a Kangaroo season ticket. It resulted in an additional 141,463 bus trips, and 16,244 tram trips, being completed that would not otherwise have been made by public transport.

4.20 **Citycard Cycle hire:** A city-wide cycle hire scheme known as 'Citycard Cycles' was introduced, with access linked to the Citycard. Through this initiative 500 bikes were made available for hire via 28 on-street locations across the Nottingham urban area. Between September 2012 (when the first hire bikes became available) and March 2015 a total of 6,089 bike hire instances were recorded by 1,833 unique users.

4.21 When first launched (in autumn 2012) the service was operated with a £1 daily charge, but low levels of usage through the first winter resulted in the hire fee being removed. The cycle hire scheme has subsequently operated free of charge for the bulk of the LSTF 2011-15 implementation period. While 75% of service users were generally satisfied with their experience of using a Citycard Cycle, detailed feedback collected through surveys revealed underlying implementation issues that made it hard for people to regularly hire bikes, these included:



- Difficulty obtaining a bike using the SMS text-based system (31% fairly or very dissatisfied)
- Challenges with customers' finding bikes that were being hired for long periods of time once the scheme was made free of charge (28% fairly or very dissatisfied)
- This was reflected by the fact that 37% of service users only used the service once.
- Service users also commented upon the distribution of cycle hire points, noting many were next to main roads that were not conducive to cycling.

> *"I have wasted time walking to five different hire stands to find all empty but the last one – where I wasn't able to hire the bike because the last hirer hadn't sent their 'return' text. I phoned the helpline but the person wasn't able to do anything about this."*
>
> Female Citycard Cycle hire user from the centre of Nottingham

4.22 Encouragingly, the Cycle Hire service's availability encouraged people who used it to walk and cycle more regularly, and for greater distances. Over 50,000 additional hours of cycling activity, and almost 13,000 additional hours of walking activity were estimated based on survey responses from Cycle Hire users. The Cycle Hire initiative also allowed 715 people who did not have access to a bike to take up cycling for local trips.

> *"I found Citycard Cycles made a huge difference… I had not enjoyed Nottingham at all without the bicycles, and instead I found the city rather enjoyable with them."*
>
> Male Higher Education student from overseas

4.23 In net terms, it is estimated that the Citycard Cycle hire initiative resulted in over 1 million fewer car kilometres (~120,000 fewer car trips) being made in the Nottingham Urban Area during the course of the LSTF implementation period.

4.24 Feedback from service users suggests a number of learning points that could improve the future delivery of the city-wide cycle hire scheme. They include:

- Making more bikes available in residential areas, to encourage cycling into the city.
- Improving the mechanism for returning the bikes, so users were more careful about checking them back in.
- More accurately tracking the locations of available bikes, so this information could be shared via an app or website to help people looking for a bike.

> *"Three out of my 5 attempted hires failed because the bike I had in front of me was registered as being at another location! I wonder if some kind of tracker or a better way of registering the bike to location might help if human error occurs when people return bikes."*
>
> Female Citycard Cycle hire user from Sherwood



4.25 **Citycard Cycle Hubs**: A further measure to increase the use of low carbon transport was the installation of 14 secure cycle parking hubs which anyone with a Citycard can access. Between October 2013 and March 2015 these were used 28,772 times by 1,246 unique users, reflecting an average of 255 uses per week (across all Hub locations).

4.26 Surveys with Cycle Hub users revealed they have been well-received; with the Hubs at Nottingham rail station, Broadmarsh bus station, and Fletcher Gate most well-used. The main reasons people choose to use the Hubs was the greater security they offer over less-secure, in-street racks; with the majority of users (94%) using them to park their own bikes.

4.27 Over half of surveyed Cycle Hub users (57%) indicated they use the Hubs at least 4 times per week, primarily for commuting purposes. A relatively small number of people use them on a regular basis, with a larger number of people occasionally choosing to park their bikes at the Hubs to interchange with local and national public transport options.

4.28 Survey data revealed the Citycard Cycle Hubs had encouraged almost 38,500 additional cycling trips in the Nottingham Urban Area, and over 2,000 integrated cycle + public transport trips (most notably by combining bike and train), during the course of the LSTF implementation period. Users of the Hubs indicated they had reduced their car use, by an aggregated total of more than 92,000km.



4.29 **AccessAdvisr:** was a website (www.accessadvisr.net) launched in September 2013, which enabled people who experience limited mobility to share their views and experiences of travelling to different places in Greater Nottingham (as well as the wider UK). The aim of the website was to become a central source of information for disabled and older people on accessibility issues – particularly at transport stops and stations – in order to encourage more independent mobility among these groups.

4.30 To promote the website the project team contacted 245 different disabled people's organisations and interest groups from the local area, and met with 24 of these in order to raise awareness of the information tool. The site attracted almost 1,600 hits from Nottingham Urban Area residents during this time, yielding a total of 220 searches for accessibility information. This represents a low level of usage, reflecting the specialised nature of the information it provides and the relatively low levels of internet usage among some groups of disabled and older people.

Workstrand A: Overview of outputs and outcomes (2011-15)

- Total number of directly engaged beneficiaries: 18,689[7]
- Total new cyclists: 777
- Total increase in cycle km: 1,013,654
- Net change in cycle trips: 195,607 extra trips
- Net change in bus use: 269,878 extra trips
- Net change in tram use: 450,138 extra trips
- Net change in train use: 9,227 extra trips
- Net change in car trips: -81,726 fewer trips
- Total number of car km saved: 1,129,533km
- Jobseekers placed into work: 919 (618 FTE: 569 full time, 350 part time)
- Net change in CO_{2e} emitted: +127 tonnes (arising from increase in PT trips)

Workstrand B – Community Smarter Travel Hubs & Places for People

4.31 Table 4-6 summarises the LSTF expenditure allocated to Workstrand B. In total £3.77 million was allocated to this workstrand and the revenue/capital split was relatively even, with £1.85 million spent on revenue measures and £1.93 million on capital measures.

Table 4-6: Workstrand B funding allocations (in £000s)*

Bid element	Revenue	Capital	Total
Key component	574	0	574
Main bid	1,274	1,926	3,200
Total	1,848	1,926	3,774

*Values exclude Workstrand E: Programme Coordination, in relation to which some funding is attributable to Workstrand B.

Outputs and outcomes

4.32 As shown in Table 4-7, Workstrand B involved the implementation of a range of initiatives, which are discussed in the remainder of this section. In combination they aimed to:

- Integrate smarter travel services at neighbourhood level.
- Help local people choose low carbon, active travel options.
- Address identified travel barriers.

[7] This total excludes the 500 new starters at Asda as the outcomes of this intervention are captured within Workstrand B – PTP through Community Smarter Travel Hubs

Table 4-7: Workstrand B – Cumulative outputs and outcomes

Project Name	Cumulative Outputs	Cumulative Outcomes
Community Smarter Travel Hubs + delivery of PTP	• 5 Community Hubs • 5 Hub Coordinator posts + 78 volunteer placements created to run the Community Hubs • 8 Cycle Centres • 5,893 residents received PTP through the Community Hubs	Economic value of the Hub co-ordinator posts: £342,000 £1.07m value of volunteer contributions to delivery Outcomes of PTP to 11,970 beneficiaries: • Reduction in car use: 911,890 trips / 12,603,279 car km • Increased walking: 580,331 trips • Increased cycling: 193,914 trips / 1,004,879 cycle km
PTP for Job Seekers[8]	• 9,725 Jobseekers were provided with tailored travel advice	Changes amongst jobseeker PTP beneficiaries: • Reduction in car use: 493,909 trips / 6,826,338 car km • Increased walking: 314,326 trips • Increased cycling: 105,030 / 544,275 cycle km
Led Walks and Cycle Rides	• 4,237 residents took part in a led walk • 1,516 residents took part in a led cycle ride	One-off increase in activity by: • 7.5km per participant in led walks • 23km per guided cycle rides participant
Cycle Training and Bike Maintenance	• 1,775 residents received cycle training • 6,443 residents benefitted from the bike maintenance offer (no outcome data available)	Average changes among cycle training beneficiaries: • Increase in cycling: 16 minutes per day • Increase in cycle trips/km: 89,922 trips / 2,704,600 km • Reduction in in car trips/km: -214,414 trips / -2,963,422 km
20mph limits programme	• 20mph speed limits implemented in residential areas across Nottingham City • Total of 580km of roads covered • Households consulted: 123,750	Monitoring data for Sherwood indicates: • 1.8% reduction in traffic flows and 5.2% reduction in mean average speeds • Reduction in accident casualties of 1.4 per year • 17.5% increase in walking and cycling (limited data sample)
Small-scale infrastructure improvements	• 20mph zones outside schools in County area. • Cycle /pedestrian link introduced between Ruddington Lane & Farnborough Road • £100,000 highways maintenance at Beckhampton Road	No outcome data available

[8] Omits outputs and outcomes of Community Smart Travel Hubs' Employability Support Offer (PTP plus one month's free travel for new starters), as the benefits were captured under Workstrand A.

4.33 **Community Smarter Travel Hubs ('Community Hubs')**: The main deliverable of Workstream B was the creation of five Community Smarter Travel Hubs. They aimed to help local communities and individuals to adopt more sustainable travel behaviours by providing information and advice alongside specific training and activities/events in a community setting. The Nottingham City North Hub was the first to be established in 2012 and was followed in 2013 by two further hubs in Nottingham City (the Nottingham Central and Nottingham South Hubs) and two in the County area (Gedling and Broxtowe Hubs). Alongside the Community Hubs, eight Cycle Centres were established to extend the reach of the Community Hubs' cycling offer.

4.34 Each of the five Community Hubs were coordinated by a full time officer, and the economic value (in Gross Value Added) of these five FTE roles was £342,494. In addition to these paid positions, 78 volunteering opportunities were created to support Sustrans and TravelRight with the delivery of the Hubs. Using a methodology developed by DWP and the Cabinet Office[9] it was possible to estimate both the labour replacement value (£6,873) and monetised wellbeing value (£1,065,636) over the LSTF funding period. The quote below shows how these opportunities assisted volunteers to find paid employment:

> *"The volunteering really helped me develop my CV as it offered me the chance to work in an office environment, which had been the downfall of my CV before. It gave me experience of completing day to day office tasks like updating and creating documents, doing surveys and communicating with customers."*
>
> TravelRight North Community Hub volunteer

4.35 **Personalised Travel Planning (PTP) for communities**: Rather than delivering residential PTP via travel advisors going door-to-door, the Nottingham LSTF programme offered the service through the Community Hubs. Hub staff members were trained to provide residents with personalised travel information, which addressed identified travel barriers and promoted Nottingham's sustainable transport offer. In total the Community Hubs provided personalised advice to 5,893 residents, in addition to the PTP advice delivered to 500 Asda New Starters (Workstrand A) and to 5,577 individuals actively engaged in PTP discussions at Big Wheel events (Workstrand D). Travel data, derived from surveys with beneficiaries of the Nottingham North and Gedling Community Hubs, indicates that PTP interventions resulted in beneficiaries walking an average of 9% more and cycling around 30% more than they did before receiving the advice. Based on a total of 11,970 people receiving PTP, the resulting travel behaviour change led to:

- An additional 580,331 walking trips
- 193,914 additional cycling trips, resulting in over 1 million extra kilometres cycled
- 911,890 fewer car trips (-12,603,279 car km)
- Associated health benefits and financial savings for individuals

[9] DWP and Cabinet Office (2014) *Wellbeing and Civil Society: Estimating the value of volunteering using subjective wellbeing data*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221227/WP112.pdf, last accessed 11/03/2016.

4.36 **Jobseeker Personalised Travel Planning**: In addition to more general community-focused PTP, the Community Hubs provided specific travel advice to 9,725 jobseekers alongside the Employability Support Package outlined under Workstrand A. In combination with cycling initiatives for jobseekers, this led to greater levels of walking and cycling activity amongst beneficiaries, which is estimated to have resulted in over 300,000 extra walking trips and 100,000 cycling trips (almost 550,000 cycled km) with a subsequent reduction in car use (by almost 500,000 trips / 6.8m car km). This shift to sustainable modes also generated health benefits and financial savings for individual beneficiaries.

4.37 In addition to providing personalised travel information, staff of the Community Sustainable Travel Hubs sign-posted individuals to other complementary services and initiatives:

- **Led walks and cycle rides**: A number of led walks and cycle rides were promoted and delivered across the Greater Nottingham area by the Hub teams. In total 4,237 residents took part in a led walk, and 1,516 took part in guided rides. These leisure events delivered immediate health benefits to participants, with the aim being to encourage longer-term switches to active modes for a wider range journeys.
- **Adult Cycle Training**: Limited cycle skills and route knowledge can inhibit cycling for new or inexperienced cyclists. To address these barriers, and help individuals switch to more active modes, Community Hub staff signposted residents to free cycle training offered by Ridewise. Courses tailored to beginners', improvers' and commuters' were offered, providing both cycle skills and route information. In total, 1,775 residents took up the offer of cycle training between 2011 and 2015. Surveyed cycle training beneficiaries reported that, on average, they cycled an extra 16 minutes per day after receiving the training. It is estimated that all LSTF-funded cycle training activity resulted in 89,922 additional cycle trips covering over 2.7 million kilometres.
- **Bike Servicing and Maintenance Classes**: Alongside cycle training, the five Community Hubs offered bike servicing and maintenance classes. Over the course of the LSTF programme 6,443 residents received a bike maintenance service or class. There is no outcome data which exclusively addresses the outcomes of this measure, so any impacts have been captured through other measures.

> *"In November 2012 I was 17 stone 10 pounds and asked TravelRight for some guidance regarding cycling, explaining that I felt it would help me in my quest to lose weight…TravelRight provided me with lots of assurance and support to get me started…loads of information about what bike would be most suitable for me and my budget, where to cycle and advice on how to remain safe on the roads… A year on and I am now 12 stone 10 pounds and more confident than I've ever felt before. I also save £120 a month on petrol. Without TravelRight's support I feel that my attempt to lose weight and get cycling would only have been a short-term fad."*
>
> Nottingham North Community Hub beneficiary from Basford, who now cycles 6 miles to work every day

4.38 In addition to the residents who actively participated in the Community Hub initiatives, many other residents were engaged less intensively through local events and community newsletters run by the Hubs in the target areas.

4.39 **20mph limits programme**: Sitting alongside the Community Hubs, the implementation of 20mph limits in residential areas across Nottingham City was a significant workstrand component. Initially 20mph limits were implemented in the pilot area of Sherwood, with further areas added in 2013 and 2014. A total of 11 distinct rounds of 20mph signage and road treatment works were completed by March 2015, the majority (75%) of which were funded through the LSTF programme. This initiative fitted the aims of Workstrand B by:

- Reducing traffic speeds on residential roads, which have been identified as barriers that inhibit the uptake of walking and cycling in urban areas.
- Reducing road traffic incidents and injuries, as a consequence of reduced traffic speeds on narrow residential roads.
- Creating safer and more pleasant environments with the aim of encouraging local residents to walk and cycle more.

4.40 Monitoring data on the impact of the 20mph speed limit areas was only available for the Sherwood pilot. This data suggests the scheme has resulted in:

- A 5.2% reduction in mean traffic speeds, to 21.1mph.
- A 1.8% reduction in the flow of vehicles along 20mph streets.
- A 17.5% increase in walking and cycling levels (focused particularly upon walking), which exceeded the measured 11.2% increase at control sites. The sample for this data was small (one day before, and one day after), so these changes in behaviour were not included in the impact evaluation.
- A small reduction in casualties of 1.4 per year, compared to the average for the five preceding years.
- A minor reduction in the severity of collisions and casualties reported.

4.41 The recorded changes in vehicle speeds in the Sherwood pilot were not widely matched by the perceptions of members of the public, who identified a lack of speed enforcement as a potential issue. Even so, local residents were broadly supportive of the aims of the 20mph speed limit areas initiative.[10] The 20mph speed limit areas programme was also identified as a key LSTF legacy by the programme delivery team and stakeholders interviewed through the Nottingham LSTF Process Evaluation. The creation of places that support walking and cycling, and the long timeframe over which they will remain in place were cited as reasons for these perceptions.

4.42 **Small-scale infrastructure improvements:** The final element of Workstrand B was the implementation of small scale active travel infrastructure improvements around schools and the creation of 20mph zones outside County schools. The main interventions supported through this element were a cycle/pedestrian link between Ruddington Lane and Farnborough Road (adjacent to the extended Nottingham tram line) and £100,000 of highways maintenance for Beckhampton Road in Nottingham.

[10] The monitoring data collected for the Sherwood pilot area was considered to represent a fair proxy of the impact of each subsequent 20mph zone, and was therefore used as the basis for spreadsheet modelling and Value for Money assessment of the impacts of the LSTF programme.

Workstrand B: Overview of outputs and outcomes (2011-15)[11]

- Total number of directly engaged beneficiaries: 29,223[12]
- Total increase in cycle km: 4,289,001
- Net change in cycle trips: 390,382 extra trips
- Net change in walking trips: 898,894 extra trips
- Net change in car trips: -1,620,213 extra trips
- Total number of car km saved: -22,393,039
- Change in serious casualties: -28
- Change in slight casualties: +4
- New jobs (FTE paid positions) created: 9
- Reduction in CO_2 equivalent emissions: -4,069 tonnes

Workstrand C – Worksmart and green transport infrastructure

Inputs

4.43 Table 4-8 summarises the LSTF expenditure allocated to Workstrand C. In total £4.37 million was allocated to this workstrand, of which around two thirds (£2.99 million) was spent on capital measures, with the remainder (£1.34 million) available for supporting revenue measures.

Table 4-8: Workstrand C funding allocations (in £000s)*

Bid element	Revenue	Capital	Total
Key component	493	0	493
Main bid	889	2,985	3,874
Total	1,382	2,985	4,367

*Values exclude Workstrand E: Programme Coordination, in relation to which some funding is attributable to Workstrand C.

Outputs and outcomes

4.44 As shown in Table 4-9, Workstrand C involved the implementation of a range of initiatives, which have been discussed in the remainder of this section. In combination they aimed to:

- Support the needs of the business community
- Provide smarter travel advice and support services
- Develop the low carbon transport network

[11] Includes beneficiaries/outcomes of the PTP given to 500 Asda New Starters (Workstrand A) and PTP given to the 5,577 individuals actively engaged in PTP discussions at Big Wheel events (Workstrand D) as these have been assessed as part of the Community Hub PTP.
[12] Excludes the 123,750 households consulted through the 20mph programme.

4.45 **ECO Stars Fleet Recognition Scheme** was an efficient driving and fleet management training course with operator recognition scheme. It was open to fleet operators of all sizes across the Nottingham Urban Area and was free to join. Through ECO Stars members had access to over £1,000 of free expert advice to help improve the efficiency of their fleet operations. Members also had the opportunity to provide free SAFED (Safe and Fuel Efficient Driving) training to their fleet drivers in order to further reduce fuel consumption. By encouraging companies to utilise lower emission vehicles and training staff to drive more efficiently, ECO Stars supported the Nottingham business community and contributed to the development of a low carbon network.

4.46 Over the course of the LSTF period 69 organisations became members of the Nottingham ECO Stars scheme, and 4,869 fleet vehicles were rated through the scheme.

> *'The ECO Stars review has allowed us to identify and save over 30 hours of vehicle idling time each week, which in a small operation is a massive saving. Reviewing and monitoring this area then led on to run exception reports which made the drivers review their own performances which resulted in 0.5mpg more. So with both efficient driving and no idling in the fleet due to weekly reports issued to our drivers the savings are easily £1000 per vehicle p.a., plus a reduction in maintenance which we can't value as yet but we will be able to see if brake wear has been reduced in time. Easy and obvious steps but all driven by the ECO Star concept, thank you!'*
>
> Company Director P. H. Hull Services

4.47 Monitoring data provided by three Nottingham ECO Stars members indicated an average fuel and emissions savings of 3% across their 83 fleet vehicles. The result was a total saving of 301,715 kg CO_2 emissions for these three companies alone. This equates to an average saving of 3,635 kg CO_2 per vehicle. When factored to all ECO Stars members' rated vehicles, the estimated CO_2 reduction is 17,699 Tonnes and an estimated monetary fuel saving of £55,000 across all participating fleets over the intervention period.

4.48 **City Car Club:** LSTF funding was used to research, develop and implement a Car Club for the Nottingham Urban Area. A car club is a key element of developing a low carbon transport network, by providing on-demand access to vehicles, which reduces the need for individuals to own their own vehicle. The LSTF funded the installation of 12 car club spaces at 18 locations across the Nottingham Urban Area and underwrote the lease for 9 City Car Club vehicles of varying sizes were made available for hire in Nottingham. The scheme was run by 1 FTE coordinator and launched in the 2014/15 financial year.

4.49 Nottingham residents could sign up to the City Car Club either as a personal member, or if their employer had registered for a corporate membership of the City Car Club, they could join via their employer's account. During the course of the LSTF programme 222 people joined the Nottingham City Car Club: 87 Corporate Members and 135 personal members. These low membership numbers reflect the relatively recent launch of the initiative.

Table 4-9: Workstrand C – Cumulative outputs and outcomes

Project Name	Cumulative Outputs	Cumulative Outcomes
ECO Stars Fleet Recognition Scheme	• Membership offered (free) to fleet operators of all sizes in Nottingham Urban Area • £1,000 of free expert advice offered to members • 69 organisations joined ECO Stars • 4,869 fleet vehicles rated by ECO Stars	• Average saving on fuel and emissions: 3% (for 3 monitored companies' 83 vehicles) • Total carbon saving: 301,715kg CO_2 (for 3 companies) • Average 3,635kg CO_2 saved per vehicle • Estimated CO_2 saving across all vehicles:17,699 Tonnes • Estimated fuel saving to all fleet operators: £55,000
Nottingham City Car Club	• 9 vehicles available to hire from 12 bays in 7 locations • 222 Nottingham City Car Club members • 7,649 car club vehicle hours booked • 43,371 miles driven in car club vehicles	• 25.8% of members report walking more (14.3% cycling) • 27.6% report increased bus use and 25% use trams more • Almost 50% of members reported reduced private vehicle use since joining the Car Club • Estimated reduction in car use by car club members: 4,765 trips / 155,606 car km
Electric Buses	• 6.3 Electric Linkbus vehicles funded through LSTF financial contribution	Cost + carbon savings attributable to LSTF Linkbuses: • CO_2 savings (2013-15): 109.2 tonnes CO_2 • Estimated 10yr operating life CO_2 savings: 611.3 tonnes • Fuel saving (2013-15): £318,960 • Estimated 10yr operating life fuel saving: £1,144,800
Employer Travel Plan support + The Big Wheel Workplace Challenge	• 92 businesses intensively supported • 1,183 individuals took part in the Workplace Challenge through which 23,838 journeys were logged in 2013 and 2014	• During Workplace Challenge: 13,591 kg reduction in CO_2 as a result of reduced car use (-9,866 trips) + increased cycling (+6,258 trips) and walking (+3,088 trips) • Post-Challenge behaviour change impacts: Cycling +4.1mins per day; Walking +3.4 mins per day (averages)
Mobile Travel Centre (Infobus)	• Staffed by 2 FTE, the info bus made regular visits to Nottingham neighbourhoods. • 1,518 people received PTP recipients via the Mobile Travel Centre • 7,478 individuals benefited from info bus services	• No outcome data is available for the Mobile Travel Centre • PTP outcomes were inferred from similar activities delivered at Community Smarter Travel Hubs • Estimated outcome of 38,500 fewer car trips, over 8,000 additional cycling trips and 24,500 more walking trips • Resulted in estimated 0.5m fewer car Km, 42,000 additional cycling Km and 24,500 more walk Km.
Cycle corridor infrastructure	• Wilford Grove/Bathley Street & Queens Drive / Victoria Embankment improvements, River Leen cycle path, Harvey Hadden cycle track.	• No outcome data available

4.50 A survey of individual City Car Club members indicated that the service is a way of extending their range of personal mobility options. Corporate members who were surveyed appeared to use the service as a way of reducing their personal, company car, or hire car usage. The presence of the Car Club enabled 19% of survey respondents (10 people) to sell or dispose of their car. Although the monitoring survey sample sizes were relatively small, their findings indicate that the Car Club is helping to reduce car use and the need for individuals to own a vehicle. Based on the survey data, it is estimated that the Car Club has resulted in:

- 4,764 fewer local car trips
- A reduction of 155,578 car kilometres driven
- An increase in bus (+1,377 trips), tram (+4,529 trips), and train (+3,006 trips) travel.
- Increased walking (+5,724 trips) and cycling (+2,601) activity.

4.51 The Car Club is estimated to have delivered a net saving of 5 tonnes of CO_2 equivalent as a result of these travel behaviour changes.

4.52 **Electric Buses:** Contributing to the development of a low carbon transport network, the local LSTF programme funded 6.36 vehicles of Nottingham's new fleet of 45 Electric Linkbuses. Drawing on data provided for the whole Electric Linkbus fleet it was possible to estimate the carbon and financial savings accruing to LSTF investment, relative to EURO6 emission standard diesel buses. In total, an estimated 109.2 tonnes of CO_2 were saved between 2013 and 2015, equating to an annualised carbon saving of 61.1 tonnes of CO_2. Based on an operating vehicle life of 10 years it is possible to suggest LSTF funded vehicles will result in a total carbon saving of 611.3 tonnes of CO_2 and over £1.1m of fuel savings (calculated at £18,000 per bus relative to EURO6 buses). Further environmental benefits arise in the form of NOx + PM10 emission reductions.

4.53 **Employer Travel Plan support and travel advice at business events:** Pre-LSTF Nottingham already had a well-developed workplace travel plan support programme known as 'The Big Wheel Business Club'. LSTF funding allowed for the continuation and expansion of the package of business support. The Big Wheel team provided intensive support to 92 workplaces, while numerous other workplaces were engaged to a lesser extent. Activities included Travel Plan development, travel surveys and the delivery of travel-focused workplace events. It is not possible to quantitatively assess the impact of this programme element due to a lack of baseline and post-intervention data from participating workplaces and employees. Qualitative feedback from participant employers illustrates the benefits delivered through the workplace support package.

> *"The Big Wheel's business support and personalised advice culminated in an event which was supported by 40+ on site staff & visitors who received advice on cycle to work routes; bike security; bike maintenance including free bike MOT's for staff and general information on greener travel options and the latest transport work across the city. Using the details collected on the day, we are now looking into the possibility of setting up a cycle to work scheme and bike maintenance lessons for staff members."*
>
> The Nottingham NHS Treatment Centre

4.54 **The Big Wheel Workplace Challenge:** Another Big Wheel coordinated activity was the Workplace Challenge, which received LSTF funding in 2013 and 2014. Across the two years almost 1,200 individuals participated, logging almost 24,000 journeys. The Workplace Challenges had both short term impacts, logged by participants during the course of the Challenge, and longer-term travel behaviour change impacts recorded through travel surveys. These include:

- During the challenge periods in 2013 and 2014 over 13.5 fewer tonnes of CO_2 were emitted as a result of travel mode-switching by participants. These short-term mode shifts saved individuals almost £20,000 in travel costs, arising from almost 10,000 fewer car trips. The bulk of these car trips were instead made by cycling (more than 6,250 trips) and walking (more than 3,000 trips).
- Post-challenge impact surveys revealed an average longer-term increase in walking (+3.4 mins per day) and cycling (+4.1 mins per day) activity which respondents directly attributed to the workplace challenge. These longer term changes in physical activity resulted in financial and health benefits for the individuals which were estimated using the World Health Organisation's HEAT tool.

4.55 **The Mobile Travel Centre:** The Mobile Travel Centre, or "Infobus", was designed to be an easy to access 'one stop shop' for travel advice that made regular visits to community areas on the fringes of the Nottingham Urban Area. Practical services provided from the mobile travel centre included fielding renewals and queries about concessionary public transport passes, and issuing/topping-up Nottingham Citycards. Advice services included helping individuals with online journey planning and planning journeys to work/school/leisure activities bus and tram. Members of the public could hire Citycard cycles and mobility scooters from the mobile travel centre for free, and speak to trained travel advisors who could answer their queries about travelling around Nottingham.

4.56 In total, 7,478 individuals were engaged by the Mobile Travel Centre with 1,518 receiving personalised travel planning from trained travel advisors. The Infobus proved particularly valuable to elderly/more vulnerable Nottingham residents who are unable to access travel information online or visit the travel information centres in Nottingham City Centre

> *"I can't get into Nottingham you see. I only live in Strelley so this is local to me. This is a good idea as lots of people can't get into town. It makes loads of difference for the elderly and people who can't get about."*
>
> 64 year old Strelley resident who visited Infobus at Bulwell Market

4.57 **Cycle corridor infrastructure:** £0.5m of LSTF programme budget was spent on targeted local cycle infrastructure improvements. These included the development of the River Leen cycle path, cycle path works at Wilford Grove and Bathley Street in the Meadows, resurfacing the Victoria Embankment 'Big Track' cycle route, implementing a 1.5km off-road cycle circuit at Harvey Haddon leisure centre, and improving cycle paths around Queens Drive. No data were collected on the numbers of people using these upgraded routes, but it is considered that changes in cycling levels recorded through other LSTF projects may have been influenced by these localised cycle infrastructure improvements.

Workstrand C: Overview of outputs and outcomes (2011-15)

- Total number of directly engaged beneficiaries: 10,401 individuals
- Total number of businesses benefiting from direct support : 248 businesses
- Total new cyclists: 592
- Total increase in cycle km: 794,007km
- Net change in cycle trips: 159,480 extra trips
- Net change in walking trips: 131,770 extra trips
- Net change in car trips: -69,450 fewer trips
- Total number of car km saved: 1,049,604 km
- New jobs (FTE paid positions) created: 4
- Net reduction of 17,982 tonnes of CO_2 equivalent emitted in the local area

Workstrand D – Active Travel Solutions

Inputs

4.58 Table 4-10 summarises the LSTF expenditure allocated to Workstrand D. In total £1.81 million was allocated to this workstrand, the majority of which (£1.56 million) was revenue funding, with a small amount (£0.25 million) available for capital measures.

Table 4-10: Workstrand D funding allocations (in £000s)*

Bid element	Revenue	Capital	Total
Key component	717	217	934
Main bid	844	33	877
Total	1,561	250	1,811

*Values exclude Workstrand E: Programme Coordination, in relation to which some funding is attributable to Workstrand D

Outputs and outcomes

4.59 Table 4-11 shows that Workstrand D involved the implementation of a range of initiatives. In combination they aimed to make walking and cycling the norm for local journeys through a comprehensive programme of active travel marketing and promotional activities/events. Many Workstrand D initiatives were designed to reach target audiences through engagement with local education institutions. The specific outputs and outcomes of these different initiatives have been discussed below.

Table 4-11: Workstrand D – Cumulative outputs and outcomes

Project Name	Cumulative Outputs	Cumulative Outcomes
Ucycle - Cycle promotion and training in H.E. and F.E. institutions	• 3 (FTE) Ucycle officer posts created • Partner institutions: 2 HE establishments, 3 FE colleges (13 campuses), Nottingham University Hospitals NHS Trust • 1,189 students/staff loaned a Ucycle bike • 460 Ucycle events hosted • 18,963 students/staff engaged through Ucycle campaign or events • 986 cycle parking spaces provided through infrastructure funding support	Ucycle bike loan resulted in 595 people taking-up cycling: • 150% increase in cycling by beneficiaries = extra 26 minutes of cycling / beneficiary / day on average • 592,377 km estimated increase in cycling • Reduction in car use of 34,396 trips / 135,864 car km Cycle parking improvements resulted in 460 new cyclists: • 137,897 additional cycling trips (1,429,193 cycle km) and 344,725 additional walking trips • Reduction in car use of 190,820 trips / 2,637,325 km
BikeIT - Cycle promotion and training in schools	• Full time BikeIT officer in post • 6 secondary and 1 primary schools engaged • 229 BikeIT events organised • 7,570 students, 501 staff + 142 parents engaged	• 549,285 additional cycling trips, 2.9m extra Km cycled • 181,015 additional walking trips, 0.2m extra Km walked • Over 180,000 fewer car trips, 1m less car Km travelled • 891 fewer tonnes CO_2 equivalent emitted
Cycle promotion and training in schools - Lifecycle and Bikeability	• 44 primary schools engaged through Bikeability • 838 pupils trained to Bikeability Level 2 • 64 primary schools engaged through Lifecycle • 3,074 students participated in Lifecycle	• 10.1% of Bikeability pupils increased cycling activity • Estimated 21,661 additional cycle Km from Bikeability • Estimated 91 additional riders biked an average of 239km per annum following Bikeability
Cycling promotion and training for all – 'Cycling for All'	• 0.8 FTE posts funded • 951 individuals attended Cycling for All events • 610 individuals took part in Cycling for All training • 270 individuals given information/advice	• Over 915 hours of inclusive cycle training delivered • Estimated 90mins activity per person per session worth approx. £8,000 according to WHO HEAT tool. • No long term quantitative outcome data available
Active travel marketing and events	• 1.2 FTE posts, 62 events reached 69,000 people • 5,557 people given in-depth 1-2-1 travel advice[13] • 18,444 people participated in Cycle Live	• Over 900,000 additional km of cycling activity as a result of Cycle Live (~80km per participant) • No long term quantitative outcome data available

[13] Outcomes of this 1-2-1 advice are captured within the PTP offered through the Workstrand B Community Hub

4.60 **Ucycle bike loans:** Pre-LSTF, Sustrans' Ucycle project was already working to increase levels of cycling activity among staff and students at Nottingham's Higher Education (HE) institutions (University of Nottingham and Nottingham Trent University) and Nottingham University Hospitals NHS Trust. LSTF funding enabled the offer to be expanded to cover the following Further Education (FE) colleges: Bilborough College, Central College (8 campuses) and New College Nottingham (NCN, 4 campuses). The proposition was to loan bikes out to staff and students at the institutions on a first-come basis. Bikes were loaned at a cost of £35 per term/semester, or £49 for the academic year; on top of which participants paid a £50 deposit which was refundable on safe return of the bike. The bikes included lights, a lock, mudguards and a rack.

4.61 During the course of the LSTF programme 1,189 students and staff members took up the opportunity to loan a Ucycle bike, whom Sustrans' surveyed in order to ascertain the impact of the initiative. This data suggested that access to a Ucycle bike resulted in 595 people taking up cycling, with an average reported increase in cycling of 150% amongst loan bike recipients. This equates to an average of 26 extra minutes of cycling per day, per beneficiary. These data suggest that the bike loan initiative was highly effective in its aim to increase cycling, with anecdotal evidence from surveys and pen portraits suggesting the bike loans were particularly appreciated by students who would otherwise have used a car or relied upon public transport while studying in Nottingham. Alongside the increase in cycling, the estimated reduction in car use by loan bike beneficiaries equated to over 34,000 trips, saving over 135,000 vehicle kilometres.

4.62 **Ucycle infrastructure improvements and events**. The Ucycle scheme also offered FE and HE institutions the opportunity to access:

- Small scale infrastructure improvements, for example cycle storage, to remove the physical barriers to commuting by cycling.
- Supporting services, such as training and cycle maintenance.
- Profile-raising marketing and events, such as led activities, to 'normalise' cycling amongst students and staff.

4.63 In total 986 on-campus cycle parking spaces were provided via Ucycle and 460 events were hosted at Ucycle partner institutions. It is estimated that 18,963 students/staff were engaged through the Ucycle campaign or event and that 460 new cyclists were created through the scheme. Travel surveys undertaken at partner institutions suggest that the Ucycle activities have contributed to a change in travel behaviour, with all partner institutions exhibiting an increase in walking and cycling by staff and students and reductions in car use.

> *"Thanks to the Ucycle project I've been inspired to cycle to work at the University every day. I've found a great off road route from the free map they gave me which beats being stuck in traffic in my car. I'm saving about £100 a month in petrol and even getting my bike serviced for free by Dr Bike."*
>
> Ucycle beneficiary

4.64 To further complement the Ucycle initiatives offered to further and higher education institutions, Workstrand D incorporated projects targeted at school pupils and teachers:

- **BikeIT**: Sustrans' BikeIT officer's primary goal was to work with secondary schools to teach cycling skills and promote cycling as a healthy recreational activity and pragmatic travel mode to staff, students and teachers through engaging campaigns, activities and events. By working closely with six secondary schools and one primary school the BikeIT officer delivered 229 events and engaged a total of 7,570 students, 501 staff and 142 parents. Staff, parent and pupil surveys indicate that BikeIT resulted in almost 500,000 additional cycling and 181,000 additional walking trips over the course of the LSTF funding period. Parents also reported a 13% reduction in their car travel when taking their children to school as a result of the initiatives. In net terms this resulted in an estimated 1 million fewer car kilometres and 2.9 million more cycle kilometres.
- **Lifecycle:** LSTF funded the implementation of a new curriculum based initiative known as Lifecycle, an early intervention program which supports road safety education, sustainable transport and cycle safety. It is intended as a stepping stone towards Bikeability training. A total of 64 primary schools chose to participate, which resulted in 3,074 students being engaged through Lifecycle. No outcome data is available to assess the impact of the project, but it did receive positive qualitative feedback from participant schools. Further demonstrating its perceived impact, other local authorities have shown interest in adopting this new initiative.
- **Bikeability:** LSTF funded the "Bikeability" Level 1 and Level 2 cycle training offer to primary school students. In total 44 primary schools were engaged through Bikeability and 838 pupils were trained to Bikeability Level 2. As a result of the initiative 91 pupils reported cycling to school on a more regular basis, with each pupil cycling an average additional 239 kilometres more to school per year. On the basis that an estimated 50% of these additional cycling trips were the result of mode-shift from car travel (drawing on the findings from other school cycling initiatives funded through LSTF), this is estimated to have resulted in almost 11,000 fewer car kilometres being driven in the local area by parents making the school run.

4.65 **Cycling for All**: To promote and enable individuals of all ages and abilities to take up cycling, Ridewise provided monthly free cycle training sessions on Sundays during the spring/summer months. In total 610 individuals took part in Cycling for All training and 270 individuals were provided with information and advice at a Cycling for All event.

> *'Ben has coordination problems, and this time last year he couldn't pedal a bike without stabilisers. He didn't think he'd ever be able to cycle…We came to this* [Cycling for All] *event last year and it was great. He had an instructor supporting him and offering encouragement, and I think because he could see other children a similar age having a go, he was more determined, and within an hour he was cycling'*
>
> Cycling for All attendee

4.66 In addition to increasing participants' cycling confidence, taking part in such events provided immediate health benefits for participants, which were quantified using the WHO HEAT tool and have been reported in amongst the programme impacts in Chapter 5.

4.67 **Active travel marketing and events:** Sitting alongside the user-group specific campaigns and projects, a broader marketing and events programme was delivered under the banner of the Big Wheel (Nottingham's existing sustainable travel brand). These ranged from

supporting the Milk Race, Cycle Live, Light Night, and smaller scale active travel events. In 2014/15 over 34,000 people attended a total of 31 events, with around 10% of participants engaged in meaningful dialogue on the topic of sustainable travel behaviour change.

4.68 In addition to supporting the delivery of the events, the Big Wheel's team coordinated the distribution of cycle maps, bike lights, high-vis vests and reflective snap-wraps; as well as offering 'Bike Doctor' services on a first-come-first-served basis. For the major events The Big Wheel team worked with local leisure venues to develop ticketing incentives in order to encourage visitors to travel to events by public transport, rather than by car.

4.69 The most significant active travel event was Cycle Live, an annual weekend of cycling-focused activity supported by LSTF between 2012-2105. The open event allowed people to sign-up to take part in four cycle rides of varying lengths. Across the four LSTF-funded delivery years 18,444 people took part, with the numbers broken down as follows:

- Nottingham City Ride (average distance of 7.5 miles): 2,769 participants
- Great Notts Bike Ride (25 miles): 3,445 participants
- Great Notts Bike Ride (50 miles): 8,220 participants
- Great Notts Bike Ride (100 miles): 4,010 participants

4.70 These one-off events helped to promote cycling as a recreational activity, as well as a practical means of getting around the city. The physical activity of completing the rides themselves resulted in over 18,000 participants each cycling an average of 80km. When aggregated, this resulted in almost 1.5 million additional kilometres of cycling activity over the course of the 4 years of LSTF programme delivery. The range of events also resulted in 1.2 FTE posts being appointed through the LSTF funding period.

Workstrand D: Overview of outputs and outcomes (2011-15)[14]

- Total number of directly engaged beneficiaries: 52,809 individuals
- Total number of institutions that benefitted from support: 77
- 750 sustainable travel events delivered across LSTF funding period
- Additional cyclists: 1,455
- Total increase in cycle km: 6,425,146 km
- Net change in cycle trips: 691,362 extra trips
- Net change in walking trips: 525,739 extra trips
- Net change in car trips: -410,382 fewer trips
- Total number of car km saved: 3,808,644 km
- -1,606 tonnes CO_2 equivalent emitted as a result of reductions in car trips made
- New jobs (FTE paid positions) created: 7

[14] Beneficiaries and outcomes of the 1-2-1 advice provided via active travel events are captured within the PTP offered through the Workstrand B Community Hub

5 PROGRAMME-WIDE OUTCOMES AND IMPACTS FROM 2011-2015

Overview of key findings

5.1 By aggregating all the data collected through the LSTF evaluation activities, it is possible to present a programme-wide summary of outcomes and impacts. Table 5-1 shows that, in travel behaviour terms, the overall effect of LSTF projects upon beneficiaries has been to:

- Increase the level of walking (among 82% of actively engaged beneficiaries) in terms of trip-making, and distances travelled.
- Increase the level of cycling (among 25% of actively engaged beneficiaries) in terms of trip-making, and distances travelled.
- Modestly increase local tram use, but reduce bus and train use (most likely the result of mode-substitution), representing around 0.08% of additional local public transport trips.
- Reduce the total number of car trips made by around 2.18 million trips, representing approximately 1.2% of all car trips made in Greater Nottingham per annum.

Table 5-1: Overview of aggregated programme-wide outcomes and impacts

Measure	Outcome	Impact*
Total beneficiaries	246,263 people	• 933,299 net increase in trips made in Nottingham Urban Area (primarily walk & cycle)
Change in cycling behaviour	87,424 people changed cycle behaviour	• 9.2 mins average increase cycling/day • Average increase of 144km cycled / annum / person • 1.4m additional cycling trips • 12.5m net additional km cycled • 2,824 more people cycling regularly
Change in walking behaviour	63,288 people changed walking behaviour	• 1.1 mins average increase walking/day • Average increase of 58km walked / annum / person • 1.6m additional walk trips • 2.3m additional km walked
Change in public transport use	66,234 net additional public transport trips	• -136,437 bus trips following LSTF projects • 277,824 more tram trips by LSTF beneficiaries • -75,152 fewer in train trips by LSTF beneficiaries
Change in car use	-2.18m fewer car trips	• -28.4m car kilometres travelled • £3.2m of estimated net WebTAG Marginal External Benefits (includes £3.5m of decongestion benefit)
Growth & Accessibility	14.5 LSTF jobs	• £1.3m of Gross Value Added
	509 volunteer hours	• £1.07m of volunteering benefits estimated
	618 additional FTE jobseekers placed into work	• £3.1m of Gross Value Added for positions filled • £581,280 saving in Job Seekers Allowance claims • £44,000 of additional income tax
Health	Estimated long-term health savings for NHS and society	• -28 serious road incident casualties on average across LSTF-funded 20mph zones • £5.6m estimated net-saving in casualty reduction
Carbon & air quality	Net reduction in CO_2 and GHG emissions	• -23,529 fewer Tonnes CO_{2e} emitted • £1.47 million of carbon reduction (DECC values) • £0.31m of net estimated WebTAG benefit

* All impact values quoted are for the LSTF period from April 1st 2011 - end March 2015

5.2 In the remainder of this chapter, the programme-wide findings are contrasted with corroborative data derived from Key Performance Indicators (KPIs), and other sources, to explore the extent that these reported findings align with wider reported trends in the Nottingham Urban Area. These outcomes and impacts have been considered against each of the four LSTF objectives defined in Nottingham City Council's original funding bids, and an additional mode-shift target defined in the funding documents.

Contribution to growth and accessibility

> **Growth:** 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.
>
> **Accessibility:** Linking people to jobs by reducing barriers to accessing services and opportunities, particularly in terms of affordability and low travel horizons.

How LSTF contributed to growth and accessibility outcomes

5.3 The growth and accessibility objectives were closely linked through project delivery in the Nottingham Urban Area, with the majority of interventions that addressed one of these objectives also relating to the other. As such their impacts have been jointly considered here.

5.4 Table 5-2 summarises the extent to which LSTF interventions targeted at jobseekers and young people in education and employment have impacted on local growth and improved access to opportunities (in particular jobs and training). In total these initiatives are estimated to have generated over £11.7 million of economic benefit for the Nottingham Urban Area between 2011-15, by removing transport barriers for low income groups in areas of the conurbation that experience high levels of unemployment and deprivation.

5.5 Wider society is estimated to have benefited through the increase in people returning to work (13% of jobseekers in receipt of a Jobseeker Kangaroo half fare pass found employment during the LSTF period), with 83% of the Jobseeker Kangaroo pass holders stating they would not have been able to access their interview or place of employment due to the cost of using public transport. The Jobseeker Kangaroo travel pass was reported, through focus group discussions, to have broadened travel horizons and improved the affordability of local public transport for people on low incomes who were looking for work. In total 193 people would not have been able to access their current job on affordability grounds without the benefit of the 50% discount on Kangaroo fares they received.

5.6 Travel mode-switching behaviours (covered under other objectives and targets in this Chapter) arising from jobseeker Personal Travel Planning initiatives delivered to complement the Jobseeker Kangaroo initiatives are estimated to have resulted in 6.8 million fewer car kilometres being travelled in the Nottingham Urban Area over the LSTF programme's delivery period. This contribution to reducing local traffic levels is considered to have assisted with freeing-up capacity for growth, and improving economic competitiveness.

5.7 The average of 14.5 FTE jobs created and sustained through the course of the LSTF programme delivery period[15] generated additional Gross Value Added economic benefits of £1.3m during 2011-2015. This estimate was calculated using English Partnerships' Additionality technique; which takes account of the leakage, displacement, and local multiplier effects of employment based on an average value of productivity[16].

Table 5-2: LSTF outcomes and impacts related to growth and accessibility

Outcome	Evidence sources
• 780,000 total extra bus and tram trips by jobseekers living in the Nottingham Urban Area • 154,000 extra public transport trips by jobseekers accessing interviews and employment that would otherwise not have been possible • 157,700 extra public transport trips by 16-19 year olds that would otherwise not have been made	• Stated change surveys and focus group discussions with Jobseeker & 16-19 Citycard beneficiaries • Analysis of Jobseeker Citycard, and 16-19 Kangaroo pass and trip data
• 14.5 FTE posts created through the delivery of LSTF projects in the Nottingham Urban Area.	• LSTF programme data (averaged across 2011-15)
Impacts (2011-15)	
• 618 additional FTE jobseekers returned to work as a result of Jobseeker Kangaroo. • £0.63m saving in Job Seeker Allowance payment reductions and income tax receipts. • £3.1m of additional Gross Value Added (GVA) from filled employment positions • £2.42m net increase in local public transport operator revenues from half-price Kangaroo ticket sales and reimbursement for 16-19 year olds/new starters free travel • £2.9m of estimated monetised social value of generated local public transport trips[17]. • £1.3m GVA of jobs directly created through LSTF programme delivery. • £1.07m value of staff hours volunteered through Community Smarter Travel Hubs. • £3.2m of marginal external benefits calculated using WebTAG methodology across all LSTF projects that resulted in reductions in car km travelled.	

5.8 The LSTF projects that have made the greatest contributions to growth and accessibility in Greater Nottingham include:

- **The Jobseeker Kangaroo** initiative, as a result of which 919 people returned to work in 618 FTE positions. Based on feedback received through surveys and discussion groups, 72% of the jobseekers stated they would not have been able to access their new job without the increased travel horizons that more affordable public transport fares offered them. This initiative alone is calculated to have generated £3.74m of Gross Value Added job and employment benefits through local income increases, estimated savings in Jobseeker Allowance payments, and additional Income Tax receipts. The net increase in public transport patronage resulting from this initiative was estimated to be worth £0.45m to local public transport operators in ticket revenues, while the social

[15] LSTF funded jobs were available for varying amounts of time. A total of 21.5 posts were created, with GVA benefits calculated to reflect the varying duration of employment positions. The 14.5 FTE posts represent the average level of local employment supported by LSTF projects across the 2011-15 funding period.
[16] English Partnerships (2008) *Additionality Guide: A standard approach to assessing the additional impact of interventions.* Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191511/Additionality_Guide_0.pdf, last accessed: 11/03/2016.
[17] Calculated using the approach defined in Mott MacDonald (2013) *Monetising Social Impacts of Bus Travel, which also forms part of DfT WebTAG guidance*. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226804/how-to-calculate-social-benefits.pdf, last accessed: 13/01/16.

value of new public transport trips (which would not otherwise have been made at all) was estimated at £1.37m.

- **The 16-19 Kangaroo support scheme**, through which over 9,250 young people from low-income households also benefited from free Kangaroo public transport passes. Over 3.65m public transport trips were made by these beneficiaries between 2011-15, of which around 4% would not have been made without this benefit. As well as generating over 150,000 new public transport trips, valued at £1.4m in social terms (as trips that would not otherwise have been made), the 16-19 Kangaroo Smartcard enabled a larger number of younger people to access employment and education opportunities in the conurbation – significantly improving their accessibility. The additional trips made by 16-19 year olds generated an estimated net increase of £1.83m of revenues that were reimbursed to local public transport operators through LSTF.
- **There are 12 LSTF projects which provided monitoring and evaluation data that demonstrated quantifiable reductions in car kilometres travelled** as people changed travel behaviour and started using alternative modes of travel. The WebTAG-calculated economic value of de-congestion benefits arising from these projects ranged from as little as £1,350 (Bikeability) to almost £2.8m (All Community Smarter Travel Hub initiatives), with an estimated total value of £3.55m over the 2011-15 LSTF programme. The other projects delivering quantifiable decongestion benefits include: Bike It, adult cycle training, the Workplace Challenge, Mobile Travel Centre delivered PTP, Car Club, Jobseeker Kangaroo and PTP, Ucycle, and the Citycard Cycle Hire and Hubs projects.
- **The Community Smarter Travel Hubs** were successful in securing volunteering contributions from 78 different people totalling 509 hours. Using the DWP and Cabinet Office methodology[9] for estimating the value of labour replacement and well-being benefits associated with these roles, it is possible to estimate this initiative generated over £1.01m of wider economic benefits.
- **The LSTF programme itself**, which sustained an average of 14.5 new FTE positions through its implementation period. This generated an estimated £1.31m in economic value for the Nottingham Urban Area.

5.9 It is considered unlikely that the full economic multiplier effects of these growth and accessibility improvements have been considered through this evaluation. This would suggest the estimate of economic benefits reported above may be underplayed.

Comparison against outcome indicators

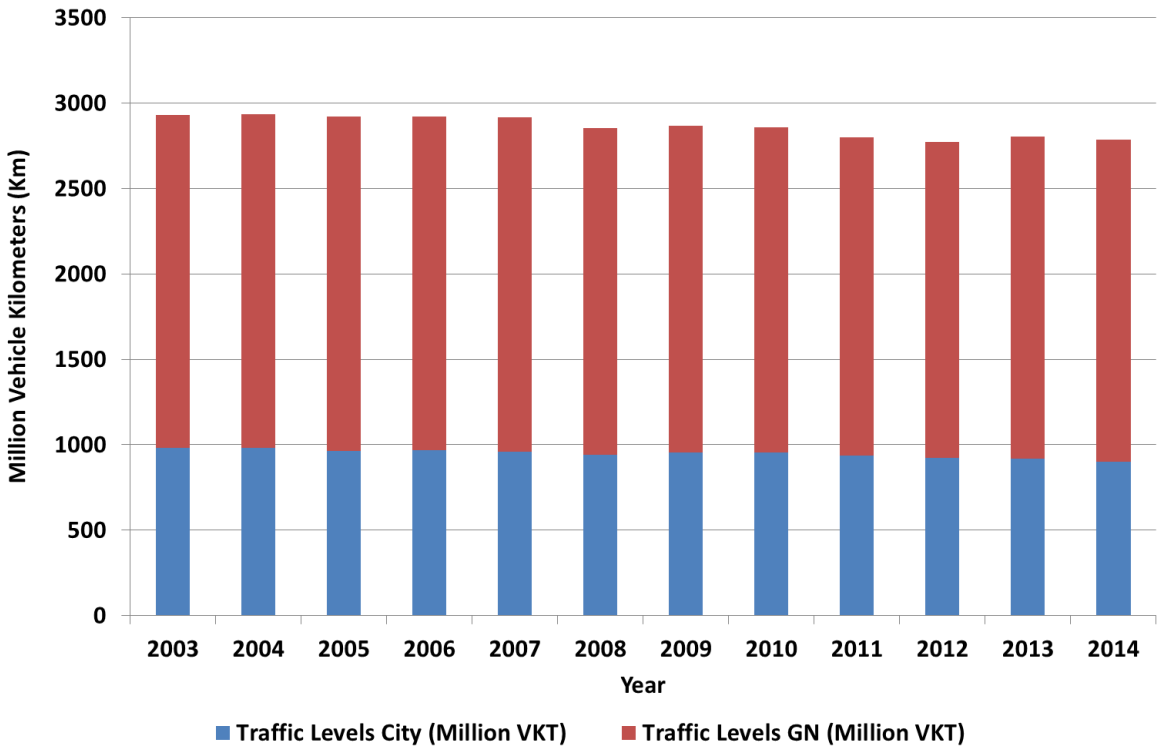
5.10 By comparing the growth and accessibility impacts estimated above with corroborative Performance Indicators (PIs) maintained by Nottingham City Council and Nottinghamshire County Council it is possible to ascertain their consistency with, and impact upon, local observed trends related to growth and accessibility.

5.11 Across the whole of Greater Nottingham (Figure 5-1) area traffic levels have fallen by around 5% (143 million vehicle kilometres) between 2003 and 2014. The bulk of this reduction in traffic has occurred in the city of Nottingham, where traffic levels have fallen by around 8%, from 982 million vehicle kilometres in 2003 to around 901 million vehicle kilometres in 2014. Conversely, traffic levels in the surrounding 'County' areas of Greater

Nottingham have experienced a 3% reduction in area traffic levels, down from 1,957 million vehicle kilometres in 2003 to 1,885 million in 2014.

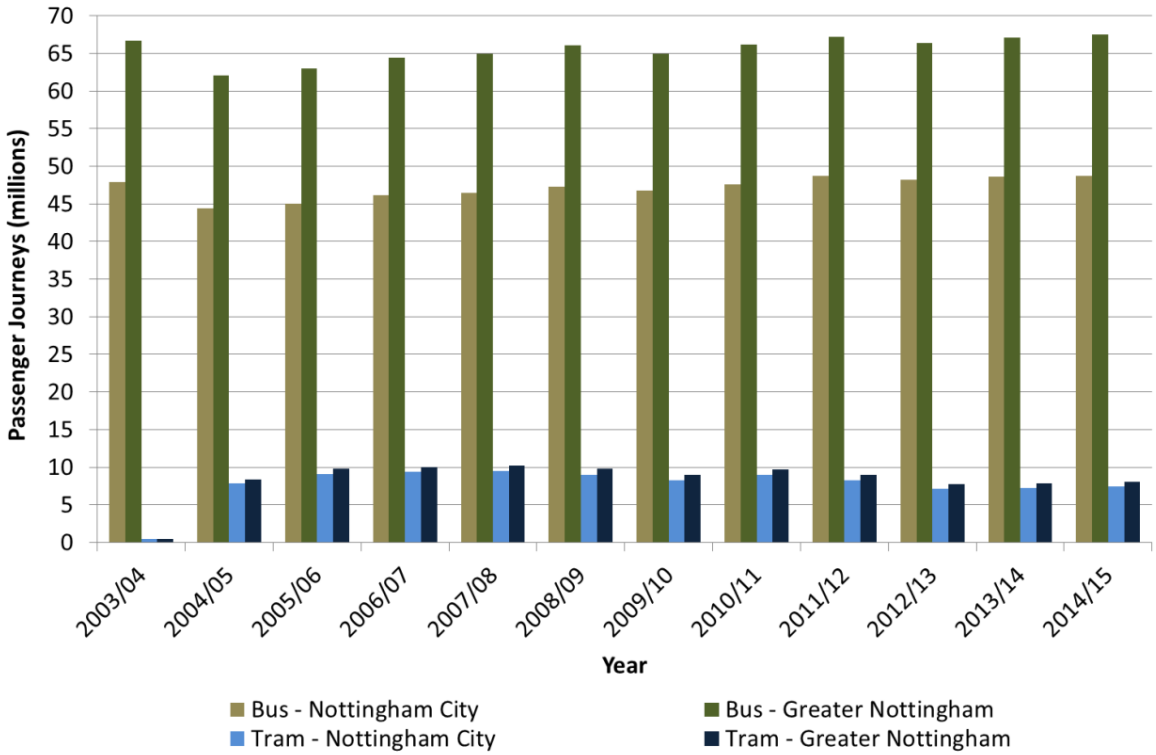
5.12 Since 2010, just before the LSTF programme began, traffic levels in Greater Nottingham have reduced by 2.5% overall. This masks a trend for continued reductions in area traffic levels in Nottingham City (down 5.4% from 953 million vehicle kilometres travelled in 2011 to 901 million in 2014), and an increase in traffic levels in the outlying County areas which make up Greater Nottingham. It is not possible to attribute the reduction in Nottingham City area traffic levels to the LSTF programme, because a number of other trends and initiatives have influenced traffic levels. For example, the impacts of economic recession and recovery (since 2008) have likely served to depress traffic levels, while the disruption associated with major infrastructure improvements (NET Phase 2, ring-road, and A453) will also have had an impact on local traffic levels. It is, however, possible to suggest that the self-reported changes in travel behaviour reported through LSTF programme outcome monitoring have contributed to reductions in local traffic levels. By freeing-up capacity on local roads, these reduced traffic levels help to create capacity for growth.

Figure 5-1: Traffic levels in Greater Nottingham and Nottingham City (2003-14)



5.13 It is similarly not possible to directly attribute changes in public transport patronage to the self-reported outcomes of LSTF programme beneficiaries. Analysing the patronage data displayed in Figure 5-2 reveals that, across Greater Nottingham, annual bus trips increased by a total of 0.8 million/year, while tram trips fell by a total of 0.3 million/year from their first full year of operation (recorded in 2004/5).

Figure 5-2: Public transport patronage in Nottingham City 2003/4 – 2014/15



5.14 This relatively stable period for bus and tram patronage includes significant changes in 2003-2005 when the first NET Tram line was opened. As well as a significant increase in tram trips from a low baseline (following the opening of the line in 2003) there was a significant reduction in bus trips, as people switched public transport modes and competing bus routes were removed. Since 2005/6 there has been an increase in bus patronage of 5.4 million passenger trips per annum in Greater Nottingham, the bulk of which has been focused upon Nottingham City (accounting for 4.3 million passenger trips per annum). Consequently bus passenger levels have returned to those prior to the introduction of the Nottingham tram network, but at the time of writing are expected to change following the 2015 NET Phase 2 opening in August 2015.

5.15 Since 2010/11, the last full year before the LSTF programme commenced, the public transport patronage data reported in Figure 5-2 shows an increase of 2.5 million bus trips per annum and a reduction of 0.9 million tram trips per annum across Greater Nottingham. This includes a drop in overall public transport patronage in 2012/13, following the change of operator of the NET tram system which prompted Nottingham City Transport's Dayrider tickets to cease being accepted on tram services. These trends are the opposite of those reported through the LSTF programme monitoring surveys, through which the aggregated net impacts of behavioural change initiatives suggested a reduction in bus trips (-136,437) and a net increase in tram trips (+277,824) based on beneficiaries' reported changes in travel patterns. It is possible the trends recorded through LSTF programme monitoring surveys have been out-weighed by the impacts from other local initiatives, population growth, and/or patterns of consumer decision-making. The LSTF programme's data also reflects the prevalence of initiatives that focused upon promoting active modes of travel.

5.16 Analysis of journey time and speed data collected by Trafficmaster sensors across the Nottingham City area suggests traffic speeds have slowed, with the average time taken to travel one mile increasing by around 6% between 2010 and 2014. While it is not possible to attribute the reasons for the slower traffic speeds recorded since the start of the LSTF programme, it is considered likely that widespread NET Phase and ring-road widening works, along with the impact of economic recovery, had an effect on these data. Slower traffic speeds and disruption associated with local roadworks may also have acted as a catalyst for mode shift to more sustainable modes of travel being promoted through the LSTF-funded initiatives in Greater Nottingham.

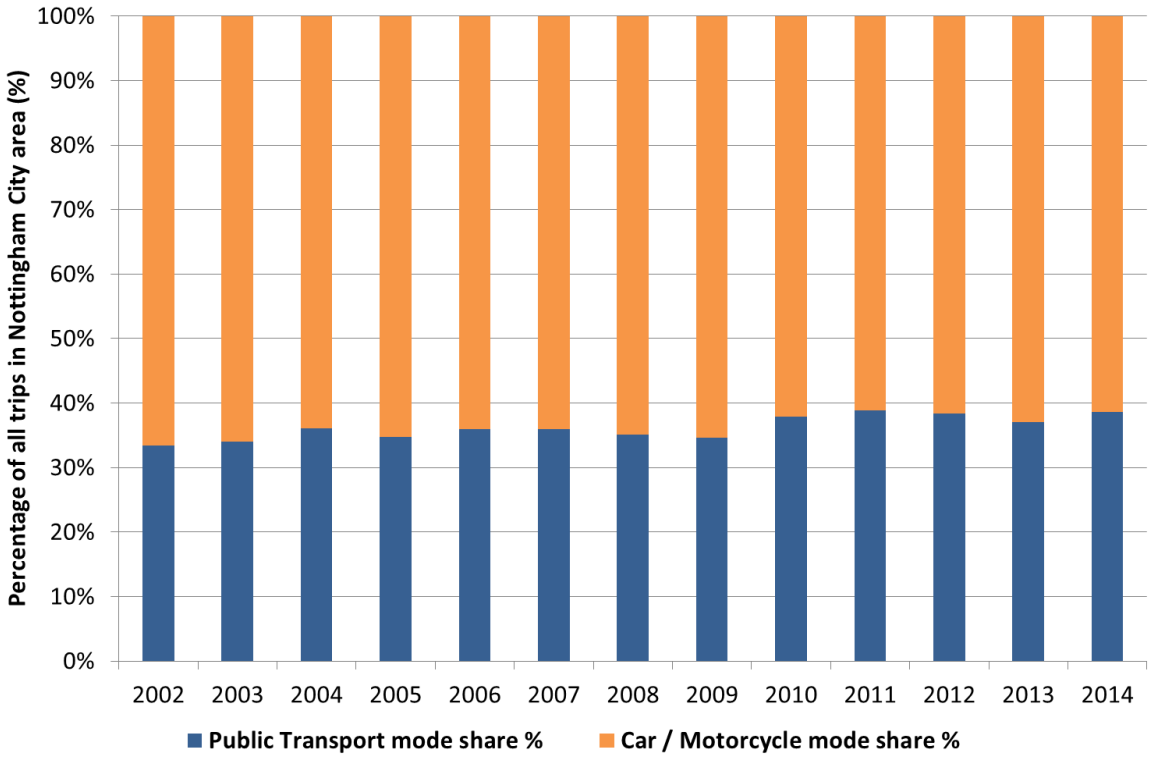
Table 5-3: Average journey time and speed data for Nottingham City 2005-2014

Metric	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Minutes per mile	3.60	3.49	3.44	3.43	3.39	3.57	3.27	3.54	3.64	3.78
Speed	16.67	17.19	17.44	17.49	17.70	16.81	18.35	16.95	16.48	15.87

5.17 .

5.18 Figure 5-3 shows that public transport mode share, as a proportion of all motorised trips, has remained relatively even in the Nottingham City area since 2011. This is a considerable achievement in the context of real-term reductions in levels of funding for supporting local bus services, and is in-line with the steady growth in public transport patronage reported in Figure 5-2.

Figure 5-3: Public transport / private motorised mode share for Nottingham (2002-14)



5.19 Table 5-4 reveals that, alongside public transport patronage; levels of public transport, walking, and cycling accessibility (tested using the Accession tool) have remained high – at around 94% - since before the start of LSTF programme delivery.

Table 5-4: Public transport, walk & cycle accessibility to Greater Nottingham town centre locations (2005-15)

% population within 30 min PT, walk & cycle of city / town centres	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15
	93.19	93.79	94.27	94.95	94.30	94.21	94.00	94.77	94.25	94.01

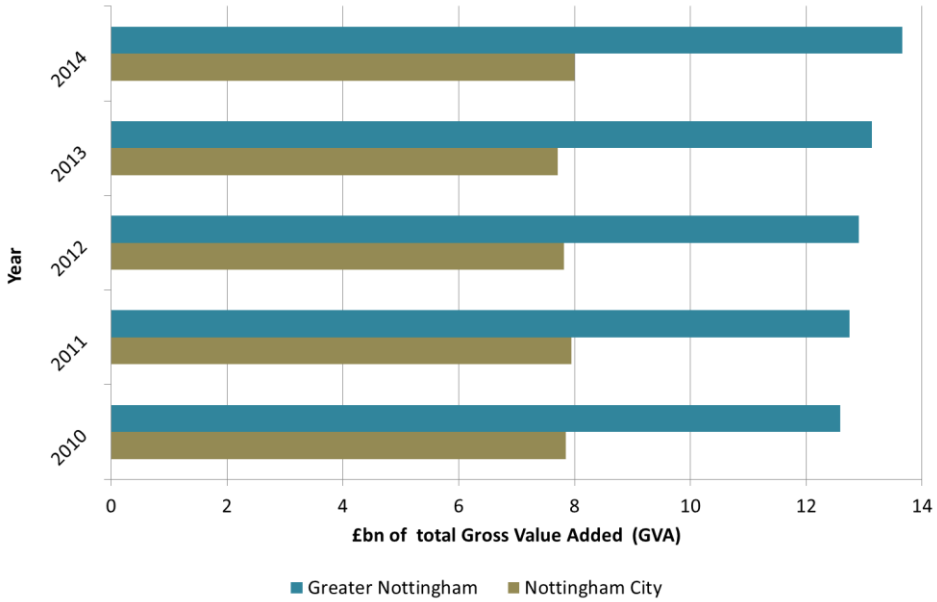
5.20 Corroborative outcome data suggests people are more satisfied with their local neighbourhoods at the end of the LSTF intervention period than they were in 2011. A total of 87% of respondents to the Nottingham Citizen's survey indicated they were satisfied with their local neighbourhood in 2014, up from 84% in 2012, and 81% in 2010.

Impacts related to targets and indicators

5.21 The economic growth objectives defined for the LSTF programme sought to achieve an increase in Gross Value Added for the Nottingham economy, by supporting increases in local employment levels and the amounts of inward investment attracted to the city-region. The rationale for this was that increased use of public transport and active modes of travel would help to free-up strategic road capacity and improve the numbers of people that could access employment opportunities in the local area, thereby making Nottingham a more attractive investment proposition for major employers.

5.22 Secondary data gathered by the Office of National Statistics suggests this virtuous effect may have been taking place over the period 2011-15. Figure 5-4 shows how the Greater Nottingham Gross Value Added measure of economic output is estimated to have increased by over £1bn per annum between 2010 and 2014.

Figure 5-4: Economic output in Gross Value Added (£bn) from 2010-2014 (ONS)[18]



5.23 The bulk of this growth has been focused in the areas of Greater Nottingham that lie outside of the Nottingham City administrative boundary. Growth in the population level of

[18] ONS (2014) GVA data. Available at: http://www.ons.gov.uk/ons/rel/regional-accounts/regional-gross-value-added--income-approach-/december-2013/rft-nuts3.xls

the Nottingham Urban Area (+2.3% to 2013 from a 2009-11 baseline[19]) and the number of jobs in the area (+2.4% relative to 2010[20]) is considered likely to account for some of this economic growth.

5.24 Table 5-5 further supports this positive economic growth indicator. It suggests there was a 5% increase in the number of people employed in Greater Nottingham since 2010, and a 9% increase in Nottingham City. The LSTF programme made a direct contribution to this employment growth, through the creation of 14.5 FTE posts averaged across the intervention period and by supporting 919 jobseekers into 618 FTE posts, through the removal of public transport travel cost and availability awareness barriers.

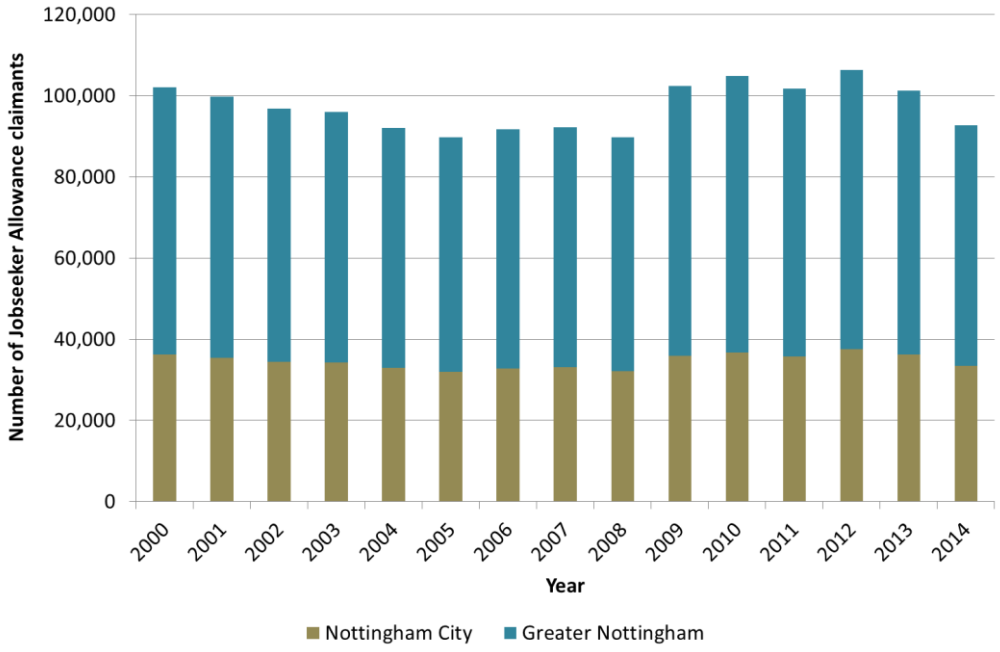
Table 5-5: Employment levels (000's) for Greater Nottingham and Nottingham (ONS)[21]

Location	2010	2011	2012	2013	2014*
Nottingham City	193,900	194,000	202,000	205,000	211,900
Greater Nottingham	307,100	303,300	314,300	315,000	322,800

* Data from 2014 is provisional

5.25 Data on levels of worklessness in Nottingham City and Greater Nottingham corroborates these wider economic changes. Figure 5-5 shows that between 2011 and 2014 there was a reduction of over 10,000 local Jobseeker Allowance claimants – roughly 10% of total claimants in the Greater Nottingham area. While the LSTF programme's initiatives made a direct impact on this number, it is also considered likely that stricter JSA application and award criteria (and the recovering economy) have been more influential on JSA claimant numbers over the LSTF delivery timeframe.

Figure 5-5: Jobseeker Allowance claimants, Nottingham City and Greater Nottingham 2000 – 2014 (ONS)



[19] ONS mid-year population estimates for 2013
[20] The Business Register and Employment Survey (BRES) for 2013
[21] ONS (2014) Business Register and Employment Survey 2013. Available at: https://www.nomisweb.co.uk/

It is not possible to clearly disentangle the impact of the LSTF programme from other local transport and employment initiatives. However, the corroborative datasets reviewed in this section suggest that findings from LSTF programme outcome monitoring are consistent with observed positive macro-level accessibility and economic growth impacts, including:

- Reduced local traffic levels in the Nottingham City area.
- Stable public transport patronage and mode share.
- Increased public transport, walk and cycle accessibility to local employment centres.
- Greater public satisfaction with their local neighbourhoods.
- A 10% increase in Gross Value Added economic output across Greater Nottingham between 2010 and 2014.
- A 5% increase in employment levels and a 10% reduction in worklessness across Greater Nottingham between 2011 and 2014.

While the extent of causality from LSTF-funded initiatives cannot be measured, it is reasonable to suggest that the outputs and outcomes described in Chapter 4 of this report have played a role in supporting these wider growth trends. LSTF initiatives have created capacity on public transport services and local roads, by encouraging members of the public to switch to more active modes of travel. In this context, and through direct employment benefits, the LSTF programme has supported local economic growth.

Effect on carbon emissions and air quality

Continuing the 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.

The LSTF programme's contribution to improved carbon emissions and air quality

5.26 The Nottingham Urban Area LSTF programme sought to support reductions in carbon emissions and improve local air quality by promoting responsible car use and encouraging behavioural shifts towards more sustainable walking, cycling, public transport, and car share travel modes. Table 5-6 summarises the key outcomes and impacts arising from the LSTF programme's interventions. It reveals that, across all programme initiatives, a total reduction of over 23,500 tonnes of CO_2 equivalent emissions has been achieved based on monitoring surveys aimed at capturing changes in local travel behaviours. These emissions reductions have primarily been achieved through behavioural shifts to more sustainable modes of travel which resulted in reductions in car travel, the use of more fuel efficient vehicles, and more efficient vehicle fleet operations.

5.27 Wider society is estimated to have benefitted through the direct reduction in CO_2 and Greenhouse Gas emissions, which positively impact upon local air quality. Air quality monitoring data have been presented later in this section, to corroborate the impacts of LSTF against wider local trends. The monetised financial impact of these carbon reductions and associated air quality improvement is estimated at £1.37 million using a combination of methodologies set out in:

- WebTAG: used where reductions in car km travelled could be used to calculate monetised Greenhouse Gas emission benefits.
- DECC carbon valuation: applied to projects where car km reductions were not the cause of emissions savings (e.g. electric bus vehicle investments).

Table 5-6: LSTF outcomes and impacts related to carbon emissions and air quality

Outcome	Evidence sources
• 2.18m fewer car trips reported as a result of changes in LSTF beneficiaries' travel behaviours • 0.06m more bus, tram and train trips as a result of aggregated changes in LSTF beneficiaries' travel behaviours • 28.4m fewer car kilometres travelled in total, from changes in local people's travel behaviour	• Stated change in beneficiary surveys from Bikeability, BikeIt, Ucycle, PTP, Car Club, adult cycle training, Jobseeker & 16-19 Kangaroo + PTP, Citycard Cycle Hub & Hire projects, and Community Travel Hubs PTP. • Workplace Challenge trip data
• £0.32m fuel cost saving to local bus operators between 2011-15 through electric buses funded by the LSTF programme	• Electric bus trial data
• £55,000 fuel saving to fleet operators participating in Ecostars	• Ecostars fleet efficiency training monitoring surveys
Impacts (2011-15)	
• 23,529 fewer tonnes of CO_2 equivalent (incorporates all Greenhouse Gas emissions) emitted between 2011 and 2015 across all LSTF programme initiatives • £1.37m value of CO_2 equivalent emission reduction, using DECC untraded values and WebTAG car km travelled reduction values. • £0.031m value of monetised air quality benefits, using WebTAG methodology across all LSTF projects that resulted in reductions in car km travelled.	

5.28 The LSTF projects that have made the greatest contributions to reducing local carbon emissions and improving air quality are:

- **The Ecostars programme**, through which 69 member organisations and 4,869 fleet vehicles were targeted with efficient driving and fuel-use advice. Monitored companies achieved an average 3% fuel saving as a result of measures aimed at reducing emissions and introducing more efficient fleet management and driving practices to the organisations. The project achieved an estimated reduction of 17,700 tonnes of CO_2 equivalent emissions. It saved the participating organisations approximately £55,000 in fuel costs, and delivered an estimated £1.1m of monetized enviro-economic benefits for the Nottingham Urban Area during 2011-2015. These local reductions in fuel consumption and associated emissions reductions are anticipated to have contributed to improved air quality in the Nottingham Urban Area, most notably through the associated reduction in harmful PM_{10} particles and NO_x gasses found in vehicle emissions. This delivers long-term positive benefits for air quality and public health.
- **Smarter travel behaviour initiatives**, delivered through the five Community Smarter Travel Hubs across the Nottingham Urban Area. The combination of adult cycle training, and Personal Travel Planning support to jobseekers and local residents, resulted in an estimated 22.4 million fewer car kilometres being travelled. Discernible changes in people's behaviour (evidenced through local monitoring and travel behaviour surveys) meant that roughly 80% of these car trips were displaced by non-polluting walking and cycling activities, while 20% were made by more sustainable public transport alternatives to driving. Taken together, these changes in local people's travel

behaviour resulted in over 4,000 fewer tonnes of CO_{2e} being emitted in the Nottingham Urban Area between 2011 and 2015.

- **Bike It**; which engaged over 8,200 pupils, parents, and members of staff over the course of the Nottingham LSTF programme. By working with 'school champions' to promote active modes of travel to school, the initiative increased levels of cycling activity by between 70% and 85%; with the mode share of cycle trips to school rising to around 9.5% from a baseline of 5.5%. Data from travel surveys with students, parents, and staff members resulted in almost 550,000 additional cycle/scoot/skate trips and 181,000 walking trips. Mode shift among the target population resulted in almost 190,000 fewer car trip to/from schools in the Nottingham Urban Area, and over 1 million fewer car kilometres being travelled. There were also reductions in the use of buses and trains to get to school as a result of pupils, parents and staff members switching to more active modes of travel. From an environmental perspective the reduction in car kilometres travelled resulted in 891 fewer tonnes of CO_2 equivalent being emitted, which are valued at £0.06m using DECC's non-traded carbon values.
- **Ucycle initiatives with staff and students** at local Further and Higher Education institutions. Behavioural change among Ucycle beneficiaries resulted in almost one million fewer car trips in the Nottingham Urban Area over the LSTF intervention period, with the vast majority replaced by walking and cycling activity. Consequently over 2.7 million fewer vehicle kilometres were travelled between 2011 and 2015, resulting in a reduction in CO_{2e} emissions of 720 tonnes. Based on their environmental contribution alone, the Ucycle initiatives were estimated to have delivered around £0.045 million of monetised enviro-economic benefits for the Nottingham Urban Area.
- **The electric bus trial**; which was supported using LSTF funding, with contributions from the programme covering the equivalent of 5 of the buses introduced into service in 2012, and 1.3 of the buses introduced in 2013 (45 buses were introduced into service in total during the LSTF funding period). The impacts of the electric bus trial were carefully monitored by Nottingham City Council, in order to understand the business case for replacing conventionally-fuelled buses with electrically-powered vehicles. By factoring the reported impacts to the scale of contribution made using LSTF funding, it was possible to determine that, to the end of March 2015, the equivalent of 6.3 buses had emitted 109.2 fewer tonnes of CO_2, 1.2 fewer tonnes of NO_x and 6.3 fewer kg of PM10 particulate matter. Over their 10 year operating life these buses are estimated to emit 611 fewer tonnes of CO_2, 6.7 fewer tonnes of NO_x and 35 kg less of PM10 particulates. These reductions in locally emitted greenhouse gas emissions make a tangible contribution to improving air quality in the Nottingham Urban Area, and were estimated to deliver around £0.04m of monetised enviro-economic benefits alongside the £0.32 million in fuel cost savings for local public transport operators between 2011 and 2015.

5.29 In preparing these carbon and greenhouse gas emission saving estimates, it was not possible to calculate the emissions-related impacts of all LSTF-funded projects. For example, any emission reductions associated with travel behaviour change impacts arising from the 20mph residential speed limit area programme, Lifecycle, the Cycle Live event, and local led-walks and rides (delivered through the Community Smarter Travel Hubs) were not captured through the monitoring and evaluation activity. As a result the values

presented above represent a best-estimate of the programme's impact on local carbon emissions and air quality.

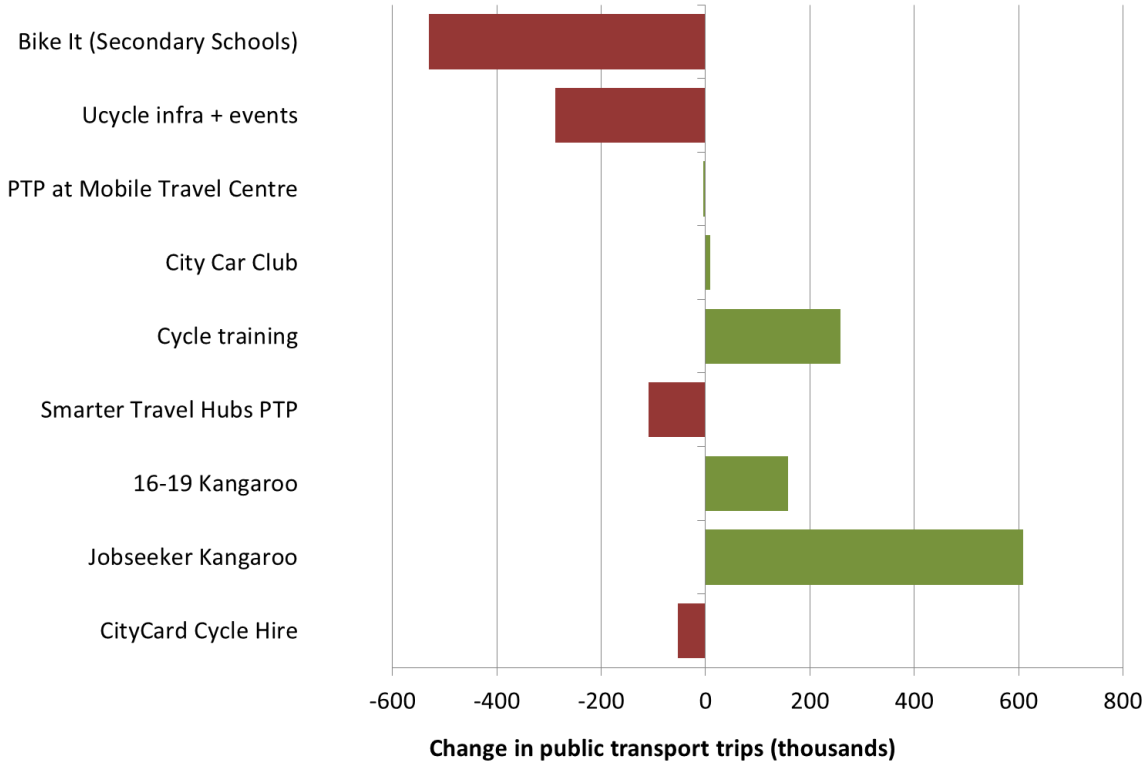
Comparison against outcome indicators

5.30 As observed in the previous section (evaluation of growth and accessibility impacts); the outcomes reported in relation to carbon emissions and air quality need to be set against a context of a 2.5% reduction in Greater Nottingham's area traffic levels (Figure 5-1). While LSTF-funded initiatives may have contributed to reduced traffic levels and associated emissions in the city area; a number of other local transport initiatives (Net Phase 2, ring-road capacity improvements) and economic conditions (recovery from economic recession) are also anticipated to have contributed to this trend.

5.31 Over the same period the mode share of public transport as a proportion of all motorised trips has grown by 1.85%, as shown in .

5.32 Figure **5-3**. This is consistent with the modest increase in public transport trips that emerged from LSTF programme monitoring data. Figure 5-6 shows that, while some projects resulted in considerable increases in public transport use (e.g. Jobseeker and 16-19 Kangaroo smartcard initiative, Community Smarter Travel Hub initiatives – notably adult cycle training), others have encouraged people to switch to more active modes of travel at the expense of public transport services (notably the Ucycle initiative and Bike It, which focused on promoting cycling).

Figure 5-6: Impact of LSTF 2011-15 programme initiatives on public transport trips

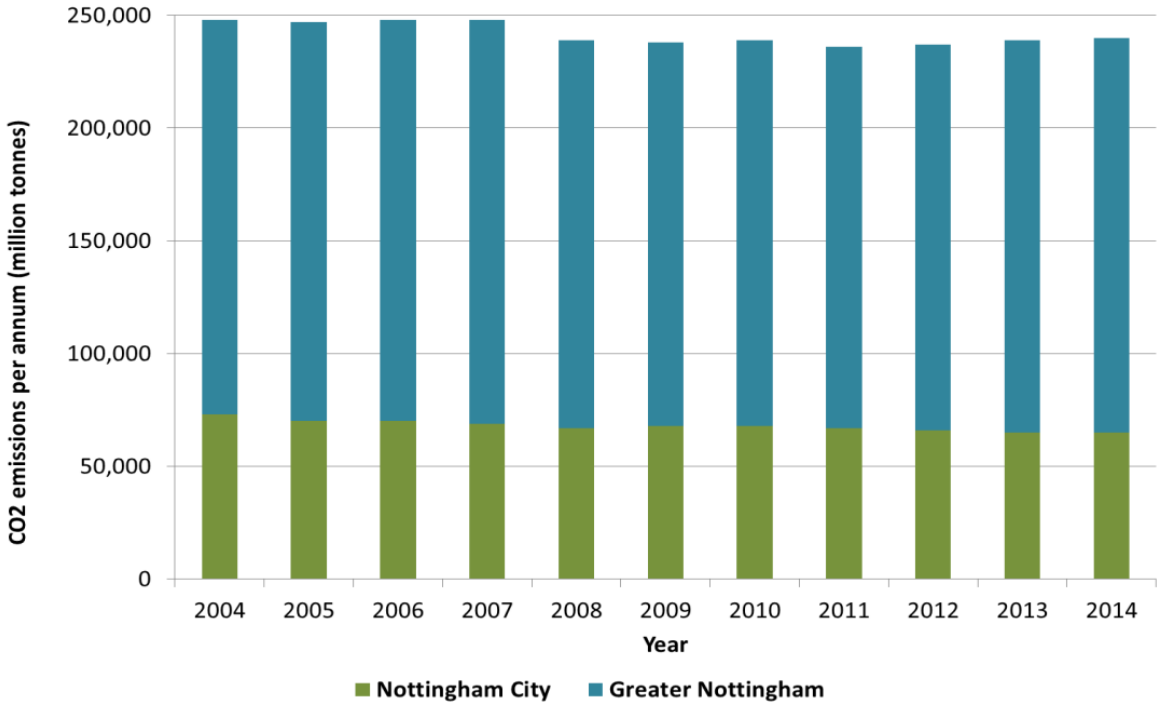


5.33 The modest net increase in public transport trips attributable to LSTF programme initiatives is largely as a result of the reduced fare Kangaroo smartcard initiatives and the impact of adult cycle training – as a result of which beneficiaries reported making an average of 5.6 additional public transport trips each week.

Impacts related to targets and indicators

5.34 Figure 5-7 shows how carbon emission levels from transport have been falling steadily in the Nottingham City area, but increasing slightly in the Greater Nottingham area since 2010. When normalised per head of population, carbon emissions in Nottingham City have reduced from 1.38 tonnes of CO_2 in 2010 to 1.09 tonnes of CO_2 per capita in 2013 (the latest available dataset). Over the four years of the LSTF programme's delivery, the combined impact of project initiatives is estimated to have resulted in a reduction of 23,529 tonnes of CO_2 equivalent. This averages out at around 2.5% of all transport-related carbon emitted in Greater Nottingham over this four year period.

Figure 5-7: Annual carbon emission levels from transport (2012 - 2015)



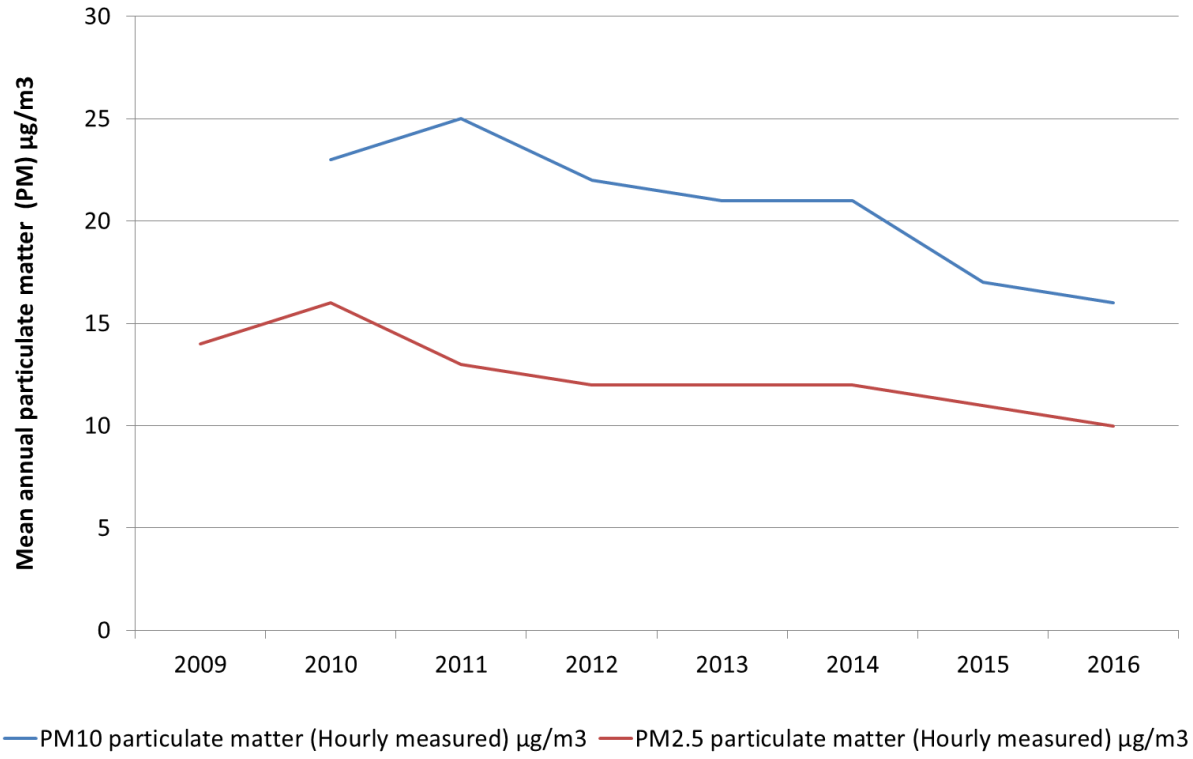
5.35 These encouraging reductions in carbon emissions appear to be reflected in local air quality monitoring data. This is focused on the two Air Quality Management Areas (AQMAs) in Nottingham City, found at Dunkirk flyover on the A52, and the north, east and south areas of Nottingham city centre. Table 5-7 reveals that, between 2010 and 2014, there was a 9.3% reduction in Nitrogen Oxide readings at the city AQMA, and a 9.8% reduction at the Dunkirk site.

Table 5-7: Average Nottingham AQMA Nitrogen Oxide air quality readings (ugm-3)

Location	2010	2011	2012	2013	2014
Nottingham City	43	42	42	44	39
Dunkirk	41	38	40	38	37

5.36 Figure 5-8 also shows how, over a similar period there has been a significant reduction in the level of Particulate Matter measured in Nottingham City Centre. The volume of mean average annual PM_{10} and $PM_{2.5}$ particulates has fallen by around 30% since 2009.

Figure 5-8: PM 2.5 and PM10 particulate matter measured at Nottingham City air quality monitoring station (2009-16)



5.37 While it is not possible to attribute these changes directly to the Nottingham LSTF programme, it is reasonable to suggest that net aggregate reductions in vehicle kilometres travelled and emission reductions associated with specific projects (notably the investment in electric buses, as described above, and Ecostars programme) have made a positive contribution to this long-term trend.

The impact of other local transport initiatives (e.g. ring-road widening, Cycle City, NET Phase 2) on carbon emissions and air quality across the local area, makes it impossible to isolate the impact of LSTF-funded projects on local carbon emissions and air quality. Reported changes in beneficiaries' travel patterns, and calculated carbon emission impacts, suggest that from 2011-2015 the local LSTF programme has contributed to:

- Preventing any discernible increase in area traffic levels across Greater Nottingham.
- Widespread switching to active travel modes for short local trips, contributing to an average personal reduction of around 163km of car travel per annum among the 63,000 LSTF beneficiaries that reported making changes in their car trip-making.
- A 1.2% average reduction in estimated annual car kilometres travelled by LSTF beneficiaries who reported making changes in the number of car trips they make[22].
- A 2.5% reduction in carbon emissions from transport, and a 21% reduction in total carbon emitted per capita in the Nottingham City area.

[22] Based on 2014 National Travel Survey data, which estimate 590 personal car trips per annum, each of an average distance of 13.8km.

- An average 9.5% reduction in Nitrogen Oxide levels recorded at the Nottingham AQMA monitoring sites since 2010.

These impacts have been achieved without meeting the LSTF programme target to increase sustainable travel mode share by 10%. Between 2010 and 2014 the public transport mode share in Nottingham City increased by 1.85% as a proportion of all motorised trips. However, this indicator overlooks the significant increase in levels of cycling (average: 144km additional cycling/annum/beneficiary) and walking (average: 58km additional walking/annum/beneficiary) reported through the LSTF programme monitoring data. Corroborative data from the Nottingham Cycling Index reports a 28% increase in cycling in Greater Nottingham since 2010, with an increase of 666,000 additional cycling trips recorded at automatic count locations in 2014.

It is therefore considered likely that increased walking and cycling activity reported through LSTF programme monitoring will have contributed to a greater than 1.85% increase in sustainable transport mode share if non-motorised trips are included.

Health-related outcomes and impacts

Creating the social, cultural and physical environment to support active travel options and reduce transport impacts.

The LSTF programme's contribution to improved health

5.38 Table 5-8 shows that the primary health-related outcomes and impacts from the Nottingham Urban Area's LSTF programme are attributable primarily to interventions and projects that resulted in increases in local walking and cycling activity levels, as well as to the 20mph speed limit area initiatives which improved road safety. In total these initiatives are estimated to have generated monetised benefits of £9.64m during the LSTF delivery period of April 2011 to the end of March 2015.

5.39 The LSTF projects that have made the greatest contributions to public health in Greater Nottingham include:

- **The 20mph speed limit area initiative**, through which respondents were more inclined to walk in their local area as a result of the greater perceived safety of local streets. The one day samples of before and after walking and cycling trip counts were too small to infer meaningful behaviour change. However, the Sherwood 20mph area benefitted from an average reduction of 290 fewer vehicles passing through it each day, following the introduction of the lower speed limit. As well as the £5.60m in appraised economic benefits calculated across all eleven 20mph speed limit areas (accruing primarily to the NHS through casualty reduction), there are considered to be unknown air quality impacts associated with the reduced vehicle flows in these residential areas of Greater Nottingham.

Table 5-8: LSTF outcomes and impacts related to health

Outcome	Evidence sources
Increases in time spent… • Walking: + 1.12 mins/person/day (assumed 250 walk days per year) • Cycling: + 9.2 mins/person/day (assumed 120 cycle days per year)	Stated change surveys of beneficiaries of Citycard Cycle Hubs and Hire service, Adult cycle training, and the Workplace Challenge
• 1.4m additional cycling trips • 1.6m additional walking trips	Monitoring survey data from all LSTF-funded initiatives with discernible walk & cycle impacts
Increases in the average distance travelled by… Walking: + 58 km/person/year • Cycling: + 144 km/person/year	Stated change surveys with beneficiaries of PTP delivered at Smarter Travel Hubs / mobile travel centre/to jobseekers, led walks and rides, 20mph speed limit zones, Nottingham Car Club, Ucycle and Lifecycle, measured activity from Cycle Live events
• -2.18m car trips reduce traffic noise	Inferred contribution from WebTAG outputs
• -28 serious road incident casualties • +4 slight road incident casualties	Monitoring of 3 year moving average incident data for Sherwood 20mph Zone (factored-up to LSTF-funded implementation areas)
Impacts (2011-15)	
• 87,424 people changed their cycling behaviour and 63,288 people changed their walking behaviour, with the majority indicating they do more activity post-LSTF. • £3.05m of health-economic benefits (at 2015 prices) were attributable to LSTF beneficiaries. This is an estimate of the value of reduced mortality among adult LSTF beneficiaries calculated using the WHO Health Economic Assessment (HEAT) tool[23]. • £0.99m of monetised economic benefits derived from with the reduced number of accidents associated with 28.4m fewer car kilometres travelled by beneficiaries.[24] • £5.60m of benefits to society (primarily the NHS and wider economy) resulting from road casualty reductions in 20mph zones.[24]	

- The **Ucycle projects** delivered across local Universities, Hospitals, and FE Colleges encouraged an additional 1,054 people to cycle; and 1,149 people to walk; in order to regularly access their place of work or education in the Nottingham Urban Area. Over 480,000 additional walk and cycle trips were reported with an estimated annual increase in 714,600 cycle kilometres and 502,000 walking kilometres. This project alone was calculated to have generated over £1.01m of local economic benefits attributable to health impacts using the WHO's HEAT tool, based on an assumption that 50% of all beneficiaries were affected by the reported increases in cycling levels.
- **The combined impact of Community Smarter Travel Hubs initiatives**; which included Personal Travel Planning (for residents and jobseekers), cycling training, led walks and rides. Collectively, these initiatives reported average increases in cycling of between 7.5-28km per user per year, or an average of 16.3 minutes of additional cycling

[23] The HEAT tool (http://www.heatwalkingcycling.org/) is not applicable for children or young adults, because the vast majority of epidemiological studies have been conducted on adults – reflecting that most-commonly studied diseases are rare in children, and studies on adults are easier to carry out. Thus the evidence base for the chronic health effects of physical activity on young people is not as large as that for adults and therefore evidence for children and adolescents is considered insufficient, to the extent that economic appraisals should focus on adults only in the first instance.

[24] WebTAG Unit 4.1 Social Impact Appraisal, para 2.3.28. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/370908/TAG_Unit_A4.1_-_Social_Impact_Appraisal_January2014.pdf, last accessed 12/01/16.

per user per day (in the case of cycle training beneficiaries). They also resulted in an average increase of between 8.9 and 24 additional kilometres of walking activity per user per year. The WHO's HEAT tool was used to estimate that these initiatives generated over £0.82m of quantifiable monetary health benefits, while a further £0.81m of benefits are attributable to the accident reduction and local air quality contribution of the estimated 22.4m fewer car kilometres driven as a result of the increase in walking, cycling and public transport use attributable to these initiatives.

- Users of the **Citycard Cycle Hubs and Cycle Hire** service respectively reported average increases of between 5.8 and 3.0 minutes of cycling activity per user, per day. These increases were the result of people cycling greater distances, and/or choosing to make trips by bicycle that they would previously have completed using other modes, or not made at all. The WHO HEAT tool was used to estimate these initiatives had generated £0.4m of quantifiable economic benefits which were calculated using the DfT's WebTAG guidance.

5.40 The increases in walking and cycling activity levels reported through LSTF programme monitoring activities are also significant from the perspective of mental health and wellbeing. Studies carried out at the University of East Anglia's (UEA) Norwich Medical School and the Centre for Health Economic at the University of York, included data on around 18,000 commuters from across the UK over a period of 18 years[25]. They found:

- That active travel improved mental wellbeing in a number of areas such as concentration, the ability to make decisions and enjoy normal daily activities, and that it reduced the feeling of being constantly under strain.
- This is in addition to the known physical health benefits associated with walking and cycling, such as reduced risk of coronary heart disease, cancer, stroke, and type 2 diabetes.

5.41 A total of 28.4m fewer car kilometres travelled are attributable to all LSTF interventions in the Nottingham Urban Area, based on the available monitoring and evaluation evidence. On the basis the average vehicle on the road in the UK is 7.7 years old[26] and this equates roughly to the Euro IV emissions standard[27], it is estimated that around 0.28 fewer tonnes of Particulate Matter (PM) and 4.3 fewer tonnes of Nitrogen Oxides (NO_x) – both of which are key air pollutants – have been emitted from private cars travelling in the Nottingham Urban Area as a result of the LSTF programme. While we caution that these emissions have not been directly measured at the tailpipe, and are estimates based on monitoring survey respondent's stated reductions in car trips, we note that such reductions in air pollutants would be expected to improve local air quality.

[25] NICE (2014) *Commuting by walking or cycling 'can boost mental wellbeing'*. Available online at: https://www.nice.org.uk/news/article/commuting-by-walking-or-cycling-can-boost-mental-wellbeing, last accessed on 01/03/16.

[26] SMMT (2014) *Decade's fastest growth sees almost 32 million cars on the road*. Available online at: http://www.smmt.co.uk/2014/03/decades-fastest-growth-sees-almost-32-million-cars-road/, last accessed: 12/01/16.

[27] Next Green Car (2015) *Car emissions types and impacts*. Available online at: http://www.nextgreencar.com/emissions/types-impact/#1, last accessed: 12/01/16. Average values of 0.15 g/NO_X/km and 0.01 g/PM/km were used to estimate combined petrol and diesel powered car emissions.

5.42 The 28.4m fewer car kilometres travelled were also calculated (in line with DfT's WebTAG guidance) to have generated £0.99m of monetised accident reduction benefits. The value of these benefits is derived from average vehicle accident rates and applied to the economic value of human life in the UK. In addition to these values, the reduction in vehicle trips is estimated to have contributed to small reductions in local traffic noise levels, which were valued at £0.06m over the four year delivery period using the WebTAG methodology. Traffic noise is a reported contributor to mental disorders, poor sleep quality and psychological distress symptoms[28].

In sharing these values it is important to note the WHO HEAT tool cannot be used to estimate the economic value of physical activity undertaken by people under the age of 16. Consequently the health impacts arising from LSTF initiatives that engaged with young people (11,500 under 16's were engaged through the Bike It, Bikeability, and Lifecycle initiatives) are under-stated in relation to those which involved adult populations. **It is therefore considered likely that the health impacts of the whole LSTF programme are higher than those stated above**.

Comparison against outcome indicators

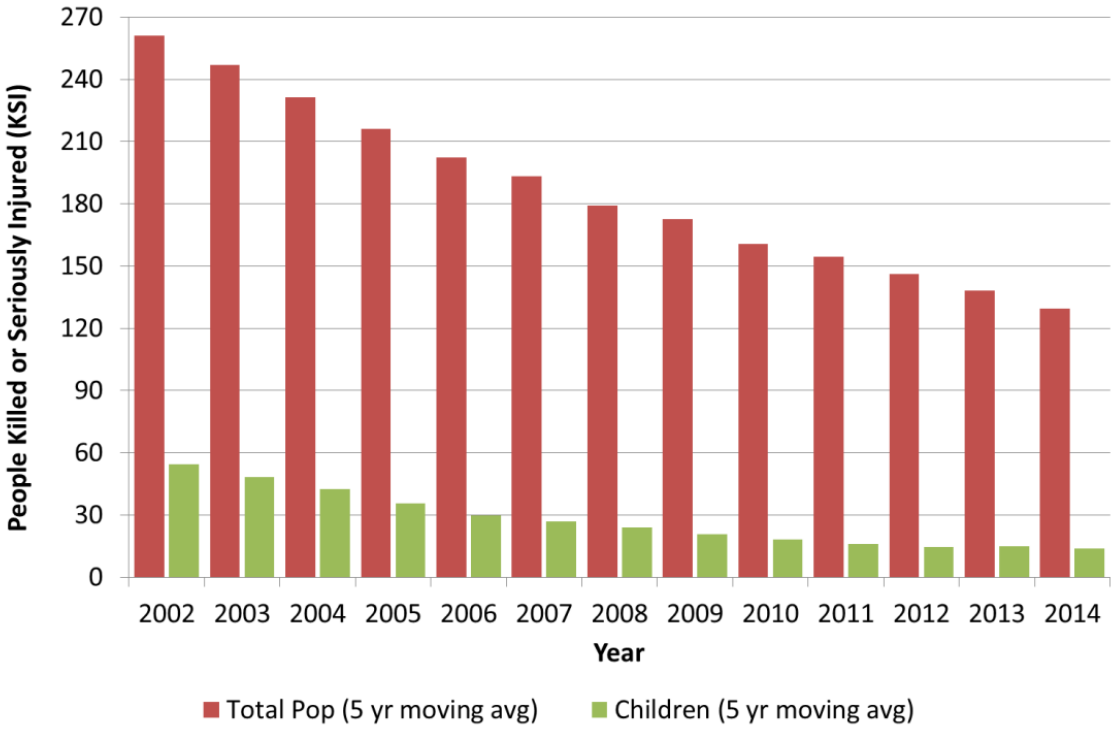
5.43 By comparing the health outcomes estimated above with corroborative Performance Indicators (PIs) maintained by Nottingham City Council and Nottinghamshire County Council it is possible to establish their consistency with local observed road safety and public health trends.

5.44 Figure 5-9 shows how a reduction in the number of Killed and Seriously Injured casualties from road incidents has been the prevailing trend over the last 13 years (PI 9). There has been a 25% reduction in total KSIs in 2014/15 (to 129) against the LSTF baseline (2005-09 average) of 173. The long-term downward trend in road safety KSIs in the total population is encouraging, and has been occurring since before the LSTF programme's initiatives commenced. Findings from stated change surveys conducted with members of the public living in Sherwood, and monitoring of road incident data in this location (relative to control areas in other parts of the city), suggest it is likely that the 20mph zones introduced across Nottingham City have contributed to the ongoing reduction in serious road incident casualties among the general population through 2013 and 2014.

5.45 Across the Nottingham Urban Area the extent of roads covered by 20mph speed limits has increased from 0km in 2010/11 to 580km in 2014. This expansion of the 20mph speed limit areas was funded through the LSTF programme, and extended beyond the initial pilot area in Sherwood to cover 11 residential areas of Nottingham City in total. In addition, 20mph zones were established outside 104 schools in the County area of Greater Nottingham.

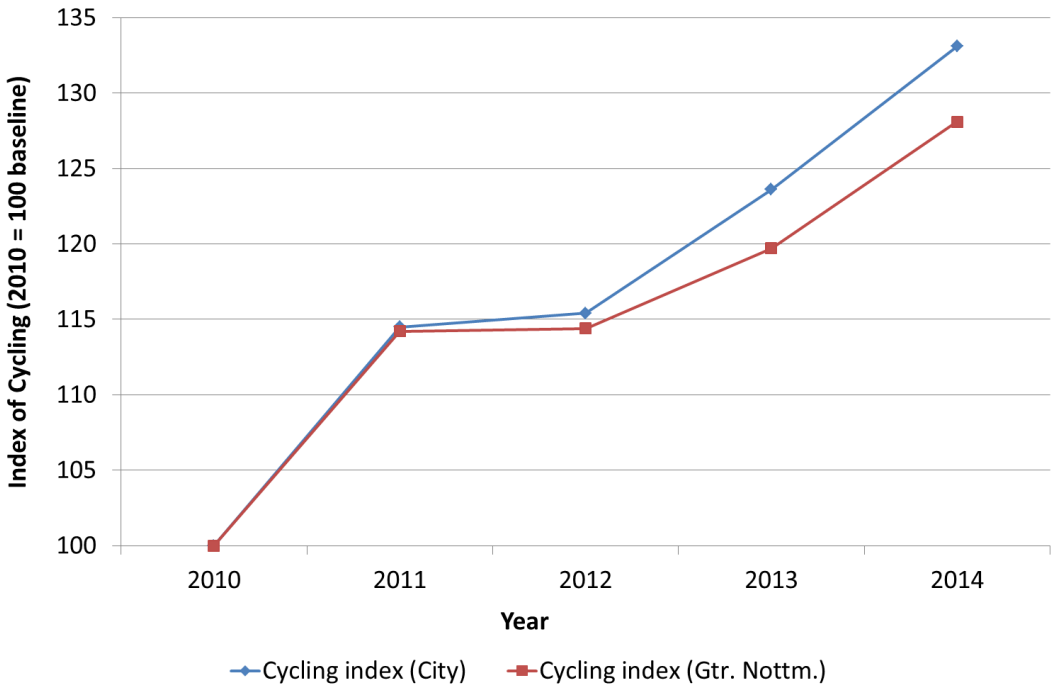
[28] Sygna K, Aasvang GM, Aamodt G, Oftedal B, Krog NH (2014) Road traffic noise, sleep and mental health. Available online at: http://www.ncbi.nlm.nih.gov/pubmed/24637180, last accessed: 01/03/16.

Figure 5-9: Children Killed or Seriously Injured (City) in road traffic incidents in the Total Population, 2002-2014



5.46 Figure 5-10 reveals the recorded increase in levels of cycling in Nottingham City and Greater Nottingham since 2010. This data is derived from 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, taking account of alterations to the cycle counters at some locations.

Figure 5-10: Cycling index data for Nottingham City and Greater Nottingham (2010-14)



5.47 It shows that, since the beginning of the LSTF delivery period, the level of cycling in Greater Nottingham has increased by 28%. Data from stated change surveys with beneficiaries of the Citycard Cycle Hubs and Hire scheme, Ucycle, and adults and children undertaking cycle training; coupled with out-turn data collected through the Workplace Travel Challenge; indicates that LSTF-funded initiatives have contributed to this increase in cycling. This contribution is estimated to have been greatest in 2013-15 when the LSTF programme had ramped-up and was being delivered fully.

5.48 The full extent of these impacts cannot accurately be known because of the absence of control data from areas unaffected by LSTF interventions on cycling (which we note would be hard to identify given the widespread campaign and awareness raising activities of the programme in relation to cycling).

Comparison against impact performance targets and indicators

5.49 The LSTF programme's most relevant health-related target was to double levels of cycling in the key intervention areas from baseline levels by the end of 2014/15.

5.50 Table 5-9 shows that cycling-focused projects delivered through the programme recorded levels of stated change in cycling activity among beneficiaries and target groups ranging from 6% (Cycle Hubs) to 150% (Ucycle bike loans). The most reliable sources are considered to be those involving 'before' and 'after' survey data collection across large samples of beneficiaries.

5.51 The implemented LSTF projects with the most reliable datasets are shaded green in Table 5-9. They suggest the impact of LSTF initiatives on individuals' levels of cycling ranged from a 30% (Smarter Travel Hubs) to 73% (Bike It) increase in cycling activity. The weighted average percentage change in cycling activity across these three projects is 47%, which suggests LSTF projects increased cycling by almost half their original baselines.

Table 5-9: Reported changes in cycling (project surveys and corroborating data)

Project Datasets	Time-series	Sample	Change in cycling
Ucycle bike loan beneficiary survey	2011 (stated change)	66 beneficiaries (Tel survey)	+ 150% (+180 mins/week)
Bike It pupils hands-up survey	2012-15 (before & after)	~1,100 beneficiaries (3x hands-up surveys)	+ 73% (5.6% to 11.3%)
Ucycle organisation travel surveys	2009-2013 (before & after)	~2,000 people (Travel diaries)	+ 43% (4.7% to 8.3%)
Smarter Travel Hub surveys	2011-2015 (before & after)	1,200 beneficiaries (Hub/tel/web)	+ 30% (10% to 13%)
Citycard Cycle Hire user survey	2015 (stated change)	492 beneficiaries (telephone)	+ 14% (+21 mins/week)
Citycard Cycle Hub user survey	2015 (stated change)	94 beneficiaries (in-street)	+ 6% (+20 mins/week)
Corroborative Datasets	**Time-series**	**Sample**	**Change in cycling**
Big Idea Survey	2012-2015 (before & after)	2,000 members of public	+33% (2% to 3%)
Nottingham Cycling Index	2010-2014 (before & after)	Continuous automated counts	+28% Urban Area average
National Travel Survey	2010-2014 (before & after)	16,000 members of public	+20% National average

5.52 When compared with the corroborative data presented in Figure 5-10 it appears reasonable to conclude that at least an average ~30% increase in cycling activity has been achieved across the Nottingham Urban Area during the LSTF delivery period. The beneficiary monitoring data collected through LSTF-funded projects, presented above, suggests that LSTF projects achieved greater increases in cycling activity between 2011 and 2015 than those recorded through corroborative datasets.

5.53 We cannot be totally sure of the extent to which this additional cycling activity would have happened anyway without LSTF funding at the local level. Comparisons with National Travel Survey data, which report a 20% increase in cycling levels between 2010 and 2014[29], are favourable. They suggest that both the ~30% estimated increase in local cycling levels, and the reported overall mode split of cycling in the Nottingham Urban Area (3% of all trips, compared with 2% across England[30]), are greater than national averages over a comparable timeframe.

The weighted average of the three LSTF-funded projects with the most robust monitoring datasets (+47%), suggests that **LSTF cycling behaviour change initiatives out-performed both the local and national averages in key intervention areas.** Although this ultimately falls short of the original Nottingham LSTF target, growing cycling by half the recorded baseline level is a considerable achievement.

5.54 From a public health perspective, corroborative data drawn from the active people's survey and Public Health Outcomes Framework presents a mixed set of local trends. Table 5-10 reveals that positive local trends since 2010 include an overall 19% increase in the proportion of the local population undertaking at least 3 x 30 mins of physical activity per week, a 25% reduction in the percentage of overweight or obese adults and a narrowing of life expectancy disparity between males and females. Despite this, the mortality rate for circulatory diseases has increased by around 15% over the same timeframe.

Table 5-10: Public health trends in Nottingham City (2010-2015)

Public health measure	2010	2011	2012	2013	2014	Source/notes
Percentage of population undertaking 3x30mins physical activity / week	21%	32%	23%	26%	25%	Active People's Survey
Percentage of adults overweight or obese	60% (2007)	45%	46%	45%	-	Citizens Survey: Qn. discontinued in 2013 due to under-reporting
Difference in years between Male and Female life expectancy	10	10	9.2	9.1	-	Public Health Outcomes Framework monitoring data
Mortality rate for circulatory diseases per 100,000 population	97.45	95.8	83.6	111.8	109.5	Public Health Outcomes Framework monitoring data

[29] NTS figures from 2011-14 would themselves have likely been affected by LSTF spending across the country.
[30] DfT (2014) *National Travel Survey: England*. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/457752/nts2014-01.pdf, last accessed: 13/01/16.

5.55 In considering the data from the Active People's Survey it is important to note that the question in the survey relating to the percentage of population undertaking 3 x 30 mins of physical activity per week specifically excludes activity related to commuter travel.

5.56 The direct public health impact across all LSTF-funded projects was not captured through individual-level monitoring of beneficiaries' health and well-being. Consequently it is not possible to discern the extent of LSTF programme initiatives' contribution to the wider local public health improvements reported in Table 5-10.

5.57 Instead it is possible only to consider it likely that the outcomes of the LSTF initiatives have delivered a minimum monetised public health benefit of £9.64m, which accrued through:

- Increases in physical walking and cycling activity among beneficiaries, reducing these individual's health risk factors and associated socio-healthcare costs.
- Reductions in the number of severe road safety incidents in 20mph speed limit areas, which bring benefits for the NHS and wider economy.
- Reductions in carbon emissions and local motorised transport contributions to poor air quality (a public health risk), achieved through travel mode-shift to non-polluting walking and cycling activities by LSTF beneficiaries.

5.58 This health-economic benefit is considered to represent an under-estimate on the basis that £3.05m of the benefits were calculated using the WHO's HEAT tool[23], which does not capture the health benefits of increases in physical activity for people under the age of 16 (due to the lack of empirical evidence of the long-term health impacts of activity participation among young people).

Monitoring survey and out-turn delivery data collected through the course of the LSTF programme suggest the public health impacts of LSTF-funded initiatives and projects have been positive and significant. Over 26% of all LSTF programme beneficiaries reported they now walk for an average of 1.1 minutes more (on an assumed average of 250 days per year), while 35% of programme beneficiaries reported they now cycle for an average of 9.2 minutes more (on an assumed average of 120 days per year). Around 70% of these trips involved changes in travel behaviour which resulted in mode-switching away from motorised modes of travel, while roughly 30% were new trips involving physical activity which individuals did not make previously.

Although it is not possible to isolate the impact of changes in local people's active travel behaviour from the context of wider public health trends; the LSTF programme's reported outcomes appear consistent with the following local impacts between 2010 and 2014:

- A 20% reduction in Killed and Seriously Injured road incident casualties.
- ~30% growth in local cycling levels (50% in key intervention areas), exceeding the national average of 20% over the same period.
- A 19% increase in the proportion of the population undertaking 30 mins of physical activity at least 3 times per week.
- A 25% reduction in the percentage of adults classed as overweight or obese.

- An average 9.5% reduction in Nitrogen Oxide levels recorded at the Nottingham AQMA monitoring sites.

These findings are also consistent with wider evidence on the 'health dividend' of walking and cycling initiatives[31], such as those delivered through the Nottingham Urban Area LSTF programme.

Overall performance against LSTF outcome targets

5.59 As noted in paragraph 2.3, there were four defined outcome targets for the Nottingham LSTF programme. The extent to which these have been met is summarised in Table 5-11. It reveals that all of the targets defined at the beginning of the LSTF programme have been met to some degree, with the greatest success achieved in relation to supporting a greater number of people into employment and training. Considerable success was also achieved in preventing increases in traffic levels, which actually fell between 2010 and 2014 in Greater Nottingham, but this was not matched by a corollary reduction in carbon emissions from transport. When normalised per capita, total carbon emissions were found to have fallen significantly (down 21%) in the Nottingham City area.

Table 5-11: LSTF programme performance against defined outcome targets

Target	Extent achieved?	Supporting data
Increase sustainable travel modal share by 10% from 2010 levels by 2014/15	✓✓	• Public transport mode share increased by 1.85% in Nottingham City. • Non-motorised trip mode-share not captured by cordon counts. • Cycle mode share increased by an estimated 50% in key intervention areas
No increase in traffic levels contributing to a reduction in carbon emissions from transport by 10% over three years by 2014/15	✓✓	• Traffic levels fell by 2.5 % in Greater Nottingham. • Traffic levels fell by 5.4% in Nottingham City. • 2.5% reduction in carbon emissions from transport across Greater Nottingham as a whole. • 21% reduction in total carbon emissions per capita in Nottingham City.
Increase in the number of people supported to employment and training by 2014/15	✓✓✓	• 5% increase in the number of people employed in Greater Nottingham (9% in Nottingham City). • 10% reduction in Jobseeker Allowance claimants in Greater Nottingham (> 10,000). • 14.5 FTE posts created through LSTF delivery. • 919 jobseekers supported into 618 FTE positions (569 FT + 250 PT).

[31] DfT (2014) *Claiming the Health Dividend*. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/371096/claiming_the_health_dividend.pdf. Last accessed: 10/02/16.

Target	Extent achieved?	Supporting data
Double levels of cycling in key intervention areas from baseline levels by 2014/15	✓✓	• Cycle mode share increased by an estimated 50% in key intervention areas, based on most robust before and after monitoring datasets. • Exceeds the local average (~30%) and national average (~20%) over the same time period.

5.60 Performance against the two targets which sought to achieve tangible changes in travel patterns proved harder to monitor and influence.

- While public transport mode share increased by 1.85% between 2010 and 2014/15, this value does not include non-motorised travel modes (which are notoriously hard to collect accurately). Evidence from both the LSTF programme monitoring data, and corroborative data sources, suggests that local cycling levels increased by around 30% during the intervention period (~50% in key LSTF intervention areas), albeit from a low baseline. Consequently it is considered likely that the non-motorised share of public transport has increased between 2010 and 2015. As such, actual performance against this indicator may be better than the performance indicator and programme monitoring data presented in Table 5-11 suggest.
- The ~50% increase in cycling recorded through LSTF projects with robust before and after travel behaviour change data is very positive, but falls short of the intended 100% increase originally targeted. Even so, this finding suggests LSTF projects outperformed the local average of a ~30% increase in cycling levels between 2011 and 2015 based on the available corroborative data.

The Nottingham Urban Area LSTF programme has largely met the four outcome targets defined prior to the start of programme delivery. The most emphatic successes in relation to these targets were:

- Successfully encouraging an increased number of people to access employment and training opportunities through the removal of travel cost and information barriers.
- Contributing to a reduction in local traffic levels and carbon emissions from transport (albeit at a lower level than targeted).
- Successfully encouraging a significant increase in additional cycling activity, which has contributed to a ~50% increase in cycling levels in key intervention areas, and a ~30% increase in cycling across Greater Nottingham.

Analysing these targets also highlights some learning points that could be useful for Nottingham City and Nottinghamshire County Council when preparing future smarter/active travel bids and/or when defining monitoring and evaluation frameworks. These include:

- Defining achievable objectives. With hindsight, proposing a 10% increase in sustainable travel mode share and 100% increase in cycling may have been over-ambitious within a 4 year delivery timeframe.

- Defining measurable objectives (ideally based on routinely collected data). Quantifying the extent of LSTF impacts against targets relating to sustainable travel mode share and cycling in key intervention areas was challenging because these datasets did not already exist, and are not routinely collected. Had these targets been defined in relation to public transport mode share, and cycling levels across Greater Nottingham they would have been measurable with readily available secondary data. Using secondary data in this way does, however expose project monitoring activity to risk of influence from other (non-funded) interventions or economic trends).
- Ensuring long-term data collection meets tangible objectives. The performance indicator data collected and held by Nottingham City and Nottinghamshire County Council over a long period of time proved most useful when evaluating LSTF programme impacts. While a lot of data are available for the Nottingham City area, a much smaller range is held for the Nottingham Urban Area - increasingly a focus for transport funding and delivery. A greater volume of data on cycling levels would also have been beneficial, and is expected to be relevant in the context of the Cycle City programme being delivered in Nottingham.

6 PROGRAMME VALUE FOR MONEY

6.1 Using output and outcome data from the range of projects delivered across the Nottingham Urban Area LSTF programme, it is possible to estimate the value for money of their combined monetised benefits. WebTAG appraisal methodologies were applied to the same programme monitoring datasets that underpinned ITP's independent impact evaluation. A spreadsheet model was developed incorporating DfT's recommended standard appraisal values, and conversion factors, along with project-by-project outcome monitoring data (wherever available). This spreadsheet model is included in Appendix B to this report, with further detail on approaches and assumptions used set out in Appendix A.

Overview of approach to estimating LSTF programme value for money

6.2 Working sequentially through the available output and outcome monitoring data from each LSTF-funded project, it was possible to:

- Determine how many people had benefitted from each initiative. This typically took the form of count-based output data derived from service delivery mechanisms (e.g. recorded Cycle Hub entries, cycle hires, or distances travelled by electric bus vehicles) or project records (e.g. numbers of people who received Personal Travel Planning).[32]
- Identify evident travel behaviour impacts among beneficiaries associated with each individual project, wherever data allowed. This included secondary data collected by individual LSTF-funded service providers and targeted surveys delivered by ITP to fill identified evidence gaps.
- Quantify the estimated impact of each project, through a combination of the project monitoring data referenced above and common secondary datasets (e.g. National Travel Survey average trip lengths/numbers/speeds, DECC average emissions per km travelled). As appropriate, and where data allowed, the impacts were calculated on a project-by-project basis in relation to the following metrics:
  - Average change in minutes of walk/cycle activity, or average change in weekly distance walked/cycled as a result of each initiative.
  - Net change in bus, tram, train, car, cycling and walking trip numbers associated with each project.
  - Total net change in car and cycle kilometres travelled through each project.
  - The number of additional (i.e. completely new) cyclists established.
  - The change in fatal, serious and slight casualties associated with the introduction of 20mph speed limit areas.
  - The net change in CO_2e, NO_2, CH_4, and CO_2 emissions; which were calculated using DECC and WebTAG values per km travelled by car, bus, tram, and train.

[32] It was not possible to distinguish between survey respondents who had benefitted from more than one LSTF-funded service. Consequently we acknowledge the BCR estimates are likely to include an element of double-counting, where some people's self-reported changes in travel behaviour may have been influenced by more than one LSTF-funded project or initiative.

- The number of additional jobs created (directly through LSTF delivery in the local area), and jobseekers placed into Full Time Equivalent positions.

- Monetise these estimated impacts, to consistent 2015 prices, using a combination of:
  - The WHO HEAT tool[23], wherever changes in walk/cycle activity were recorded.
  - DfT's WebTAG methodology for estimating the social value of bus trip generation where cost/lack of service was previously a barrier to travel[17]
  - DfT's WebTAG methodology for estimating social value of utility arising from indoor cycle parking (in relation to Cycle Hubs)[33]
  - DfT's WebTAG marginal external cost, accident rate and cost, absenteeism, factors (in £ per km terms) for 'Inner and Outer Conurbations - Other Roads'.[34]
  - Reported net third party revenue benefits and cost saving values (e.g. fuel savings accruing to local bus operators from the introduction of electric bus vehicles funded through LSTF projects).
  - DECC's non-traded carbon values for non-car modes of motorised travel[35], which were multiplied by DCF Carbon Factors[36] for projects where a calculated change in car kilometres was not possible or relevant (e.g. the Kangaroo concessionary projects, which resulted in net changes in public transport travel distances across beneficiary populations).
  - English Partnerships Additionality methodology for calculating the Gross Value Added of new jobs funded through LSTF, and uptake of jobs by jobseekers[16].
  - Published HMRC Job Seeker Allowance benefit values for 2014/15 financial year, and National Minimum Wage values which were multiplied up to 12 months to calculate an 'average income level' and Jobseeker Allowance savings value for each FTE post filled as a result of LSTF-funded initiatives.
  - DWP and Cabinet Office guidance on estimating the value of volunteering using subjective wellbeing data[9].

6.3 The present value of benefits was then calculated across all programme workstreams, taking into account the average implementation period of each individual LSTF-funded project wherever possible.

6.4 The only exception to this methodology was the Robin Hood Smartcard initiative, for which future benefits were estimated based on anticipated uptake among local public transport users. This was informed by the previously recorded reduction in combined bus and tram trips when, in 2012, a change in the operator of Nottingham's NET tram services

[33] DfT (2014) *WebTAG Unit A5.1: Active Mode Appraisal*. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427098/webtag-tag-unit-a5-1-active-mode-appraisal.pdf. Last accessed 15/02/16.
[34] WebTAG Data Book (November 2014) *Tables A5.4.2 and A4.13*. Available online at: https://www.gov.uk/government/publications/webtag-tag-data-book-november-2014, last accessed: 15/02/16.
[35] WebTAG Data Book (November 2014) *Table A3.4*. Available online at: https://www.gov.uk/government/publications/webtag-tag-data-book-november-2014, last accessed: 15/02/16.
[36] DCF (2015) *Carbon Factors*. Available online at: http://www.ukconversionfactorscarbonsmart.co.uk/, last accessed 10/01/2016

precipitated a change in local ticketing rules. This prevented travellers with Nottingham City Transport Dayrider tickets from using the tram, where previously this had been possible. The result was a drop of some 2 million trips in the number of public transport journeys completed in Greater Nottingham in 2012/13.

6.5 The future benefits of the Smartcard were therefore estimated on the basis of these multi-modal trips being restored over the period 2016-2020 as a result of the Robin Hood Smartcard's introduction. The rationale being that, using the new smartcard, it will be possible for local travellers to complete multi-operator bus and tram trips without incurring a fare penalty.

6.6 The impact was sensitivity tested using comparative data on the change in numbers of Kangaroo smartcard trips and pass numbers in recent years. The resulting changes in passenger trip numbers, and associated benefits, were monetised using:

- Additionally generated revenue from Robin Hood smartcards (through trip generation) accruing to local public transport operators.
- WebTAG generalised time value from simplified ticketing.
- Estimated time savings for passengers and bus operators arising from people switching from cash fares to Robin Hood smartcard.

6.7 Realisation of these benefits was calculated over a 10 year timeframe, reflecting the capital investment that the smartcard scheme represents.

Programme costs

6.8 As discussed in paragraph 2.7, the total cost of the Nottingham Urban Area LSTF programme was £16.196m. A further £2.55m of local authority and third party contributions made up the total value of the LSTF programme delivered between 2011 and 2015.

6.9 When considering these costs for the purpose of Value for Money calculation, it was appropriate to take into account the extent that benefits were captured through programme monitoring and evaluation. This was important in the context of the £4.3m of LSTF funding invested in the Robin Hood multi-operator smartcard, given the future benefits from this initiative were estimated based on anticipated uptake after the funding period.

6.10 Consequently, two different Benefit:Cost ratios were calculated, to reflect low (conservative) and high (optimistic) scenarios for Net Present Value benefits. These are explained in Table 6-1:

Table 6-1: Treatment of costs for tested LSTF programme Benefit:Cost scenarios

BCR Scenario	Total value of costs	Treatment of costs
Conservative (Low)	£16.99m	• £15.524m LSTF funding received from DfT • £1.466m of Local Authority contributions • £1.084m of Third Party Contributions (removed from benefits) Total LSTF programme delivery costs, irrespective of whether or not individual project benefits were captured through programme monitoring.

BCR Scenario	Total value of costs	Treatment of costs
Optimistic (High)	£12.69m	• £11.22m of LSTF funding from DfT: £15.524m minus £4.3m for contribution to Robin Hood multi-operator smartcard initiative • £1.466m of Local Authority Contributions • £784,000 of Third Party Contributions removed from benefits: £1.084m minus £0.3m DfT Smartcard Fund contribution Total LSTF programme delivery costs, minus spending associated with the multi-operator smartcard initiative.

6.11 Adopting this approach allowed for further sensitivity testing in respect of estimating the value for money of the Nottingham Urban Area LSTF programme.

Estimated value for money of the Nottingham Urban Area LSTF programme

6.12 The resulting estimated costs and benefits for each scenario have been presented in a modified Appraisal Summary Table (Table 6-2). It reveals the estimated Benefit:Cost Ratio for all LSTF projects ranges from a conservative 3.78:1 (where all programme costs are included) to an optimistic 4.76:1 (where costs associated with Robin Hood Smartcard have been stripped out).

6.13 Irrespective of whether the conservative or optimistic BCR value is used, they suggest the Nottingham Urban Area LSTF programme has delivered high to very high value for money, based on DfT's Value for Money assessment guidance[37].

Qualitative benefits highlighted through process and impact evaluation activities

6.14 Although the focus of this impact evaluation has largely been upon the quantifiable benefits that arose on a project-by-project basis, it is important to also capture and record the range of qualitative benefits that accrue to the whole LSTF programme. These were identified through a combination of Process Evaluation interviews with key programme delivery teams and stakeholders, as well as through case studies developed in relation to specific projects (and from which a number of the quotes in this report have been drawn).

6.15 The key qualitative benefits identified in relation to the LSTF programme are:

- Directing people to significant local public transport, walking and cycling capital investments that have been delivered during the LSTF delivery period (NET phase 2, ring road widening, Nottingham station redevelopment).
- Locking-in the benefits of added road network capacity on the ring road and A453, by encouraging mode shift to walking and cycling for shorter trips in the urban area.
- Establishing a lasting legacy of improved walking, cycling and public transport infrastructure through the 20mph speed limit areas, targeted walk/cycle route

[37] DfT (2015) *Value for Money Assessments*. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255126/value-for-money-external.pdf, last accessed: 16/02/16.

improvements, secure cycle parking hubs, and Robin Hood multi-operator smartcard and associated ticket retail network.

- Expanding the range of local transport options for urban area residents and visitors through the car club and public bike hire service.
- Establishing a strong social media presence and improved outreach through new social media communications channels that were not being fully exploited previously. By coordinating marcomms across all Nottingham LSTF programme projects, it was possible to plan and manage local media coverage of sustainable travel initiatives – amplifying the impact of media messages, and increasing their reach locally.
- Removing the technological barriers to smart, integrated ticketing in a deregulated bus environment. This is considered a significant achievement in its own right and one that has established a platform that could be expanded across the D2N2 and Midlands Connect areas.
- Expanding the travel horizons of jobseekers through reduced rate public transport travel and free bike loans, in order to remove mobility as a short term barrier to finding employment.
- Leveraging support from local FE colleges and HE institutions through Ucycle, which has been so effective that they are sustaining it independently following the LSTF programme.
- Wider recognition from across the UK for Nottingham's successful delivery and innovative approach to running LSTF-funded smarter travel initiatives.

What worked?

6.16 The complementary nature of the multiple small initiatives delivered through the Nottingham Urban Area LSTF programme, and the lack of complete project-by-project datasets, meant it was not possible to make meaningful value for money comparisons between individual projects. Instead this comparison was indicatively made between each programme workstrand, with projects that contributed significant benefits highlighted.

6.17 Table 6-3 shows that Workstrand B delivered the greatest value for money under the conservative benefit:cost appraisal, while Workstrand A improved significant under the optimistic scenario. This highlights the impact of removing the £4.3m of Robin Hood smartcard-related costs, against which future benefit could only be estimated. It is important to note that these calculations overlook any qualitative benefits identified and recorded in relation to each project, which by their nature cannot be monetised and included in this BCR comparison.

Table 6-2: Value for Money summary table for Nottingham Urban Area LSTF (11/15)

Estimated Costs and Benefits	Conservative	Optimistic
Reduced Car KM	28,380,819	28,380,819
Greenhouse gas (CO2e) reduction (tonnes)	-23,529	-23,529
Congestion (£)	£3,547,602	£3,547,602
Infrastructure (£)	£31,041	£31,041
Accident (£)	£993,319	£993,319
Local Air Quality (£)	£31,041	£31,041
Noise (£)	£62,082	£62,082
Greenhouse Gases (£)	£1,374,884	£1,374,884
Indirect Taxation (£)	-£1,738,308	-£1,738,308
Additional Cycle KM	12,521,808	12,521,808
HEAT Benefit (£)	£3,051,000	£3,051,000
Addition Cycle Accidents (£)	-£176,187	-£176,187
Absenteeism Benefits (£)	£44,778	£44,778
Change in Serious casualties in 20mph areas	- 28	- 28
Change in Slight casualties in 20mph areas	4	4
Net casualty reduction from 20 mph areas (£)	£5,601,468	£5,601,468
LSTF jobs created	22	22
GVA of jobs created during LSTF delivery (£)	£1,308,105	£1,308,105
People Returned to Work (FTE)	618	618
Net GVA of filled employment positions (£)	£3,110,838	£3,110,838
Income Tax Benefits (£)	£581,280	£581,280
JSA Saving Benefits (£)	£44,366	£44,366
Volunteering positions created	78	78
Monetised value of volunteering well-being (£)	£1,065,636	£1,065,636
Volunteer hours recorded	509	509
Monetised financial saving of volunteering (£)	£6,873	£6,873
New PT trips made due to reduced fares	432,635	432,635
Social impact of new PT trips not previously possible (£)	£2,894,085	£2,894,085
Net third party revenue benefits & cost savings (£)	£2,796,922	£2,796,922
Total new uses of secure cycle parking facilities	28,772	28,772
Estimated utility from improved cycle parking	£25,817	£25,817
TOTAL BENEFITS 2011-15	**£ 24,656,644**	**£ 24,656,644**
Delayed Benefits 2015/16	£11,470,676	£10,670,289
Delayed Benefits 2016/17	£7,420,605	£6,615,416
Delayed Benefits 2017/18	£4,364,205	£3,554,184
Delayed Benefits 2018/19	£3,291,869	£2,476,989
Delayed Benefits 2019/20	£3,212,995	£2,393,226
Delayed Benefits 2020/21	£2,327,763	£2,312,295
Delayed Benefits 2021/22	£2,252,045	£2,234,102
Delayed Benefits 2022/23	£2,179,366	£2,158,552
Delayed Benefits 2023/24	£2,109,702	£2,085,558
Delayed Benefits 2024/25	£2,043,039	£2,015,032
TOTAL DELAYED BENEFITS	**£ 40,672,266**	**£ 36,515,643**
Third Party Contributions	£1,084,000	£784,000
TOTAL BENEFITS	**£ 64,244,910**	**£ 60,388,287**
Central Govt Costs	£15,524,000	£11,222,000
Local Authority Costs	£1,466,000	£1,466,000
TOTAL COSTS	**£ 16,990,000**	**£ 12,688,000**
INDICATIVE BCR	**3.8**	**4.8**

Table 6-3: Programme workstrand Value for Money assessments

Workstrand	Total Costs	Total Benefits	BCR (Conservative)	BCR (Optimistic)
LSTF programme	£16,990,000	£64,244,910	3.8	4.8
A: Smartcard Development, Integrated Ticketing and Multi-modal Integration	£6,567,000	£21,643,197	3.3	8.9
B: Community Smarter Travel Hubs and 20mph speed limit areas	£4,094,000	£35,069,127	8.6	8.6
C: Worksmart and Green Transport Infrastructure (Business Support)	£4,487,000	£4,026,851	0.9	1.4
D: Active travel Solutions	£1,060,000	£3,476,907	3.3	3.3

* Note that programme coordination costs have not been included in these BCR calculations

6.18 By interrogating the spreadsheet model through which these values were calculated (Appendix B) it is possible to analyse the highest performing workstrands, and review the estimated contribution of individual projects to the overall value of LSTF benefits. This process reveals the Nottingham Urban Area LSTF programme initiatives which have generated the greatest benefits and, from a quantifiable value for money perspective, therefore appear to have delivered the greatest impact.

6.19 Table 6-4 sets out the findings from this comparison. It reveals that 20mph speed limit areas, Jobseeker Kangaroo, and Smarter Travel Hubs contributed around two-thirds of all the quantifiable benefits from the LSTF programme.

Table 6-4: Indication of highest and lowest impact LSTF initiatives

Highest Impact	Lower Impact	Unsure of Impact
20 mph speed limit areas £27.4m of benefits	Citycard cycle hire £0.5m of benefits	Bikeability BikeIt
Jobseeker Kangaroo £12.3m of benefits	1 month free pass jobseekers £0.4m benefits	Cycling for All Cycle infrastructure spend
Smarter Travel Hubs PTP £7.6m of benefits	Workplace challenge £0.2m benefits	Lifecycle Workplace engagement
16-19 Kangaroo £4.2m of benefits	City Car Club £0.1m benefits	Small scale infrastructure
Robin Hood Smartcard* £4.2m of benefits	Benefits from some projects were hard to quantify due to: • Younger beneficiaries (HEAT not valid for under 16s) • Lack of longer-term behaviour change data • Small numbers of beneficiaries • Short intervention periods • Impacts cannot be unpicked from other initiatives	
Ucycle £2.1m of benefits		
Ecostars £1.9m of benefits		
Electric Buses £1.4m of benefits		
Citycard Cycle Hubs £1.0m of benefits		
Cycle Live Events £0.9m of benefits		

*Robin Hood Smartcard benefits estimated over a 10yr period based on anticipated impact

6.20 Some projects delivered much lower levels of benefit, which may be indicative of lower impacts or (in the case of cycling and walking initiatives with younger people) benefits which could not be captured. Table 6-5 highlights how projects with low levels of beneficiaries, younger people (for whom the HEAT tool could not be used to calculate benefits) and short-term awareness raising projects (for which longer-term behavioural changes could not be calculated), were typically those that generated lower values of monetised benefits.

Table 6-5: Low impact LSTF-funded projects based on estimated monetised benefits

LSTF-funded project	Estimated benefit	Number of beneficiaries	Possible reasons for low monetised benefits
Bikeability	£3,071	838	• Beneficiaries aged 10-11 • HEAT tool could not be used to monetise health impacts of activity
Cycling for All	£64,375	610	• Small scale initiative • No data on longer-term behavioural change among beneficiaries
City Car Club	£145,082	222	• Launched late in LSTF programme • Uptake still growing at end of LSTF
Workplace Challenge	£163,844	1,183	• Short-term behaviour change / awareness raising campaign • Longer-term shifts in behaviour quite small
Bike It	£328,030	7,570	• Beneficiaries aged 11-16 • HEAT tool could not be used to monetise health impacts of activity
1 month free pass for new job starters	£413,480	1,967	• Long-term change in commuter travel behaviour not tracked
Citycard Cycle Hire	£514,785	1,833	• Low number of unique users (1,833) • 37% of beneficiaries only used the service once

6.21 It is inherently difficulty to unpick specific reasons why some LSTF projects in Table 6-5 have delivered low monetised benefits, and even harder to associate these benefits with relative project impacts.

By applying the WebTAG appraisal methodology to out-turn monitoring and evaluation data it is possible to estimate a Benefit:Cost Ratio of between 3.8 and 4.8 for the Nottingham Urban Area's LSTF programme delivered between 2011 and 2015. While the contribution of programme workstrands was uneven, the BCR values reported above are considered a fair reflection of the overall programme impact, taking into account the mix of different types of project delivered and challenges with capturing quantifiable benefits.

The programme-wide BCR values are heavily dependent on the benefits delivered by the city-wide 20mph speed limit areas which were introduced using LSTF funding. These benefits were factored-up from an initial pilot area to reflect the fact 74% of all 20mph speed limit areas implemented in Nottingham were funded by the LSTF programme, so we can be less certain of the actual degree of impact. When this project is removed from the spreadsheet model, the overall BCR values fall to between 2.5 (conservative) to 3.2 (optimistic). It is not possible to determine the extent to which the introduction of 20mph speed limit areas unlocked wider benefits, by supporting the uptake of walking and cycling activities being promoted through other LSTF projects, but it seems reasonable they would have complemented local walking and cycling initiatives.

Other high impact projects, which appear to have 'worked' on the basis of significant values of benefits identified through the WebTAG appraisal methodology, include: Jobseeker half-price and 16-19 free Kangaroo public transport initiatives, Community Smarter Travel Hubs (notably the Personal Travel Planning and cycle training components), Ucycle, Ecostars, investments in electric buses, and Citycard Cycle Hubs.

Lower impact projects were typically those which had:

- Smaller numbers of beneficiaries (City Car Club, Cycling for All, Bikeability, Citycard Cycle Hire).
- Younger beneficiaries engaged in physical activity which could not be monetised using the HEAT tool because of their age (Bikeability, Bike It).
- Shorter intervention periods, with limited longer-term outcome monitoring (Cycling for All, City Car Club, 1 month free travel pass for new job starters).

7 CONCLUSIONS

7.1 This independent evaluation has found that the Nottingham Urban Area LSTF programme delivered between 2011 and 2015 has been successful in encouraging local people to change their travel behaviour in favour of more sustainable modes for short trips. Monitored increases in walking and cycling activity, both for commuting and leisure purposes, and corollary reductions in local car trips were identified. The wide-reaching nature of the LSTF programme – engaging over 30% of all Nottingham urban area residents to some extent, and around 15% of the population more tangibly – has ensured that its impacts have been complementary to wider capital investments in road, public transport and cycling capacity. It is anticipated that future uptake in the Robin Hood multi-operator smartcard will further amplify these impacts across local public transport networks.

Key outputs delivered and legacy

7.2 As a result of LSTF funding and effective programme delivery, the Nottingham Urban Area can now point to:

- Full coverage of city residential areas by 20mph speed limits, which are estimated to have resulted in 28 fewer serious road incident casualties between 2011 and 2015.
- A multi-operator public transport smartcard that has been joined by the city's three main public transport operators (NCT, Trent Barton, Tramlink Nottingham), making it easier and cheaper for people to use most buses and trams in the Nottingham urban area.
- A car club, citywide bicycle hire service, and public network of secure cycle parking hubs. They complement forthcoming improvements to arterial and cross-city cycle routes that are being constructed as part of the Local Growth Fund-supported Cycle City programme[38] and broaden the range of multi-modal transport options available locally.
- The demonstrable impact of removing travel barriers for jobseekers and young people not in employment, education or training. A total of 919 jobseekers were supported into local employment through half price public transport incentives and free bike loans while looking for work, along with one month's free public transport travel to bridge the gap to their first pay cheque.
- A new mechanism for delivering local, community-focused travel advice in the form of the Community Smarter Travel Hubs established in five locations across Nottingham.
- A number of local cycle and walking infrastructure improvements that create traffic-free routes alongside the new NET tram lines and close to local schools.
- An off-road cycling track for traffic-free recreational and sports cycling at the Harvey Hadden sports centre in Bilborough.
- The successful Ucycle bike loan system delivered at HE and FE institutions as well as the city's two hospitals. Almost 1,200 bikes were loaned through this initiative between 2011 and 2015, with qualitative and quantitative evidence of significant increases in cycling activity as a result.

[38] Nottingham Cycle City website: http://transport2.nottinghamcity.gov.uk/cycle/, last accessed 12/03/2016.

7.3 The body of evidence delivered through this independent impact evaluation is also part of the LSTF delivery programme's legacy. The insights into what worked, and the scale of quantifiable benefits arising from different initiatives, can be contrasted with earlier reported process evaluation findings to highlight which initiatives should be sustained over a longer time-frame (and how they can be delivered effectively). This may be used to inform future funding bids and sustainable transport intervention delivery planning.

Measured outcomes of LSTF initiatives in Nottingham

7.4 As shown in Table 7-1, the outputs from the Nottingham LSTF programme resulted in significant shifts in travel behaviour – predominantly through increases in active travel modes and reductions in car use. A modest increase in public transport use was recorded across all LSTF beneficiaries. While this masked reductions in public transport travel among several cohorts that reported switching to walking and cycling from bus and tram modes for some trips, the greater increases in walking and cycling levels recorded through programme monitoring activities point to a greater overall shift towards sustainable travel modes. Given Nottingham is a city with higher than average public transport patronage, and lower than average car use, some transfer from public transport to walking and cycling is considered inevitable as a result of the local LSTF programme's strong promotion of active travel modes – focused specifically on health and financial benefits.

Table 7-1: Aggregated LSTF programme outcomes by travel behaviour change

Measure	Outcome	Impact (2011-15)
Total beneficiaries	246,263 people	• 933,299 net increase in trips made in Nottingham Urban Area (primarily walk & cycle)
Change in cycling behaviour	87,424 people changed cycle behaviour	• 9.2 mins average increase cycling/day • Average increase of 144km cycled / annum / person • 1.4m additional cycling trips • 12.5m net additional km cycled • 2,824 more people cycling regularly
Change in walking behaviour	63,288 people changed walking behaviour	• 1.1 mins average increase walking/day • Average increase of 58km walked / annum / person • 1.6m additional walk trips • 2.3m additional km walked
Change in public transport use	66,234 net additional public transport trips	• -136,437 bus trips following LSTF projects • 277,824 more tram trips by LSTF beneficiaries • -75,152 fewer in train trips by LSTF beneficiaries
Change in car use	-2.18m fewer car trips	• -28.4m car kilometres travelled

Aggregated impacts of the Nottingham LSTF programme

7.5 Table 7-2 shows how the aggregated impacts of the delivered Nottingham LSTF programme break down in relation to the three core LSTF objectives. Although it is not possible to disentangle the impacts of LSTF funded initiatives from other local transport projects and socio-economic changes; local corroborative datasets indicate the programme delivered between 2011 and 2015 made a positive contribution to:

- Sustained local economic growth

- Improved public health and physical activity levels
- Reduced carbon emissions
- Improved local air quality

Table 7-2: Aggregated impacts arising from LSTF-funded initiative outcomes

Measure	Outcome	Impact (2011-2015)
Growth & Accessibility	-28.4m car km travelled	• £3.2m of WebTAG marginal external benefits
	+2,824 new cyclists	• £0.045m of absenteeism benefit from cycling
	14.5 LSTF jobs	• £1.3m of Gross Value Added
	509 volunteer hours	• £1.07m of volunteering benefits estimated
	618 additional FTE jobseekers placed into work	• £3.1m of Gross Value Added for positions filled • £581,280 saving in Job Seekers Allowance claims • £44,000 of additional income tax
	325,245 bus trips generated	• £2.42m of additional public transport revenues for local bus and tram operators. • £2.9m of social value from generated bus trips
Carbon & air quality	-23,529 fewer Tonnes CO2e emitted	• £1.47 million of carbon reduction (DECC values) • £0.31m of net estimated WebTAG benefit • £0.37m saving in fuel costs to bus and HGV fleet operators
Health	Estimated long-term health savings for NHS and society	• -28 serious road incident casualties on average across LSTF-funded 20mph zones • £5.6m estimated net-saving in casualty reduction
	Increases in physical activity	• £3.0m of health economic benefits attributable to increases in walking and cycling activity.

Growth and accessibility impacts

7.6 Growth and accessibility outcomes account for around £14.6m of monetised economic benefits during the LSTF programme delivery period. These were derived from aggregated contributions to the following local trends observed in corroborative monitoring datasets covering the LSTF delivery period:

- A 2.5% overall reduction in local traffic levels in Greater Nottingham City area and stable public transport patronage and mode share. LSTF projects have helped to create capacity on existing public transport networks by encouraging a greater proportion of people to travel by active modes.
- Increased public transport, walk and cycle accessibility to local employment centres and greater public satisfaction with their local neighbourhoods (up from 81% citing satisfaction in 2010 to 87% in 2014).
- A 10% increase in Gross Value Added economic output across Greater Nottingham between 2010 and 2014.
- A 5% increase in employment levels and a 10% reduction in worklessness across Greater Nottingham between 2011 and 2014.

Carbon and air quality impacts

7.7 Approximately £1.5m of net monetised economic benefits were derived from LSTF-funded initiatives' contributions to carbon reduction and air quality improvements, which included a headline reduction of 23,529 tonnes of CO_{2e} emissions during the LSTF delivery period. This was achieved through a combination of mode-shift resulting in 2.18m fewer car trips and efforts to de-carbonise HGV and bus fleet operations in the local area. Evidence from corroborative datasets suggests that LSTF projects made a positive contribution to the following carbon and air quality trends observed in the Nottingham Urban Area over the same timeframe:

- The 1.2% average reduction in estimated annual car kilometres travelled by the 63,000 LSTF beneficiaries who reported making changes their car travel[39] (an average of 163km per person per year) is likely to have minor contributed to the 2.5% reduction in area traffic levels across Greater Nottingham.
- A measured 2.5% reduction in carbon emissions from transport in Greater Nottingham has been supported by carbon reduction and mode-switching outcomes of LSTF projects. The estimated carbon reduction achieved through LSTF initiatives equates to around 2.5% of all the carbon emitted in Greater Nottingham between 2011 and 2015, or ~0.6% per annum.
- An average 9.5% reduction in Nitrogen Oxide levels recorded at the Nottingham AQMA monitoring sites since 2010. Car trip reductions recorded through LSTF initiatives are likely to have made a modest contribution to this trend.

Health impacts

7.8 Approximately £9.6m of net monetised economic benefits were derived from LSTF-funded initiatives' contributions to public health. These were generated by the 1.4m additional cycling trips and 1.6m additional walking trips reported through project monitoring, as well as 28 fewer serious road incident casualties in 20mph speed limit areas. Corroborative data from secondary sources suggests these LSTF-funded impacts have supported:

- A 20% reduction in Killed and Seriously Injured road incident casualties in Greater Nottingham.
- ~30% growth in local cycling levels (50% in LSTF intervention areas), exceeding the national average of 20% over the same period.
- A 19% increase in the proportion of the population undertaking 30 mins of physical activity at least 3 times per week.
- A 25% reduction in the percentage of adults classed as overweight or obese.
- An average 9.5% reduction in Nitrogen Oxide levels recorded at the Nottingham AQMA monitoring sites.

7.9 Because the WHO HEAT tool cannot be used to estimate the economic value of physical activity undertaken by people under the age of 16, the health impacts arising from LSTF

[39] Based on 2014 National Travel Survey data, which estimate 590 personal car trips per annum, each of an average distance of 13.8km.

initiatives that engaged with young people (11,500 under 16's were engaged through the Bike It, Bikeability, and Lifecycle initiatives) are under-stated in relation to those which involved adult populations. It is therefore considered likely that the health impacts of the whole LSTF programme are higher than those stated above.

Performance against LSTF targets

7.10 As summarised in Table 7-3, all of the targets defined at the beginning of the LSTF programme have been met to some degree, with the greatest success achieved in relation to supporting a greater number of people into employment and training.

Table 7-3: LSTF programme performance against defined outcome targets

Target	Extent achieved?	Supporting data
Increase sustainable travel modal share by 10% from 2010 levels by 2014/15	✓✓	• Public transport mode share increased by 1.85% in Nottingham City. • Non-motorised trip mode-share not captured by cordon counts. • Cycle mode share increased by an estimated 50% in key intervention areas.
No increase in traffic levels contributing to a reduction in carbon emissions from transport by 10% over three years by 2014/15	✓✓	• Traffic levels fell by 2.5 % in Greater Nottingham. • Traffic levels fell by 5.4% in Nottingham City. • 2.5% reduction in carbon emissions from transport across Greater Nottingham as a whole. • 21% reduction in total carbon emissions per capita in Nottingham City.
Increase in the number of people supported to employment and training by 2014/15	✓✓✓	• 5% increase in the number of people employed in Greater Nottingham (9% in Nottingham City). • 10% reduction in Jobseeker Allowance claimants in Greater Nottingham (> 10,000). • 14.5 FTE posts created through LSTF delivery. • 919 jobseekers supported into 618 FTE positions (569 FT + 250 PT).
Double levels of cycling in key intervention areas from baseline levels by 2014/15	✓✓	• Cycle mode share increased by an estimated 50% in key intervention areas, based on most robust before and after monitoring datasets. • Exceeds the local average (~30%) and national average (~20%) over the same time period.

7.11 It was challenging to monitor performance against the non-motorised travel mode and cycling intervention area targets, since they were defined in a way that were not directly comparable against available secondary sources of data.

Value for money and analysis of 'what worked'

7.12 By applying the WebTAG appraisal methodology to out-turn monitoring and evaluation data it is possible to estimate a Benefit:Cost Ratio of between 3.8 and 4.8 for the Nottingham

Urban Area's LSTF programme delivered between 2011 and 2015. As shown in Table 7-4, this reflects high to very high value for money according to DfT's guidance on valuing the transport investments.

These evidence-based BCR calculations suggest the Nottingham Urban Area LSTF programme, considered as a whole, has delivered a considerable return on the investment of public funding received.

7.13 While the contribution of programme workstrands was uneven, the BCR values reported above are considered a fair reflection of overall programme's impact, taking into account the mix of different types of project delivered and challenges with capturing and estimating quantifiable benefits.

Table 7-4: Value for Money assessment of LSTF delivery programme

Conservative scenario	Optimistic scenario
Total LSTF programme delivery costs, irrespective of whether individual project benefits were captured effectively	Total LSTF programme delivery costs, minus spending and benefits associated with Robin Hood multi-operator smartcard
• £64.2m of estimated monetised benefits	• £60.4m of estimated monetised costs
• £16.99m of programme delivery costs	• £12.69m of programme delivery costs
• BCR = 3.8	• BCR = 4.8
• High value investment	• Very high value investment

7.14 The programme-wide BCR values are heavily dependent on benefits delivered by the city-wide 20mph speed limit areas. These benefits were factored-up from an initial pilot area to reflect the fact 74% of all 20mph speed limit areas implemented in Nottingham were funded by the LSTF programme, so we can be less certain of the actual degree of impact. When this project's costs and benefits are removed from the spreadsheet model, the overall BCR values fall to between 2.5 (conservative) to 3.2 (optimistic). It is not possible to determine the extent to which 20mph speed limit areas unlocked wider benefits, but it has been assumed they have complemented local walking and cycling initiatives by creating more pedestrian and cycle friendly environments.

What worked?

7.15 Although less robust than the workstrand-by-workstrand value for money assessment, comparing the value of benefits generated by each individual project indicates which ones yielded the greatest benefits. Table 7-5 indicates 20mph speed limit areas, Jobseeker Kangaroo, Community Smarter Travel Hubs, Kangaroo free public transport travel for 16-19 year olds, and the Robin Hood smartcard projects generated the highest benefit values. As well as being the most impactful projects, they were also more costly to deliver.

Table 7-5: Indication of highest and lowest impact LSTF initiatives

Highest Impact	Lower Impact	Unsure of Impact
20 mph speed limit areas £27.4m of benefits	Citycard cycle hire £0.5m of benefits	Bikeability BikeIt
Jobseeker Kangaroo £12.3m of benefits	1 month free pass jobseekers £0.4m benefits	Cycling for All Cycle infrastructure spend
Smarter Travel Hubs £7.6m of benefits	Workplace challenge £0.2m benefits	Lifecycle Workplace engagement
16-19 Kangaroo £4.2m of benefits	City Car Club £0.1m benefits	Small scale infrastructure
Robin Hood Smartcard* £4.2m of benefits	Benefits from some projects were hard to quantify due to: • Younger beneficiaries (HEAT not valid for under 16s) • Lack of longer-term behaviour change data • Small numbers of beneficiaries • Short intervention periods • Impacts cannot be unpicked from other initiatives	
Ucycle £2.1m of benefits		
Ecostars £1.9m of benefits		
Electric Buses £1.4m of benefits		
Citycard Cycle Hubs £1.0m of benefits		
Cycle Live Events £0.9m of benefits		

*Robin Hood Smartcard benefits estimated over a 10yr period based on anticipated impact

7.16 Lower impact projects were typically those which had:

- Smaller numbers of beneficiaries (City Car Club, Cycling for All, Bikeability, Citycard Cycle Hire).
- Younger beneficiaries engaged in physical activity which could not be monetised using the HEAT tool because of their age (Bikeability, Bike It).
- Shorter intervention periods, with limited longer-term outcome monitoring (Cycling for All, City Car Club, 1 month free travel pass for new job starters).

7.17 This insight into relative project costs and benefits may be beneficial when devising future sustainable transport projects and bid packages.

Recommendations for future initiatives

7.18 Taking on-board the findings from this evaluation, it is possible to identify a number of recommendations that could improve the design and implementation of local sustainable travel initiatives in the future. These are identified throughout this report, and have been summarised in Table 7-6.

Table 7-6: Recommendations for future sustainable transport initiatives

Programme design
• Draw on the evidence of impact from LSTF to refine the scale of proposed behaviour change for future sustainable transport initiatives. With hindsight, proposing a 10% increase in sustainable travel mode share and 100% increase in cycling was ambitious in the context of the four year delivery timeframe.
• Consider the size and overlap of individual projects when designing sustainable travel programme bids. The disparate nature of some smaller initiatives meant they were hard to monitor and evaluate. In reality they were often part of joined-up delivery mechanisms (e.g. the range of initiatives delivered through Community Smarter Travel Hubs). For future programmes it may be more efficient to pre-empt this issue by considering how, in practice, individual projects will be delivered when developing initial funding bids and designing monitoring and evaluation frameworks.
• Use the Workstrand BCR values and impact estimates from this evaluation to shape future programme design and delivery. The findings suggest that initiatives which mix capital and revenue spending, and direct people to new sustainable transport infrastructure through personalised information and incentives, have been most effective. Initiatives to remove cost and information barriers for jobseekers also deliver very high value for money when wider economic benefits of individual's employment are included in the evaluation of impacts.
Data collection and monitoring
• Fully consider available monitoring datasets when defining programme objectives to help ensure progress against all targets can be evaluated during and after programme delivery.
• Performance Indicator data collected and held by Nottingham City and Nottinghamshire County Council over a long period of time proved most useful when evaluating LSTF programme impacts. While a lot of data are available for the Nottingham City area, a much smaller range is held for the Nottingham Urban Area - increasingly a focus for transport funding and delivery. A greater volume of data on cycling levels would also have been beneficial, and is required to evaluate impacts of the Cycle City projects underway in Nottingham.
Data collection and monitoring (continued)
• Apply SLAs to all external suppliers and issuing mandates to internal delivery teams could achieve greater consistency and relevance of monitoring data available for post-implementation evaluation.
• With hindsight not collecting sufficient project-specific baseline data for specific target objectives was a missed opportunity for the LSTF programme, since it was always likely NCC's officers and Council members would need to demonstrate the programme's impact post-implementation, irrespective of DfT requirements.
Evaluation approach
• For major programmes such as LSTF, establishing an independent monitoring and evaluation team at the programme outset ensures that a baseline of travel behaviour and physical activity levels is determined for relevant intervention areas. This can inform target setting/monitoring across individual projects (negating the need for project-level data collection), and improve the quality of subsequent impact analyses.
• As a rule of thumb it would be appropriate to allocate 5-10% of similar future programme budgets for ongoing monitoring and evaluation activity. Such datasets are necessary if NCC wishes to determine the impact of projects and initiatives that are delivered through large-scale behaviour change programmes like LSTF.
• Future project teams could better support the monitoring effort by receiving more streamlined templates that make it easier for them to complete, and simpler for NCC to extract specific data and information they needed to meet reporting requirements.

APPENDIX A

LSTF impact evaluation spreadsheet model guide

Title:	**LSTF impact evaluation spreadsheet model guide**
Number:	Appendix A
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Author:	Neil Taylor
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1 INTRODUCTION

1.1 This Appendix is intended to provide a guide to navigating and using the MS Excel spreadsheet model developed by ITP for the purpose of evaluating the impact of the Nottingham Urban Area Local Sustainable Transport Fund (LSTF) programme delivered between 2011 and 2015. It contains detailed explanation of the approach adopted to estimate the value for money of the LSTF-funded initiatives which made up the programme. It also explains key assumptions used, documenting where in the spreadsheet model they can be found, and summarises how to navigate the spreadsheet model. The model has been included as Appendix A to the evaluation report produced by ITP on behalf of Nottingham City Council.

2 OVERVIEW OF APPROACH TO ESTIMATING LSTF PROGRAMME VALUE FOR MONEY

2.1 Working sequentially through the available output and outcome monitoring data from each LSTF-funded project, it was possible to:

- Determine how many people had benefitted from each initiative. This typically took the form of count-based output data derived from service delivery mechanisms (e.g. recorded Cycle Hub entries, cycle hires, or distances travelled by electric bus vehicles) or project records (e.g. numbers of people who received Personal Travel Planning).
- Identify evident travel behaviour impacts among beneficiaries associated with each individual project, wherever data allowed. This included secondary data collected by individual LSTF-funded service providers and targeted surveys delivered by ITP to fill identified evidence gaps.
- Quantify the estimated impact of each project, through a combination of the project monitoring data referenced above and common secondary datasets (e.g. National Travel Survey average trip lengths/numbers/speeds, DECC average emissions per km travelled). As appropriate, and where data allowed, the impacts were calculated on a project-by-project basis in relation to the following metrics:
  - Average change in minutes of walk/cycle activity, or average change in weekly distance walked/cycled as a result of each initiative.
  - Net change in bus, tram, train, car, cycling and walking trip numbers associated with each project.
  - Total net change in car and cycle kilometres travelled through each project.
  - The number of additional (i.e. completely new) cyclists established.
  - The change in fatal, serious and slight casualties associated with the introduction of 20mph speed limit areas.
  - The net change in CO2e, NO_2, CH_4, and CO_2 emissions; which were calculated using DECC and WebTAG values per km travelled by car, bus, tram, and train.

- The number of additional jobs created (directly through LSTF delivery in the local area), and jobseekers placed into Full Time Equivalent positions.

- Monetise these estimated impacts, to consistent 2015 prices, using a combination of:
  - The WHO HEAT tool[1], wherever changes in walk/cycle activity were recorded.
  - DfT's WebTAG methodology for estimating the social value of bus trip generation where cost/lack of service was previously a barrier to travel[2]
  - DfT's WebTAG methodology for estimating social value of utility arising from indoor cycle parking (in relation to Cycle Hubs)
  - DfT's WebTAG marginal external cost, accident rate and cost, absenteeism, factors (in £ per km terms) for 'Inner and Outer Conurbations - Other Roads'.
  - Reported net third party revenue benefits and cost saving values (e.g. fuel savings accruing to local bus operators from the introduction of electric bus vehicles funded through LSTF projects).
  - DECC's non-traded carbon values for non-car modes of motorised travel , which were multiplied by DCF Carbon Factors for projects where a calculated change in car kilometres was not possible or relevant (e.g. the Kangaroo concessionary projects, which resulted in net changes in public transport travel distances across beneficiary populations).
  - English Partnerships Additionality methodology for calculating the Gross Value Added of new jobs funded through LSTF, and uptake of jobs by jobseekers[3].
  - Published HMRC Job Seeker Allowance benefit values for 2014/15 financial year, and National Minimum Wage values which were multiplied up to 12 months to calculate an 'average income level' and Jobseeker Allowance savings value for each FTE post filled as a result of LSTF-funded initiatives.
  - DWP and Cabinet Office guidance on estimating the value of volunteering using subjective wellbeing data[4].

2.2 The present value of benefits was then calculated across all programme workstreams, taking into account the average implementation period of each individual LSTF-funded project wherever possible.

[1] The HEAT tool (http://www.heatwalkingcycling.org/) is not applicable for children or young adults, because the vast majority of epidemiological studies have been conducted on adults – reflecting that most-commonly studied diseases are rare in children, and studies on adults are easier to carry out. Thus the evidence base for the chronic health effects of physical activity on young people is not as large as that for adults and therefore evidence for children and adolescents is considered insufficient, to the extent that economic appraisals should focus on adults only in the first instance.

[2] Calculated using the approach defined in Mott MacDonald (2013) *Monetising Social Impacts of Bus Travel, which also forms part of DfT WebTAG guidance*. Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226804/how-to-calculate-social-benefits.pdf, last accessed: 13/01/16.

[3] English Partnerships (2008) *Additionality Guide: A standard approach to assessing the additional impact of interventions.* Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191511/Additionality_Guide_0.pdf, last accessed: 11/03/2016.

[4] DWP and Cabinet Office (2014) *Wellbeing and Civil Society: Estimating the value of volunteering using subjective wellbeing data*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221227/WP112.pdf, last accessed 11/03/2016.

2.3 The only exception to this methodology was the Robin Hood Smartcard initiative, for which future benefits were estimated based on anticipated uptake among local public transport users. This was informed by the previously recorded reduction in combined bus and tram trips when, in 2012, a change in the operator of Nottingham's NET tram services precipitated a change in local ticketing rules. This prevented travellers with Nottingham City Transport Dayrider tickets from using the tram, where previously this had been possible. The result was a drop of some 2 million trips in the number of public transport journeys completed in Greater Nottingham in 2012/13.

2.4 The future benefits of the Smartcard were estimated on the basis of these multi-modal trips being replaced over the period 2016-2020 as a result of the Robin Hood Smartcard's introduction. The impact was sensitivity tested using comparative data on the change in numbers of Kangaroo smartcard trips and pass numbers in recent years. The resulting changes in passenger trip numbers, and associated benefits, were monetised using:

- Additionally generated revenue from Robin Hood smartcards (through trip generation) accruing to local public transport operators.
- WebTAG generalised time value from simplified ticketing.
- Estimated time savings for passengers and bus operators arising from people switching from cash fares to Robin Hood smartcard.

2.5 Realisation of these benefits was calculated over a 10 year timeframe, reflecting the capital investment that the smartcard scheme represents.

Sensitivity testing when calculating benefit values

2.6 The present value of LSTF programme benefits was subject to sensitivity testing on a project-by-project basis, wherever available data allowed. This was typically achieved by:

- Varying the estimated degree of uptake/behavioural change across all recorded project beneficiaries, relative to sample outcome surveys (where used). Except for where levels of behaviour changes were known (e.g. through 100% samples, or corroborative monitoring data), sensitivity tests considered the impact of between 30% and 70% of all LSTF project beneficiaries making the reported levels of change to their patterns of travel behaviour. For most projects, it was assumed that 50% of beneficiaries made the level of travel behaviour change reported through monitoring surveys.
- Varying the average number of walking and cycling days for projects that involved changes in physical activity levels. This variable was altered through the spreadsheet model and the HEAT for Cycling tool, with an average of 124 cycling days (Copenhagen average) and 250 walking days (double the number of cycling days) used consistently for HEAT tool estimates of monetary value derived from physical activity. The only exceptions were projects where clear evidence of different levels of walking and cycling activity existed as a result of survey questions which specifically asked how frequently people undertook this physical activity.
- Varying the average walk, cycle, car and public transport trip distances (and speeds, for walk and cycle trips), based on different published variables. Average data derived from the latest National Travel Survey (2014) were used in cases where these data were not specifically available through project monitoring surveys.
- +/- 15% applied to long-term changes derived from short-term data. This was particularly important in the case of the 20mph speed limit area impacts, which relied on monitoring data from the Sherwood pilot scheme that were factored-up by the number of residential areas supported by the LSTF programme.

- Using national average data to assume levels of new public transport trip-making. With the exception of the Jobseeker Kangaroo project, project monitoring surveys did not seek to determine the proportions of public transport trips that were completely new (i.e. generated as a result of incentives of offers) and consequently risked over-stating the scale of benefits created by LSTF-funded projects. This was addressed by using standard WebTAG values derived from previous research relating to the social value of new bus trips, for which matrices of trip generation factors have been created[5].

Treatment of delayed future benefits

2.7 An average annual benefit value was calculated to allow for estimation of delayed future benefits, which are anticipated to overhang the LSTF 2011-15 implementation period. Delayed future benefits were estimated in different ways, according to whether the projects were revenue- or capital-funded through LSTF:

- Revenue-funded programmes' delayed future benefits were subjected to a 25% level of annual decay for a period of three years (2015/16 to 2017/18). This meant that 75% of average annual LSTF delivery period benefits were applied to the 2015/16 financial year, 50% of the 2015/16 financial year's benefits were applied to 2016/17, and 25% of the previous year's benefits were applied in 2017/18. The rationale for this approach was that it had taken three years to scale the Nottingham Urban Area programme to full delivery and; while ceasing all revenue funding at the end of March 2015 would mean no additional beneficiaries change their behaviour, people who had already benefitted from LSTF funding would be likely to maintain their changed travel behaviours for some period of time without further intervention.
- Capital-funded programmes' delayed future benefits were treated in accordance with WebTAG Data Book guidance for discounting future benefits. All three capital-funded initiatives for which benefits were captured through programme monitoring (Citycard Cycle Hubs, citywide 20 mph speed limit areas, and electric buses) were considered to have a 10 year lifecycle without further intervention. As such, the average annual benefits from the LSTF delivery period were discounted by 3.5% per annum for 10 years following the 2014/15 financial year. As described above the estimated benefits for the Robin Hood Smartcard scheme, which combined capital and revenue funding, were calculated over a 10 year future period based on historic trend data.

Programme costs

2.8 The funded cost of the Nottingham Urban Area LSTF programme was £16.196m. A further £2.55m of local authority and third party contributions supplemented the £15.24m received from DfT through LSTF.

2.9 When considering these costs for the purpose of Value for Money calculation, it was appropriate to take into account the extent that benefits were captured through programme monitoring and evaluation. This was important in the context of the £4.3m of LSTF funding invested in the Robin Hood multi-operator smartcard, given the future benefits from this initiative were estimated based on anticipated uptake after the funding period.

2.10 Consequently, two different Benefit:Cost ratios were calculated, to reflect low (conservative) and high (optimistic) scenarios for Net Present Value benefits. These are explained in **Table 2-1**.

[5] English Partnerships (2008) *Additionality Guide: A standard approach to assessing the additional impact of interventions.* Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191511/Additionality_Guide_0.pdf, last accessed: 11/03/2016.

Table 2-1: Treatment of costs for tested LSTF programme Benefit:Cost scenarios

BCR Scenario	Total value of costs	Treatment of costs
Conservative (Low)	£16.99m	• £15.524m LSTF funding received from DfT • £1.466m of Local Authority contributions • £1.084m of Third Party Contributions (removed from benefits) Total LSTF programme delivery costs, irrespective of whether or not individual project benefits were captured through programme monitoring.
Optimistic (High)	£12.69m	• £11.22m of LSTF funding from DfT: £15.524m minus £4.3m for contribution to Robin Hood multi-operator smartcard initiative • £1.466m of Local Authority Contributions • £784,000 of Third Party Contributions removed from benefits: £1.084m minus £0.3m DfT Smartcard Fund contribution Total LSTF programme delivery costs, minus spending associated with the multi-operator smartcard initiative.

2.11 Adopting this approach allowed for further sensitivity testing in respect of estimating the value for money of the Nottingham Urban Area LSTF programme.

3 NAVIGATING THE IMPACT EVALUATION SPREADSHEET MODEL

3.1 The LSTF impact evaluation spreadsheet model is structured into the following tabs:

Overview	Headline summary of key outputs and benefits calculated on a project-by-project basis and grouped by workstrand. Cells are linked to individual project evaluation tabs within the spreadsheet document.
AST for report	Appraisal Summary Tables modified from WebTAG templates for simplified presentation of programme level benefits and costs. Cells are linked from the Overview tab.
BCR by workstrand	Estimated Benefit:Cost Ratios for each programme workstrand, reflecting the finest grain of cost data appropriate for such comparison.
Assumptions	Master tab containing all cross-referenced assumptions for evaluation of each project. Values in cells highlighted yellow can be changed to reflect updated data derived from third party sources (e.g. WebTAG data book tables). Data sources are referenced and hyperlinked.
LA + 3rd party contributions	Summary of local authority and third party contributions to LSTF programme costs, which feed into the Overview and AST for report tabs.
LSTF spend with no benefits captured	Spending on LSTF supported projects for which it was not possible to capture evidence of behavioural change during the course of the LSTF programme. Feeds into the AST for report tab.
Coloured Tabs	Individual project benefits, with explanations on approach annotated in-line. Tabs are colour coded to signify which Workstrand they relate to, and data in these sheets feeds the Overview sheet.

4 KEY ASSUMPTIONS USED TO DEVELOP THE SPREADSHEET MODEL

4.1 The assumptions used in the spreadsheet model have been explained in-line with each project tab's calculations, so that it should be easy to follow the logic applied to project outcome data. The following core assumptions underpinned the spreadsheet model's development:

- For consistency, costs and benefits were calculated or factored to 2015 prices using GDP deflator values published in the WebTAG data book.
- Where not measured through project monitoring activity, average trip distances and annual trip numbers were derived from the latest National Travel Survey data (2014).
- Carbon emission estimates were calculated using DECC's published values for average emissions per vehicle KM travelled, and costed using WebTAG (wherever possible, for 'Greenhouse Gases') or the non-traded DECC carbon values.
- Marginal external costs were calculated using WebTAG's cost values for inner and outer conurbations for other roads, based on the value (in £) per vehicle kilometre reduced.
- Unless known through explicit monitoring questions/sample coverage, we assumed that 50% of sustainable travel intervention beneficiaries had adopted the behaviours reported through monitoring survey data and the remaining 50% had not.
- The Gross Value Added of employment benefits from LSTF jobs and positions filled by jobseekers used the average productivity value of £42,698 (at 2015 prices) for Greater Nottingham and applying this to the English Partnerships' Additionality calculation in Table 5-4 of their 2008 guide[3], which applies to business support for employment:
  - Multiply job values by 90% to account for leakage.
  - Multiply that value by 50% to account for displacement of the jobs being filled.
  - Multiply the emerging value by 1.15 to account for wider economic multiplier effects.
- Calculation of income tax contribution and jobseeker allowance (JSA) savings for jobseekers supported into work was calculated based on the rate of JSA (£72.50 per week) paid to jobseekers in 2015, and the estimated marginal income tax that would be paid if all jobseekers were supported into positions paying the National Minimum Wage of £6.50 per hour.
- The value of volunteering on individual's wellbeing was calculated based on a value of £13,662 per volunteer, per annum. This was derived from the following approach https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221227/WP112.pdf.
- The value of volunteered hours to the LSTF programme was calculated based on the value of replacing the time volunteered with paying staff. A median weekly pay value from the Office of National Statistics was factored to an hourly rate to calculate this.
- HEAT tool values have been identified where included on a project-by-project basis.
  - Changes in walking and cycling activity levels were entered into HEAT based on additional cohort distances travelled or time spent walking/cycling.
  - Where surveys reported changes in travel mode-split, average changes in time and distance spent walking/cycling were calculated using National Travel Survey.
  - HEAT outputs were sensitivity tested on a project-by-project basis, with number of years to full uptake varied according to project duration and no costs or overhanging benefits assumed (since these were calculated at workstrand/programme level).

Appendix B

Spreadsheet model underpinning Value for Money impact evaluation

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