Cycle City Ambition

Monitoring Plan

July 2015

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1 Introduction

Sustrans/WSP were commissioned by The Department for Transport (DfT) to work with the eight Cycle City Ambition (CCA) Grant recipients, to review and enhance the planned monitoring of the impacts of this investment, collate baseline data from each city, and to make recommendations for future data collection that enable impacts to be measured across the programme.

This document sets out proposals for cities to monitor and report the impacts of the CCA grant. The report contains an overview of the CCA schemes project scope, and provides an overview of the background discussions which have led to the recommended methodologies.

It covers the following:

- background to the CCA programme
- the project scope in relation to understanding and enhancing monitoring, and understanding the potential for evaluation
- key research questions and recommendations
- methods of data collection available to cities
- a scorecard and discussion of the tools provided for future monitoring use as well as the overall findings of this project.

Individual city reports are appended to this document. These can be read as standalone reports, and therefore contain some repetition of content.

In addition a series of “How to’” guides and excel tools have been produced. These set out how cities might want to extract and process data in order to present it in a consistent format across the programme.

1.1 Background

The CCA programme is a major investment programme from the DfT that aims to support cycling through capital investment in eight English cities/city regions: Birmingham, Bristol, Cambridge, Leeds, Greater Manchester, Newcastle, Norwich and Oxford.

In August 2013 funding of £77 million was announced for the CCA programme. Match funding from the benefitting cities brought total investment to £148 million up to end March 2015.

Table 1-1 CCA phase one funding

City	DfT investment	Match funding	Total
Greater Manchester	£20m	£11.1m	£31.1m
West Yorkshire	£18.1m	£11.2m	£29.2m
Birmingham	£17m	£7.3m	£24.3m
West of England	£7.8m	£3.3m	£11.1m
Newcastle	£5.7m	£6.0m	£11.7m
Cambridge	£4.1m	£4.1m	£8.2m
Norwich	£3.7m	£1.8m	£5.5m

City	DfT investment	Match funding	Total
Oxford	£0.8m	£0.6m	£1.4m

This funding took investment in cycling in these eight cities to over £10 per head per year, and made CCA the biggest single investment programme for cycling. The programmes vary vastly in scale and nature between cities. During phase one, the following schemes were planned

Birmingham

Investment in Birmingham focuses on an area within a radius of a twenty minute cycle ride from the city centre. It provides 115km of new routes and improvements to 95km of existing route and 115 km of new routes. These include on road improvements such as marked cycle carriageways and priority for cyclists at junctions, shared use footways and improved signage, in addition to enhancements and extensions to 'off road' green routes and canal towpaths.

Bristol

The CCA interventions in Bristol are a series of segregated pedestrian and cycle promenades and paths (City Promenade and River Crossings) running east to west across the city, following the route of the River Avon and terminating at Bristol Temple Meads station, where a new enterprise zone aims to bring 17,000 new jobs to the city.

Cambridge

In the city of Cambridge the CCA funding creates new, segregated cycle paths along some of Cambridge's most used cycle routes: Trumpington Road, Huntingdon Road and Hills Road. Local match funding provides a new direct foot/cycle route between the station and Cambridge Science Park.

Greater Manchester

In Greater Manchester the core of the CCA scheme is the seven Cycleways which together form: a 56km network of continuous cycle routes, largely segregated, improving cycle access to key destinations for employment, education and training. These will be implemented as a series of 'spokes' from the regional centre towards the M60.

In addition, seven cycle and ride stations will have improved access and parking for cyclists and a there is also a programme of cycle-related investment at engaged schools and colleges which are located close to the proposed cycle route upgrades.

Leeds

The funding is delivering 23km of a mostly segregated Cycle Superhighway from the east of Leeds through to Bradford City Centre; a package of improvements in Leeds City Centre; upgrades to the Leeds-Liverpool canal towpath and a package of communication and engagement activities.

Newcastle

Newcastle's programme is a network of seven major cycle routes across the city making the best use of existing infrastructure and linking in with the major improvements currently underway in the city centre. In the first two years of the

programme, Newcastle aims to have four out of the seven cycling routes operational, linking Newcastle's densely populated inner suburbs to a revitalised urban core.

Norwich

The Pedalway network in Norwich consists of five radial and two orbital routes (inner and outer) amounting to 58.7 miles. The scheme chosen for CCA funding is the Pink Pedalway- an eight mile cross city route that runs from the Norwich Research Park, Norfolk and Norwich Hospital and the University of East Anglia on the western edge of the city, through the city centre to neighbourhoods in the east of the city.

Oxford

The CCA programme for Oxford is limited to an intervention at a single junction, the Plain roundabout which will remove one of the main barriers to cycling in and out of Oxford city centre, by making the Plain roundabout safer and more attractive for both cyclists and pedestrians

A further £17m for four National Parks was also announced, although this activity is outside the scope of this report.

On 27th November 2014, the Deputy Prime Minister announced a further £214m investment in cycling; £114m of this funding was for the CCA cities to advance their programmes and the remaining £100m investment was to improve the Strategic Road Network for walkers and cyclists. While, in some cities, schemes from the first phase of the CCA programme will continue into the second phase, this report focuses on the phase one interventions only.

The ambition is that Britain will become a 'cycling nation' and achieve levels of cycling akin to countries such as Germany, Denmark and the Netherlands, and that the CCA cities will lead the way[1].

The perceived benefits as specified in the DfT's Cycle City Ambition grant guidance[2] are as follows:

- Unlocking capacity on road and public transport networks through large scale shifts to more active commuting patterns.
- Better linked communities enabling more choice for getting around within and between neighbourhoods.
- Higher productivity through improved fitness and consequently reduced absenteeism and better workforce performance
- Improved public realm capable of attracting high value business
- Direct savings to NHS through better health
- Better access to jobs for disadvantaged groups
- Revitalising streets through encouraging more spending on high value services and retail through improved access by foot or bike
- Magnifying within city agglomeration benefits
- Creation of new social enterprises and businesses to create new services in support for more cycling

Source: DfT

1 Deputy PM announces £214 million investment in cycling, 2014, https://www.gov.uk/government/news/deputy-pm-announces-214-million-investment-in-cycling
[2] City Deals - Guidance on Applications for Cycle City Ambition Grants, 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/83002/cycle-city-ambition-grant-guidance.pdf

Assessing the benefits of the investment programme is vital. An effective programme of monitoring and evaluation is important to inform DfT decision making and demonstrate the value for money and impacts of the investment. As stated in the DfT's monitoring and evaluation strategy[3]:

"Investing in the collection of good quality monitoring and evaluation evidence is important for feeding back evidence of the real world efficacy, efficiency and cost effectiveness of the intervention"

1.2 Project scope

1.2.1 Overview

A key principle of the DfT approach to CCA grants is devolving power to local authorities, which includes giving cities responsibility for decisions about how they evidence the success of their programmes. Sustrans/WSP were commissioned by DfT to work with the CCA cities to identify their plans for monitoring the impacts of CCA grants and to identify any potential gaps in data collection for adequately measuring the impact of the investment.

The primary objectives of the brief were the following:

- To develop an understanding of the nature and extent of data collection in each of the CCA cities, and what comparability exists between the different data outputs.
- To formulate a baseline expression of levels of cycling within the cities.
- To identify gaps in data collection in the cities, and to support the cities in remedying these gaps.
- To produce a methodology for the collection of consistent data to enable estimation of the extent of impact at the end of the programme.

This report sets out the results of this exercise, all of which have been developed in collaboration with the cities who received CCA grants, in response to these objectives.

1.2.2 Key findings

Just as cities' programmes of investment differ vastly in scale and nature, their approaches to monitoring and evaluation also vary. There has been little consistency in the manner or extent to which cities have collected baseline data for their CCA interventions.

In the absence of prescribed measures for monitoring and evaluation, there are few comparable data from these surveys, which all differed vastly in approach and delivery. Therefore, at the 2013/14 baseline, data is too disparate and inconsistent to establish pre-intervention levels of cycling across the cities.

However, going forward, all cities have committed to collecting scheme-specific monitoring data (as specified in Table 7-1). This largely consists of conducting user surveys on CCA interventions and installing automatic cycle counters on new pieces of infrastructure.

[3] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/175300/monitoring-evaluation-strategy.pdf

2 Research questions and data sources

2.1 Themes and research questions

The aims and objectives from the original city bid documents were reviewed and ten common themes were identified within the predicted outcomes. These themes were used as the basis for formulating the following research questions, and are common to all cities:

1) What impact has the CCA investment had upon levels of cycling?
2) What are the related benefits of mode shift from car or van to bicycle in terms of user's health, congestion levels and carbon emissions?
3) To what extent has the CCA investment affected the number of people taking integrated cycling and public transport journeys?
4) To what extent has the CCA investment altered perceptions of the safety of cycling?
5) To what extent has the CCA investment affected the demographic balance of cyclists?
6) What is the Benefit to Cost Ratio (BCR) of the investment?
7) What opportunities are there for further evaluation, and how will this enhance current data collection?

2.2 Recommended and additional metrics

Sustrans undertook a series of consultation meetings with each of the cities' monitoring leads. These meetings sought to establish current and planned monitoring provision for CCA. Sustrans worked with the cities to understand the existing data that was available to them, and existing data was then shared with a v.2iew to formulating a programme baseline.

Within each theme, Sustrans determined metrics against which programme impacts could be monitored throughout the project lifespan. Furthermore, potential data sources were defined against each metric, specifying how these metrics would be reported on. The results of this exercise are detailed in Table 2-1.

The data and monitoring information provided by cities were mapped to the research questions, and an assessment was made as to whether they were sufficient to measure the impacts of the CCA investment at intervention level, and more broadly in the city.

Table 2-1 differentiates between 'recommended' and 'additional' metrics. Recommended metrics are those which cities must address in order to report on the themes. Recommended metrics are monitored by data from counts, user surveys and the Active People Survey (APS)[4]. For consistency across the programme, it should be noted that all the cities have exactly the same metrics.

The additional metrics draw upon a wider range of data sources and would help to deliver stronger insight into answering the research questions. As some of these can be quite context specific (some may have limited applicability to some schemes) and resource intensive, these do not form part of the monitoring recommendations made to cities. However, a number of cities are still planning, where appropriate, to undertake additional monitoring. This will help to strengthen the evidence base regarding the impacts of the CCA investment in a number of ways (see Section 3 for more details).

[4] Sport England Active People Survey www.gov.uk/government/organisations/department-for-transport/series/walking-and-cycling-statistics

Thus, the recommended measures are the minimum monitoring that all cities will undertake. The additional metrics are ones that will allow more robust statements to be made about impact; the uptake of these metrics is likely to vary across the cities.

The exception is for the theme 'Integration with levels of Public Transport', for which parked bicycle counts are recommended: these are only needed when cities aim to impact upon this area. In phase one of investment, this covers Birmingham, Leeds, Greater Manchester and Newcastle.

Furthermore, for this theme, Greater Manchester has a further recommended metric of 'Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above'. This is because a significant amount of their funding has gone into improvement works at stations, which is unique within the CCA programme.

Additionally, although cities are using the same metrics, the amount of effort and resource that is dedicated to data collection and reporting should be proportionate to the scale of investment. For example, Oxford received significantly less CCA funding than Greater Manchester and therefore plans to undertake fewer user surveys.

2.3 Monitoring and evaluation

It is important to distinguish the difference between monitoring and evaluation when discussing the agreed approach.

The HM Treasury Magenta Book[5] provides the following definitions:

- Monitoring seeks to check progress against planned targets and can be defined as the formal reporting and evidencing that spend and outputs are successfully delivered and milestones met (also providing a valuable source of evidence for evaluations).
- Evaluation is the assessment of the initiative's effectiveness and efficiency during and after implementation. It seeks to measure the causal effect of the scheme on planned outcomes and impacts and assessing whether the anticipated benefits have been realised, how this was achieved, or if not, why not.

Sustrans recommend that cities should collect data periodically throughout the ten year programme at the location of intervention(s). This data will provide important evidence as part of the wider evaluation of the scheme's impacts in response to the research questions outlined above.

Furthermore, to effectively evaluate the outcomes Sustrans also recommends that city wide data is collected. The changes at the intervention can therefore be compared with the city wide picture to make a stronger statement about attribution and impact.

Within Table 2.1 there are columns that note whether a data source provides information at 'intervention' or 'city wide' level. By 'intervention' it is meant that the user surveys or counts are undertaken on the CCA intervention or at a point where cyclists using the improved route must pass (e.g. further along a canal towpath where there are no entrances or exits past the intervention). 'City wide' refers to cycle and transport monitoring within the city that is not specific to users of CCA infrastructure; for example, the wider ACC network or a travel behaviour survey exploring the habits of the city or regional population. In the case of the Active People Survey (APS), this is a national dataset available to all cities to draw upon. At city or regional level there could also be additional data sources which would enable a more robust picture to be built up.

[5] https://www.gov.uk/government/publications/the-magenta-book

Table 2-1 Themes, metrics and data sources for monitoring the impacts of CCA investment

Theme	Metric	Proposed Data Source	Intervention	City Wide
Change in levels of cycling	**Recommended**			
	Percentage change in cycling trips made utilising the intervention.	Automatic cycle counter data from the intervention/manual count data from the intervention	✓	
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	Automatic cycle counter/manual count data from the intervention and from the whole city area	✓	✓
		Automatic cycle counter/manual count data from the intervention and the Active People survey	✓	✓
Change in level of integration with public transport links	**Recommended (see exceptions box in section 2.2)**			
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	Cycle parking counts	✓	✓
	Additional			
	Percentage change in people taking integrated cycling and public transport trips	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	Perception survey of people parking at public transport hubs	✓	✓
The effect on users' health	**Recommended**			
	Percentage of users that have increased their frequency of cycling	User survey at the intervention linked to the count changes to calculate number	✓	
		Active People Survey (city as a whole) linked to the count changes		✓
	Percentage of users that report a feeling of improved health and/or wellbeing	User survey at the intervention linked to the count changes	✓	
	Additional			
	Percentage of users that have increased their frequency of cycling	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
		Household travel survey		✓
		Household survey with boosted sample at intervention location	✓	✓
Change in levels of accidents	**Recommended**			
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	STATS19	✓	✓
	Additional			
	Percentage of interactions that	Video analysis	✓	

	are 'unsafe interactions'			
The effect on CO_2 emissions	**Recommended**			
	Amount of CO_2 saved due to modal shift toward cycling	User survey at the intervention linked to the count changes to calculate amount	✓	
	Additional			
	Amount of CO_2 saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
	Amount of local pollutants saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
Employment and economic effects	**Recommended**			
	No recommended metric			
	Additional			
	Percentage change in levels of absence in the workplace	Absence records	✓	✓
		Workplace travel surveys	✓	✓
The effect of congestion levels	**Recommended**			
	Number of trips made by bicycle which were previously made by car/van during peak periods	User surveys linked to the count changes to calculate number	✓	
	Additional			
	Number of trips made by bicycle which were previously made by car/van during peak periods	Workplace travel surveys	✓	✓
		Personal travel diaries		✓
Levels of awareness and perceptions of safety	**Recommended**			
	Percentage of users that have a positive perception of safety at the intervention	User survey at the intervention	✓	
	Additional			
	Percentage change in users perceptions of safety at the intervention	Household survey	✓	✓
		Personal travel diary	✓	
	Percentage of users that have a positive perception of safety			
Changes in levels of cycling by demographic	**Recommended**			
	Ratio of female and male cyclists	User surveys	✓	
		Active People survey		✓
	Additional			
	Ratio of the gap between	Household survey		✓

	established cycling groups and groups that have a lower propensity to cycle	Workplace surveys Personal travel diary	✓	✓ ✓
Value for money	**Recommended**			
	BCR	Users surveys combined with intervention specific counts	✓	
	Additional			
	Percentage of people that have a positive perception of value for money of the CCA investment Perception of relative importance on money spent on cycling rather than motorised transport Percentage of people that have a positive perception of value for money of investment in highways projects that aim to benefit users of motorised transport	Perceptions surveys linked to the count changes Perception surveys linked to the count changes Perception surveys linked to the count changes	✓ ✓ ✓	

3 Methods of measuring impacts

This section provides an overview of the differing data sources that cities might draw upon to answer the research questions set out in Section 2. This section discusses at a broad level the recommended and additional monitoring methods that cities will use as well as the strengths and limitations of these methods.

As outlined in Table 7-1, cities have agreed that as a minimum they will collect data from the following sources: counts (automatic or manual), user surveys, Sport England's Active People Survey and parked bicycle counts.

In addition to these recommended tools, there are a range of additional data collection sources available to the cities that will allow them to provide a broader range of evidence on the impacts of the CCA grant. Some cities already employ one or more of these tools as part of their existing transport monitoring programme.

When choosing and implementing monitoring tools for the programme, cities should consider the relevance of the tool, the adequacy of sampling design and the cost. To support this decision-making, this section contains a breakdown of the main monitoring methods Sustrans consider are necessary for monitoring cycling trends, and also outlines the benefits and limitations of each approach.

Alongside this report are guidance documents, containing detail on how standard data should be extracted and processed from each source.

Recommended methods

3.1 Counts

Counts are used to establish numbers cycling in a region or specific route. There are different typologies of count detailed as follows:

Cordons/partial cordons around central areas – coverage of key routes into town centres to give a measure of the flux of cyclists to and from these areas. Automatic counters on

cordons should be sited to complement the location of any manual counts providing coverage of trafficked routes towards town centres.

Screenlines – coverage of routes crossing barriers including but not limited to rivers, railways lines, major roads.

Routes to and from key destinations – coverage of routes to key destinations such as areas of education, employment or shopping centres.

Lateral movement on key routes – coverage of key lateral routes, for example, coastal promenades, greenways and other key corridors.

Within each group, manual or automatic counts can be selected accordingly.

Counts can provide a good indication of changing cycling numbers but cannot provide insight into the characteristics of users such as demographics, frequency of cyclist, if their journeys are new or displaced or the journey purpose.

Additionally, where cycle numbers are low, cycle counts can be more limited as percentage growth figures can be misleading and the data can be more susceptible to random variation making it harder to detect the impacts of schemes.

3.1.1 Automatic cycle counters (ACCs)

Data are collected from a network of automatic cycle counters (ACCs) in each of the cities, located predominantly on traffic-free routes. Counters are typically inductive loop based mechanisms, collecting continuous counts of cyclists on an hourly basis.

ACC data are particularly valuable in that they provide a continuous record of volumes of cyclists passing a particular point and as such reflect actual rather than self-reported activity. Counter data provide information regarding fluctuations in the number of cyclists recorded on weekdays, weekend days, and at different times of year. ACCs therefore provide a good indication of route use over the long-term, and also allow for analysis of peak times and seasonality impacts.

Initial capital costs for ACCs are relatively high, and some allowance for maintenance and data collection must be set aside.

3.1.2 Manual counts

Manual counts of cyclists are performed in many of the cities, predominantly (although not exclusively) on trafficked routes.

Manual counts can be performed in locations not suitable for the installation of automatic cycle counters, and can provide a more complete picture of movement to and from central areas. They are very useful in that they can be taken at regular intervals over the course of a year and then repeated over several years, allowing for patterns to emerge. The advantage over continuous counts is that multiple locations can be covered at relatively modest cost, and coverage of complex flows around junctions, interchanges or infrastructure can be effectively monitored. Simple characteristics, such as the gender or broad age group of users can also be noted during a manual count.

Locations are best selected to complement the network of automatic cycle counters on traffic-free routes.

It should be noted that data from manual counts only acquires a useful degree of statistical robustness when a sufficiently lengthy sequence has been collected over a period of time. This time period is subject to the frequency with which counts are undertaken, the typical count volume, and the variability of the count.

3.1.3 Annual estimates of usage

3.1.3.1 ACCs

For the CCA programme, it is recommended that an ACC is only used to estimate annual usage if it has returned a minimum of six months of data within a calendar year. These six months do not have to be continuous and can be spread throughout the year. A full month of data is considered a month that is missing no more than two days of data.

When there is less than one full year of data, an average daily total is obtained by summing the counts and dividing by the total days with data. This is then scaled up to a full year by simply multiplying by 365 (or 366 in a leap year).

3.1.3.2 Manual counts

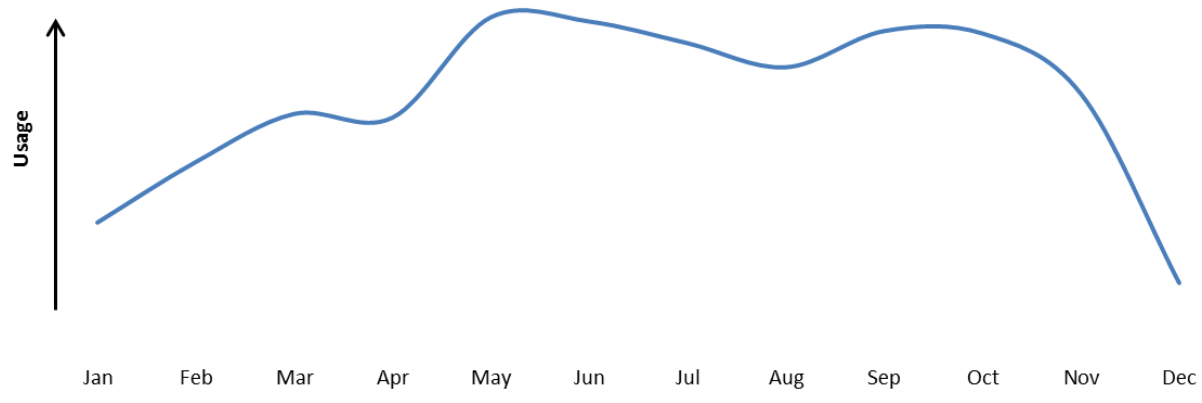
It is possible to construct annual estimates of usage using count data that are not continuous across the year (e.g. manual count data). Sustrans has developed a tool for the CCA programme that cities can use to estimate the annual number of cyclists passing through a location from a limited number of manual counts. The tool takes into account both the seasonality of cycle usage and the variation in usage seen between week days and weekend days.

The 'typical' seasonal usage curve used in the tool is calculated from over 200 'reference counters'. A reference counter is an Automatic Cycle Counter (ACC) where a full year of data is available (i.e. count data has been collected for each day in a single year).

For each reference counter, the average twelve hour monthly daily total (AMDT) is calculated, using data from 7am – 7pm. The twelve hour count is used to be more comparable with the majority of manual count data. When graphed, these values give a seasonal distribution for each reference counter. The average AMDT for each month is then calculated to give a single seasonal curve shown in Chart 3-1.

It is worth noting that it is not necessary to calculate a weighted average AMDT as each reference counter contains the same quantity of data for each month.

Chart 3-1 Seasonal distribution of reference AMDT



This curve in Chart 3-1 suggests that, at most sites, usage peaks in early summer, with a slight dip in August. Usage then picks up in September and October before dropping sharply to the end of the year. This suggests that variation in weather is a major factor in affecting usage levels, but that the Easter and summer school holidays also have a negative impact on usage across the reference dataset.

The average annual daily total (AADT) for each reference counter is also calculated (using the full 24 hours of data), and then the average of these values is taken for the whole dataset. By multiplying this value by 365, we can estimate an average annual estimate of usage for the dataset. We can then calculate the proportional relationship between the average twelve hour monthly daily total count in each month and the estimated annual usage.

If we assume that the manual count location has the same seasonal distribution of usage, it follows that this proportional relationship also holds for the manual count location. By applying this proportion to the manual count data, we can estimate the annual usage at the site.

Where the manual count has been conducted on weekdays and weekend days, the above process is followed for each day type and then summed to give an overall usage figure.

This method has limitations: the seasonal distribution of usage is unique to each site and depends on a wide variety of factors, not least the variation in trip purposes of route users. More work is needed to identify route types that share similar patterns in usage to strengthen this assumption.

Furthermore, there is substantial variation in the volume of usage across a month, particularly in months where there is a transition between seasons. This means that counts from that month may not be representative of usage for the whole month.

Assumptions

- It is assumed that usage at the manual count location follows the same seasonal distribution seen at other locations
- The manual counts are assumed to take place between 7am and 7pm on each day
- It is assumed that the manual counts are representative of the usage at that site in that month (either on weekdays or weekend days). If a manual count is only conducted on one day type, it is assumed that the count is representative of usage on all day types in the month.

Despite the above limitations, using an annual estimate of usage minimises the risk of using count data, especially when some survey periods are as short as one day. Moreover, the annual estimate method allows comparable usage figures to be obtained for all CCA cities, regardless of their differences in approach.

3.2 Sport England's Active People Survey[6]

The Active People Survey is a randomly sampled landline telephone survey of individuals aged over 14 (this was lowered from 16 in 2012). Data are reported at the level of the district / unitary authority- there are 500 interviews per local authority (district and single tier) each year.

A handful of metrics that are relevant to cycling can be derived from this survey, in particular "Proportion of residents who cycle (any length or purpose) at a given frequency".

All sample-based surveys contain a level of uncertainty to the findings because they are based on a proportion of the population and not the whole population. The Active People Survey results are presented using the 95% confidence level. This means there is only a one

[6] http://www.dft.gov.uk/statistics/series/walking-and-cycling/

in 20 chance the findings of the survey are not a true representation of the population. The confidence interval calculates the range within which the 'true' figure would sit if the whole population was interviewed. Another way of describing the confidence interval is to refer to the level of precision: the smaller the confidence interval the greater the level of precision.

When the Active People Survey results are examined on a city level, there are approximately 500 responses per borough. While the confidence level remains at 95% the reduced sample size results in a much bigger confidence interval.

A limitation of the APS, as with other population wide surveys is that where cycling levels are low, modest change can result in large proportionate increases or decreases. Furthermore, the sample at city level does not allow for meaningful breakdown by season or whether the trip was for recreation or transport purposes.

In spite of these limitations, it remains the recommended data source due to its accessibility. There is scope for cities to employ tools from the 'additional' data sources to give a more robust picture of city wide cycling levels.

It should be noted that the census was considered as a data source that could be employed by cities for CCA evaluation, however it was discounted due to uncertainty over whether the 2021 census would take place.

3.3 User surveys

User surveys are short interviews conducted with users of a particular route. They can gather demographic information (age, gender, and ethnicity), trip information (origin, destination), self-reported changes in cycling and also data on attitude and perception (safety, physical activity, etc.). User surveys are usually conducted over 12 hours (between 07:00 and 19:00) and ideally on four days (two weekend and two week days, one of each during term time and one of each during school holiday periods). A manual count should be conducted concurrently with the survey, recording all movements for each user category (age, mode and gender).

Manual count data collected during the surveys are adjusted to estimate the number of trips passing the survey point annually. The annual usage estimate for cyclists is reported alongside key findings from the survey. Where multiple iterations of surveys have been performed at the same location, comparisons are made between these.

Analysis of the collected data allows the estimation of annual usage at a point on a route (through a concurrent manual count) but most importantly provides much more detailed information about who is using the infrastructure, and for what purposes, and how this changes over time. This method may be used to enhance the existing data on a range of themes, including, health benefits, and satisfaction with cycle and pedestrian environment. User surveys also provide evidence for carbon savings and health benefits associated with increased usage of the route, and modal shift from car or van.

The impact of CCA can be assessed by asking users specific survey questions about recent changes to behaviour, for example "How long have you been using this route for this purpose?" or " Why did you start using the route?". These sorts of questions potentially allow us to make more direct links between interventions and behaviour change and therefore estimate additionality.

It can prove difficult stopping cyclists to interview, particularly in commuting periods. An important limitation of user surveys is that they do not cover those who are not cycling, or are not using the route, so it is not possible to adequately explore barriers to cycling. A survey is therefore limited in its ability to understand who has changed their travel behaviour as a result of the CCA investment. Additionally, user surveys might be biased because they are self-

reported (and thus response bias might occur), and because those who are using the cycling infrastructure are most likely to be the people with positive views of it.

It should also be noted that when a user survey aims to focus on a very specific group, the resulting sample can be low and results should be treated with caution if then scaling up to the population. For example, filtering for 'new cyclists', who have then changed their mode since a particular piece of infrastructure has been put in place may result in a small number of responses.

Sample sizes are limited by usage on the route, and are therefore best represented by a range. Previous experience suggests that between 30 and 60 interviews in a day is realistic.

How representative any findings are, or any changes in results if multiple iterations are undertaken, would depend on the size of the corresponding count (the population size) and the consistency of answers. For example, if there were 60 responses and 150 trips were counted there would be a 9.8% confidence interval for 50% at the 95% confidence level. If however the count was double, 300, the confidence interval would be 11.3%. The relationship between confidence interval and population is not linear. There is therefore a diminishing returns effect for chasing additional respondents. However, in this example, given the potential for large confidence interval, measuring significant changes is unlikely.

3.4 Cycle parking counts

Cycle parking counts are undertaken using a similar methodology to that used to count parked vehicles. They require the surveillance of a set area over the course of a day, often on an annual basis. The count data is used to understand the patterns of cycle usage at a given point, and to see annual variations pre- and post-interventions.

This tool can be used to isolate locations in need of additional infrastructure.

Additionally, cycle parking counts can yield information on:

- increases in the mode share of walking and cycling for trips to work and/or school
- increases in the number of walking and cycling trips on specific facilities and key corridors
- increases in the number of walking and cycling trips to specific destinations, such as public transport hubs

It should be noted, however, that increased numbers of parked bikes do not always indicate an increase in the number of cyclists: improved facilities and better quality parking, for example, may result in displaced parking from elsewhere. As with ACCs and manual counts, increased numbers alone don't provide information about modal shift or motivation for cycling.

3.5 STATS19

Analysis of STATS19 data by DfT includes an annual release of a swathe of road accident and safety statistics, mostly relating to the UK by road class, vehicle type, time and other factors.

Some degree of insight into the number of recorded incidents should be possible using this source. Data include recorded crashes for the number of people killed or seriously injured (KSI) or with a 'slight injury' as well some information on the cause of an incident

There are significant limitations to using STATS 19 data. These data are recorded by the police when road traffic accidents are reported to them. There is under-reporting of damage only and injury accidents because the police are not always called to the scene, or indeed

contacted at all (as there is no legal requirement to do so). Even when the police have reported an injury accident, the reporting of the level of seriousness of the injury is of doubtful validity. The police differentiate between slight and serious injuries (broadly a serious injury requires an overnight stay in hospital or a broken/fractured bone). It is not always the case that a police officer's assessment (often at the roadside) of injury severity is the same as the triage assessment and subsequent treatment at hospital. Studies[7] have been undertaken to compare hospital accident and emergency 'episode' statistics (HES) with STATS19 data and suggest some under-reporting of injury, and differences in the reporting of the level of severity of the injury. In addition to this, the evidence suggests that under-reporting is greater where the accident involves pedestrian or cyclist injury, particularly where there is no other vehicle involved. Additionally, the number of cycling accidents within the region of specific investment area can make it difficult to detect trends.

Additional methods

Given the challenges of evaluating impacts, and the limitations attached to the available tools, it is advisable for cities to employ additional data collection to allow greater confidence in the reported outcomes. Furthermore, additional evidence on wider, context specific objectives may be valuable for cities' specific programme aims.

3.6 Station surveys

Station surveys can be conducted at train or light rail stations with customers and can be used to establish travel behaviour, alongside perceptions of the facilities of the station. Passengers are usually stopped inside the station or outside as they are entering or leaving. Permission has to be sought from the station manager to conduct questionnaires on the premises.

The data can be useful to establish general travel information about the journey purpose of station users and how they might have travelled without the intervention, and are also a useful way of exploring multi-mode trips. Also, specific information about cycling facilities at the station can be gathered. However, a large sample is required to get responses from a meaningful number of cyclists. Also, station surveys can be weak for gathering data on a particular route, even if it adjoins or is in close proximity to the station, as passengers will have arrived from multiple directions.

3.7 Household travel survey

Household travel surveys are delivered by conducting questionnaires about travel behaviour to a random sample of the population.

A household survey enables general travel behaviour information to be gathered. Perceptions of cycling, for example around safety or the quality of facilities can be gleaned, unlike a travel diary which only provides a snapshot of one period of time, reported changes in behaviour or future intention can also be explored. This tool can also be used to provide data about usage, perceptions and impacts of the intervention if questions are specifically added for this purpose. They can also provide important insight into whether new cyclists are being generated by an intervention or if existing cyclists are cycling more as well as potential wider benefits (e.g. health).

The cost of delivering a household survey is relatively high, and, as with other behavioural surveys, it can be a weak tool for examining changes in minority modes if sample sizes are small.

[7] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/9279/rrcgb2011-06.pdf

3.8 Personal travel diaries

A personal travel diary or travel behaviour survey of a sample of residents in a locality is a complex monitoring tool. A sample of households is targeted for face to face interviews regarding travel behaviour. All household members above the age of 10 are asked to fill out the travel diary logging all their travel habits over a specified time period. It is conventionally conducted as part of a household travel survey (see 3.7 above)

The level of data obtained from travel diaries is extremely valuable, and offer a comprehensive picture of behaviour in the location. They can also provide important insight into cyclist profiles, such as whether they are new to cycling or if they have increased the frequency of their cycling trips

However, travel diaries can be weak for discerning changes in minority modes. For cycling, where a low base applies the survey is dependent on very small sub-sample capture, introducing large margins for error and risking the generation of misleading data. Furthermore, the cost of implementation is relatively high and the delivery and analysis is complex and resource intensive.

3.9 Workplace travel surveys

Workplace travel surveys provide primary information on mode share in the context of the journey to work, overall trips and any barriers which prevent respondents from travelling more sustainably. They are often delivered in workplaces that are already engaged in related activities with the organisation collecting data.

Surveys are usually administered online using employer contact datasets, supplemented with paper forms where staff do not have electronic communications resources.

Workplace travel survey data already exists for some employers in some locations. Expanding this type of data collection will provide substantial additional information at a relatively modest cost. These are usually limited to administrative support such as collation, analysis and reporting, and perhaps a modest incentive.

As with personal travel diaries, if there are low sample sizes this tool can be weak when exploring changes in levels of cycling, due to the low levels using this mode in the population.

In practice, workplace travel diaries are often conducted with employers ‘engaged’ with travel planning activity, so results may include bias.

3.10 Video analysis

Camera footage is used to understand cycling levels and traffic behaviour. In a similar way to manual cordon counts video analysis provides a snapshot of usage both before and after an intervention has been completed. Typically a video unit would be installed on a temporary basis, and the recorded material is checked. The count is then recorded by either manual or, in some instances, automated means.

Interaction analysis allows an assessment of how route users move in relationship to each other along a road or path. By observing the potential for collision and the actions taken to avoid it, a rating system can be applied to each individual interaction. This method was adapted from that used by MVA Consultants in 2010 for a report commissioned by Transport for London (TfL) and uses a scale of 0-5 to rank each interaction. The scale ranges from level 0; where two users pass each other on the route but do not have to change their behaviour at all, to level 5; where two users actually collide with each other.

Video counts can complement automated or manual counts, and are particularly valuable in areas of high usage density, and/or where interactions between non-motorised and motorised traffic are required. These can be a more effective way at assessing the impacts that a cycling scheme has on user safety compared to the analysis of STATS19.

Data can be quite comprehensive in nature compared to that gathered by manual or automated means; however, costs can be high.

It should also be noted that application of the scale is subjective, and may vary between individuals performing the analysis. Also, as the video footage is a snapshot in time, there is a risk that certain behaviours will not be detected, particularly at locations with low cyclist numbers.

3.11 Overview of available data sources

Table 3-1 gives a summary of the data sources detailed above, alongside the associated strengths and limitations.

Table 3-1 Overview of available data sources

Data source	Description	Strengths	Limitations
Counts (general)	Counts are used to establish numbers cycling in a region or specific route	Counts can provide a good indication of changing cycling numbers	Counts cannot provide insight into the characteristics of users
ACC	ACCs are typically inductive loop based mechanisms, which collect continuous counts of cyclists on an hourly basis. They are located predominantly on traffic-free routes	ACCs produce an absolute count, so even modest levels of cycling produce an objective measure, any growth in which is immediately a stronger measure. ACCs provide a good indication of route use over the long-term and also allow for analysis based on peak times of day and seasonality.	Initial capital costs are relatively high, and some allowance for maintenance and data collection must be set aside Though technology is advancing, ACCs do not usually provide on highway cycle counts
Manual Counts	Manual counts can be performed in locations not suitable for the installation of automatic cycle counters and as such can provide a more complete picture of movement to and from central areas.	The advantage over continuous counts is that multiple locations can be covered at relatively modest cost, and coverage of complex flows around junctions, interchanges or infrastructure can be effectively monitored	Data from manual counts only acquires a useful degree of statistical robustness when a sufficiently lengthy sequence has been collected over a period of time

Data source	Description	Strengths	Limitations
User surveys	User surveys are short interviews with cyclists conducted on particular routes. They gather demographic information trip information and also data on attitude and perception. A manual count is conducted concurrently with the survey, recording all movements for each user category (age, mode and gender).	User surveys provide detailed information about who is using the infrastructure, and for what purposes, and how this changes over time. This method may be used to enhance the existing data on a range of themes. The intercept survey can also provide evidence for carbon savings and health benefits associated with increased usage of the route.	It can prove difficult stopping cyclists to interview, particularly in commuting periods. User surveys do not access those who are not cycling, or using the route. User surveys might be biased because they are self-reported and because those who are using the cycling infrastructure are most likely to be the people with positive views of it.
Active people Survey	The Active People Survey is a randomly sampled landline telephone survey of individuals aged over 14 (lowered from 16 in 2012). A handful of metrics that are relevant to cycling can be derived from this survey, In particular, “Proportion of residents who cycle (any length or purpose) at a given frequency”.	This is an accessible data source available to all cities to monitor population level changes in cycling.	At city level, the sample size is too small to analyse cyclists by subset, such as whether for leisure or a particular purpose. The gender breakdown is not currently published. The survey doesn’t explore trip information or journey purpose, or gather any intervention level data.

Data source	Description	Strengths	Limitations
Cycle parking counts	Cycle parking counts are undertaken using a similar methodology to that used to count parked vehicles. They require the surveillance of a set area over the course of a day, often on an annual basis. The count data is used to understand the patterns of cycle usage at a given point, and to see annual variations pre and post interventions.	This tool can be used to isolate locations in need of additional infrastructure. Cycle parking counts can be used to monitor cycling trips to specific destinations, in this case key public transport destinations.	Increased numbers of parked bikes do not always indicate an increase in the number of cyclists: improved facilities and better quality parking, for example, may result in displaced parking from elsewhere. As with ACCs and manual counts, increased numbers of parked bikes alone don't provide information about modal shift or motivation for cycling.

Data source	Description	Strengths	Limitations
STATS 19	Police reported accidents and casualties. Some degree of insight into the number of recorded incidents should be possible using this source.	Data includes recorded crashes for the number of people killed or seriously injured (KSI) or with a 'slight injury' as well some information on the cause of an incident This is an accessible data source available to all cities	These data are recorded by the police when road traffic accidents are reported to them. There is under-reporting of damage only and injury accidents because the police are not always called to the scene, or indeed contacted at all Even when the police have reported an injury accident, the reporting of the level of seriousness of the injury is of doubtful validity. The low number of cycling accidents within the region of specific investment area can make it difficult to detect trends.
Station surveys	Station surveys are conducted at train or light rail stations with customers and can be used to establish travel behaviour, alongside with perceptions of the facilities of the station	Station surveys can be useful to establish general travel information about the journey purpose of station users, and are a useful way of exploring multi-mode trips. Also, specific information about station facilities can be gathered	A large sample is required to get responses from a meaningful number of cyclists. Station surveys can be weak for gathering data on a particular route, even if it adjoins or is in close proximity to the station, as passengers will have arrived from multiple directions

Data source	Description	Strengths	Limitations
Household travel survey	Household travel surveys ask about travel behaviour to a random sample of the population. The cost of delivering a household survey is relatively high, and, as with other behavioural surveys, it can be a weak tool for examining changes in minority modes if sample sizes are small.	A household survey enables general travel behaviour information to be gathered. Reported changes in behaviour or future intention can also be explored. They can provide insight into whether new cyclists are being generated by an intervention or if existing cyclists are cycling more as well as potential wider benefits (e.g. health).	Household surveys can be weak for discerning changes in minority modes if the sample size isn't large enough. The cost of these surveys is relatively high.
Personal travel diaries	A sample of households is targeted for face to face interviews regarding travel behaviour (conventionally undertaken as part of a household travel survey,) All household members, usually above the age of 10, are asked to fill out the travel diary logging their travel habits over the course of one week.	The level of data obtained from travel diaries is extremely valuable, and offer a comprehensive picture of behaviour in the location. They can provide important insight into whether new cyclists are being generated by an intervention or if existing cyclists are cycling more.	Travel diaries can be weak for discerning changes in minority modes The cost of this survey is relatively high and the delivery and analysis is complex and resource intensive.

Data source	Description	Strengths	Limitations
Workplace travel surveys	Workplace travel surveys provide primary information on mode share in the context of the journey to work, overall trips and any barriers which prevent respondents from travelling more sustainably.	Workplace travel survey data already exists for some employers in some locations. Expanding this type of data collection will provide substantial additional information at a relatively modest cost. The effort required to carry out the workplace survey is relatively low as the surveys are carried out by each organisation/business upon being provided the tools necessary for collection.	Travel behaviour surveys can be weak for discerning changes in minority modes. Often data is collected from 'engaged' workplaces, so results may be biased.
Interaction analysis (using video footage)	Interaction analysis of video footage allows an assessment of how route users move in relationship to each other on a specific piece of infrastructure. By observing the potential for collision and the actions taken to avoid it, a rating system is applied to each individual interaction.	Video footage offers a comprehensive picture of how cyclists travel and interact with motorised transport at a particular intervention site.	Analysis can be resource intensive so costs can be high. Application of the scale is subjective, and may vary between individuals performing the analysis. As the video footage is a snapshot in time, there is a risk that certain behaviours are not detected

4 Grant allocation

This section sets out the methodology that was used to allocate a grant for filling in identified gaps in each city's plans for monitoring the impacts of the CCA investment. Investigations revealed that the cities each had slightly different approaches to measuring the impacts of their schemes; the recommendations generated by Sustrans in this report seek to enable greater data comparability across the eight cities.

Initial discussions between Sustrans and the cities revealed gaps between cities baseline and planned monitoring, and Sustrans' programme level recommendations. To address this, DfT identified additional grant funding of up to £100,000 to help cities report on the common themes identified in section 2.

To identify the gaps in data collection, the programme of monitoring and evaluation in each city was reviewed, and mapped against the framework outlined in Table 2-1. This exercise provided the basis for distribution of the grant.

While approaches to monitoring differed between cities, it became apparent that the means to establish mode shift, as a direct result of the intervention, constituted a significant gap across the programme. Sustrans believe that conducting user surveys with cyclists at the intervention is the most effective way to remedy this and recommended that the grant be used for this purpose.

Sustrans identified that supporting the cities in the undertaking of user surveys alongside manual cycle counts would be the most effective use of the grant.

To get suitable coverage across the investment it was determined that user surveys were required at 15 locations for widespread programmes in Birmingham and Manchester. Though Leeds was also a high cost project, fewer surveys were recommended (six, subsequently reduced to five) as their investment focused upon a linear route. Six user surveys were deemed appropriate for Newcastle's phase one works and five for Bristol's. The relatively smaller scale CCA packages in Cambridge, Norwich and Oxford were deemed to need three, two and one user surveys, respectively. These recommendations are displayed in the Table 4-1.

In total, 53 user surveys were recommended to get suitable coverage across the investment. Using the average cost of a Sustrans survey as a proxy, it was estimated that the grant would fund 52% of these surveys, and cities would fund the remaining 48%.

In practice, the cost of user surveys will vary and will depend upon how cities choose to deliver them (i.e. consultancy costs). There is no obligation for cities to use a Sustrans Route User Intercept Survey,

It is worth noting that DfT funding is top support one iteration of the user surveys; a minimum repetition of every three years is recommended (with best practice being annually), which cities will need to resource themselves. It was also made clear that user surveys should be conducted prior to construction where possible, or at the earliest appropriate point thereafter.

Table 4-1 outlines the process and recommendations for grant allocation.

Table 4-1 Recommended process for grant distribution

	Birmingham	Bristol	Cambridge	Leeds	Manchester	Newcastle	Norwich	Oxford	Totals
Grant split equally	£12,500	£12,500	£12,500	£12,500	£12,500	£12,500	£12,500	£12,500	£100,000
Grant split on phase one funding[8]	£22,024	£10,105	£5,312	£23,387	£25,911	£7,385	£4,794	£1,082	£100,000
User surveys required	15	5	3	6[9]	15	6	2	1	**53**
53 x £3,650 =£193,450									
User surveys which can be funded by grant	7.8	2.6	1.6	3.1	7.8	3.1	1.0	0.5	27.4
Grant apportioned by number of surveys	**£28,302**	**£9,434**	**£5,660**	**£11,321**	**£28,302**	**£11,321**	**£3,774**	**£1,887**	**£100,000**

[8] excluding match funding

[9] Leeds minimum survey requirement was reduced to five to correspond with screen line counts after discussions with Leeds City council

	Birmingham	Bristol	Cambridge	Leeds	Manchester	Newcastle	Norwich	Oxford	Totals
DfT Funded	7.8	2.6	1.6	3.1	7.8	3.1	1.0	0.5	27.4
City Funded	7.2	2.4	1.4	2.9	7.2	2.9	1.0	0.5	25.6
52% user surveys DfT funded (at 2015)									
Recommended grant allocation	**£28,302**	**£9,434**	**£5,660**	**£11,321**	**£28,302**	**£11,321**	**£3,774**	**£1,887**	**£100,000**

This funding has now been awarded and the recommendations have been agreed with all the cities.

5 Recommendations for monitoring for the ten-year programme

Ten policy areas were identified that cities aimed to impact with the CCA investment (see 'themes' in Table 2-1). Suitable metrics within these themes were then set, with some options regarding how data is collected to measure these.

To reiterate: recommended or additional metrics were developed based on collaboration with the cities (including to understand data availability) and to enhance comparability of basic monitoring across the cities. The minimum recommended requirements enable an assessment of changes in cycling levels at the intervention area, as well as the wider city for comparability, in addition to insight into any modal shift impacts.

In addition to the gaps which were identified at baseline, the recommendations for monitoring and evaluating the ten-year programme were driven by this process.

Sustrans recommendations for data gathering are as follows:

5.1 Counts

There should be a comprehensive network of counts within the city to establish the numbers cycling, and this must include intervention specific sites. Cities will decide which typology of count is most appropriate for their cycle network and CCA programme, e.g. whether to adopt screenline, cordon, routes to particular destinations or multiple counts on selected keys routes. Within each group, manual or automatic counts can be selected accordingly.

5.1.1 Manual counts

To establish usage at a particular point or points on a network using a manual count, Sustrans recommends the following:

- counts should be a minimum of twelve hours 07:00 until 19:00
- manual counts can be taken as part of a user survey
- counts should be conducted at a consistent location
- counts should be conducted at the same time of year
- where feasible, pre intervention counts should be conducted

Counts taken as part of the baseline should be repeated periodically throughout the ten year programme. These should be at the same location and should also be conducted at the same time of year.

Best practice: Four day counts annually, one per season or clustered. Gender and age category (child under 16 / adult / 65+) recorded.

Minimum: Annually. Gender and age category (child under 16 / adult / 65+) recorded.

5.1.2 Automatic cycle counters

ACCs should be installed with new infrastructure where viable. Appropriate intervals will again be determined by the nature and scale of the intervention, and the number should be proportionate. For example, a minimum of one ACC should be installed on a new linear route, though practical considerations, such as whether paths are traffic free will also be factors. Data taken from ACCs need to be checked regularly, and should be calibrated.

Minimum: one ACC installed on a new linear route.

5.2 User surveys

User surveys with cyclists at the intervention should be conducted throughout the programme. Surveys should include specific and consistent questions (please see the user survey "How to" guide for example questions) to establish:

- journey purpose and length
- any change in mode of transport away from car or van use
- whether the user could have used a car/van for the journey
- whether the scheme has impacted on the user's behaviour
- reported improvement in health/wellbeing
- perceptions of safety of the route
- demographic information (age, gender, employment status, ethnicity, income)

Best practice: annual surveys at the same location.

Minimum: every three years at the same location.

Delivery of the surveys will be determined by cities; however it is essential that sites are selected to interview cyclists either on CCA routes or where this is not practical, at a location that will capture flows from the intervention.

The number of user surveys should increase to provide adequate coverage as the network grows with future investment.

5.3 Cycle parking counts

To report on integration with public transport links, Sustrans recommend cycle parking counts at key public transport hubs. This should be measured consistently throughout the programme and include the number of bicycles at the relevant transport hubs.

Best practice: Four day counts annually, one per season or clustered.

Minimum: Annually.

6 Monitoring data

All CCA cities had planned to monitor the change in levels of cycling throughout their programmes, either through their existing remit of transport monitoring or by conducting additional counts where infrastructure was planned.

Though some cities delivered surveys at baseline, different approaches were applied and there were little comparable data to enable reporting on common metrics.

Usage data was collected in all cities, to varying extent, by manual count, ACC and, in Oxford's case, a turning count from video footage.

It is important to note that this report does not quote actual count figures, but rather percentage changes from a previous point in time (up to three years before). This is to ensure that the counts compared are alike, and to minimise the risks associated with manual counts not being repeated or ACCs not returning data.

Below are two worked examples; the first demonstrates how counter data can be compared when the number of counters differs between years and the second illustrates how to use data from the Active People Survey can be used to produce comparable baseline data.

Please note, the examples are for illustration only; cities will be provided with Excel tools which perform the calculations from the table entries, alongside "How to…" guides which explain their use.

Example 1: Comparing counter data year on year

Each figure provided in the report card follows the same basic calculation. Below are some examples that have been worked through indicating the different calculations that might have to be done.

City A	Year 0	Year 1	Year 2	Year 3	Year 4
ACC 1	400	470	540	-	600
ACC 2	-	4019	4200	-	4600
ACC 3	50	70	81	-	20

The first reported figure will be comparing year 0 to year 1. The first example compares counter 1 (ACC1) and counter 3 (ACC3) as there are no comparable data for counter 2 (ACC2) in year 0.

Calculation:

(Total year 1 data – Total year 0 data) ÷ Total year 1 data

Worked example Year 1:

(470 + 70) - (400 + 50) = 540 – 450 = 90

90 ÷ 450 = 0.05 = **5%**

The second reported figure would draw from all counters as they all have comparable data available in year 1 and 2.

Worked example Year 2:

(540 + 4200 + 81) - (470 + 4019 + 70) = 4821 - 4559 = 262

262 ÷ 4559 = 0.082 = **8.3%**

The third reported figure would normally compare the available counters in year 2 and 3. However, year 3 is missing all counter data. In this situation, no change would be reported that year. The following year would compare the figures to the next available year, so in this example Year 4 and Year 2 (a maximum of three years).

Worked example Year 4:

(600 + 4600 + 20) - (540 + 4200 + 81) = 5220 – 4821 = 399

399 ÷ 4821= **8.3%**

These results would provide the first three figures, to enter in the scorecard, which is explained in detail in section 7.2. Please note that this example assumes counters ACC1, ACC2 and ACC3 are on the CCA intervention.

Example 2

City A – Population 1,000,000

Table 6-1 Proportion of residents who cycle at a given frequency [10]

	Year 0 (sample size= 500)	Year 1 (sample size =510)
Cycle at least 5 times per week	3% (3)	4% (4)
Cycle at least 3 times per week	9% (6)	10% (6)
Cycle at least 1 time per week	11% (2)	13% (3)
Cycle at least 1 time per month	21% (10)	25% (12)

The data in the table are used, with the population figure, to estimate the total number of trips for the city in a year. The figures are given as cumulative percentages, so the actual proportions, which are shown in brackets, must be used to calculate the number of trips.

Year 0	Year 1
(0.03 x 1m) x 5 x 52 = 7.80 m	(0.04 x 1m) x 5 x 52 = 10.4m
(0.06 x 1m) x 3 x 52 = 9.36 m	(0.06 x 1m) x 3 x 52 = 9.36m
(0.02 x 1m) x 1 x 52= 1.04 m	(0.03 x 1m) x 1 x 52= 1.56m
(0.10 x 1m) x 1 x 12= 1.20 m	(0.12 x 1m) x 1 x 12 = 1.44m
Total = 19.4 m	22.76m

The percentage change is then calculated from the two totals:

(22.76 – 19.4) ÷ 19.4 = 0.173 = **17.3%**

The figures from examples 1 and 2 are used to complete the scorecard section as follows:

[10] http://www.dft.gov.uk/statistics/series/walking-and-cycling/

*C Automatic cycle counter data or manual count data from the intervention
*AP Active People Survey

	Year 1		Year 2		Year 3	
	City	Intervention	City	Intervention	City	Intervention
Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area		5% *C		8% *C		8% *C
	17% *AP					

6.2 City data

Data was collated and compared for each of the CCA cities to establish percentage changes between 2012 and 2013, and 2013 and 2014. This was largely from counts and the APS.

Sustrans looked at ACC and manual count data from all cities, from 2010 to 2014 to establish the first recorded changes in the programme.

Table 6-2 shows the number of suitable counts at intervention and city level, that Sustrans had available in calculating these first entries:

Table 6-2 The number of manual and automatic counts by CCA city

		Birmingham			Bristol			Cambridge			Greater Manchester			Leeds			Newcastle			Norwich			Oxford		
		2012	2013	2014	2012	2013	2014	2012	2013	2014	2012	2013	2014	2012	2013	2014	2012	2013	2014	2012	2013	2014	2012	2013	2014
CCA investment specific	Total number of counts	0	0	0	0	1	1	0	6	0	0	0	3	0	0	10	11	11	9	0	0	0	0	5	0
	Number of counts available for comparison	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	10	9	0	0	0	0	0	0
City wide	Total number of counts	18	18	38	1	3	5	9	8	12	1	25	27	1	6	20	46	46	46	5	3	40	4	3	4
	Number of counts available for comparison	6	13	13	1	0	0	9	8	8	1	1	18	1	1	5	2	33	44	5	3	2	1	3	4

As shown in the table, in many cases, the number of counters available was low. At intervention level, a single count could be compared each year to establish usage on a particular route or piece of infrastructure. At city level, it was deemed inappropriate to use a small number of counters to estimate city wide use.

The following section outlines the year 1 data by city. More detail is provided in the individual city reports (appendices 1 to 8), and cities have also been provided with 'collated counter' spreadsheets containing the raw data.

It should be noted that there are some large figures in the APS results. This was chosen as a recommended data source due to the accessibility of the data to all cities; however, as outlined in section 3.2 there are considerable limitations. Of the sample at the city level (approximately 500), few are cyclists, and so modest change can result in large proportionate increases or decreases, as seen below.

6.2.2 Birmingham

6.2.2.1 ACC and manual count data

City wide percentage changes in usage of 28% between 2012 and 2013, and 0% between 2013 and 2014 have been calculated using 13 ACCs. This has increased from six ACCs in 2012. There are no ACCs at intervention level to report changes on.

This number was deemed insufficient in providing a picture of usage across a city as large as Birmingham, and therefore these percentage changes will not be used to report on the metrics.

As of 2014 Birmingham has 38 operational ACCs across the city, although between 2013 and 2014 only 13 of those were comparable. This increase shows commitment to improving the network and, if continued and maintained, will provide robust count data for future years.

6.2.2.2 Active People Survey

The APS has shown a 19% decrease in the level of cycling from 2011/2012 to 2012/2013. This was calculated by using the proportions in Table 6-3 with the city population to estimate the number of annual trips. In Birmingham this was calculated to be 1,092,300 trips undertaken annually in 2012/13. This was a 19% decrease in the number of trips in 2011/2012.

Table 6-3 Proportion of residents who cycle at a given frequency in Birmingham

	2011/2012 (sample size= 593)	2012/2013 (sample size =510)
Cycle at least five times per week	1%	2%
Cycle at least three times per week	3%	2%
Cycle at least once per week	8%	5%
Cycle at least once per month	12%	11%

6.2.3 Bristol

6.2.3.1 ACC and manual count data

Percentage changes in usage that have been calculated at the intervention are based on very few counters. Percentage changes of -36% between 2011 and 2013 and 20% between 2013 and 2014 are based upon the change in just one manual count. This particular manual count has produced readings that differ greatly from year to year, with the count being greatly affected by commuter cyclists and seeing a dip in usage during the summer holidays. Historically it has been completed at different times of year and therefore sometimes capturing the commuter flow and sometimes missing the commuter flow. To rectify this going forward, Bristol City Council has agreed to complete this count at the same time of year. A single count was not deemed as a robust measure for the CCA monitoring.

At city wide level, there were no comparable counts.

Overall Bristol is planning increased levels of manual and automatic counts and has collected an increased level of data in 2014, and has committed to installing ACCs on new pieces of CCA investment.

6.2.3.2 Active People Survey

The APS has shown a 20% decrease in the frequency of cycling from 2011/2012 to 2012/2013. This was calculated by using the proportions in Table 6-4 with the city population to estimate the number of annual trips. In Bristol this was calculated to be 10,076,742 trips undertaken annually in 2012/13. This is a 20% decrease in the number of trips in 2011/12.

Table 6-4 Proportion of residents who cycle at a given frequency in Bristol

	2011/2012 (sample size=484)	2012/2013 (sample size=507)
Cycle at least five times per week	7%	5%
Cycle at least three times per week	11%	9%
Cycle at least once per week	18%	16%
Cycle at least once per month	23%	22%

6.2.4 Cambridge

6.2.4.1 ACC and manual count data

A percentage change of 4% between 2012 and 2013 is based upon the change in eight ACCs. Cambridge is actively increasing its number of counts by conducting manual counts and installing new ACCs. There was a further 14% increase on eight ACCs between 2013 and 2014.

Six manual counts were undertaken in 2013 on CCA interventions. Future iterations of these counts will provide comparisons to report against the related metrics.

6.2.4.2 Active People Survey

The APS has shown a 6% change in the level of cycling from 2011/2012 to 2012/2013. This was calculated by using the proportions in Table 6-8 with the city population to estimate the number of annual trips. In Cambridge this was calculated to be 667,646 trips undertaken in 2012/13. This has increased 6% since 2011/12.

Table 6-5 Proportion of residents who cycle at a given frequency in Cambridge

	2011/2012 (sample size =501)	**2012/2013 (sample size =500)**
Cycle at least five times per week	25%	26%
Cycle at least three times per week	35%	38%
Cycle at least once per week	47%	49%
Cycle at least once per month	51%	58%

6.2.5 Greater Manchester

6.2.5.1 ACC and manual count data

The percentage changes in usage are based on a low number of counters. There is a percentage change of 48% between 2012 and 2013 is based on just one ACC at city wide level. A decrease of 13% in cycling between 2013 and 2014 was calculated using 18 ACCs across Greater Manchester.

These percentage changes were not deemed robust to report against the metrics, due to the low number of counters providing data on a region of this size. However, TfGM are actively repairing their ACC network and aim to have 50 ACCs recording data across the city in the near future.

Manual counts were also conducted 'pre-' intervention, so the changes between these and the next iteration will be reported against the related metrics.

6.2.5.2 Active People Survey

The APS has shown an 11% decrease in the frequency of cycling from 2011/2012 to 2012/2013.This was calculated by using the proportions in Table 6-6 with the population to estimate the number of annual trips. In Greater Manchester this was calculated to be 22,920,223 trips in 2012/13, which was an 11% decrease on the previous year.

Table 6-6 Proportion of residents who cycle at a given frequency in Greater Manchester

	2011/2012 (sample size =5,079)	2012/2013 (sample size = 5,503)
Cycles at least five times per week	2%	1%
Cycles at least three times per week	3%	3%
Cycles at least once per week	7%	8%
Cycles at least once per month	12%	12%

6.2.5.3 Cycle parking counts

Cycle parking counts will be used to calculate the following metric:

- Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs

TfGM does conduct cycle parking counts at stations and has committed to doing this for the duration of the CCA programme. Unfortunately, the cycle parking counts supplied for baseline recorded little and sporadic data, and it was deemed that it was not possible to create any meaningful percentage change figure from these data.

6.2.5.4 Travel diaries

TfGM has supplied travel diaries (TRADS) to Sustrans for evaluation. There was a delay in supplying these and subsequently they have not been analysed for this report. TfGM will use these data to report on the relevant metrics and populate the scorecard accordingly.

6.2.5.5 User surveys

User surveys have been used to provide the baseline data for the following metrics:

a. Percentage of users that have increased their frequency of cycling
b. Percentage of users that report a feeling of improved health and/or wellbeing
c. Amount of CO2 saved due to modal shift toward cycling
d. Number of trips made by bicycle which were previously made by car/van during peak periods
e. Percentage of users that have a positive perception of safety at the intervention

Data for the metric 'Percentage of users that have increased their frequency of cycling or new cycling trips' have been collected in 2014 and need to be collected in a subsequent year to get a comparison figure and percentage –the "How to" guide gives further instructions. In 2014 the data points are:

Cycle five+ days a week = 17%
Cycle three days a week = 11%
Cycle one day a week = 10 %
Cycle one day a month = 5%

For the metric 'Percentage of users that have a positive perception of safety at the intervention' users where asked whether the safety of the route had influenced their decision to cycle on that day. 43% strongly agreed and 33% agreed, equalling 76% in total.

6.2.5.6 Station surveys

Station surveys at rail stations were used to calculate the following metric:

- Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above

Station users where asked whether they rated the (one of three) station for cycle parking. 4% ranked it very good and 16% ranked it good, equalling 20% in total.

6.2.6 Leeds

6.2.6.1 ACC and manual count data

Leeds City Council undertook comprehensive baseline monitoring for the CityConnect scheme, and this included seven day manual counts at five screenlines along the proposed route. These counts will be repeated one year after route completion, and the percentage change will provide robust figures at intervention to report upon the metrics.

Between 2012 and 2013 there was a 59% increase at four ACCs and between 2013 and 2014, five comparable ACCs showed an increase of 7%. Leeds has recognised that they require more counter data to create robust figures and have committed to installing new ACCs on new pieces of CCA investment. Though these increases are a positive indicator in cycle usage, the number of counters they are derived from is too low to provide a robust figure for the scorecard.

The screenline counts also include locations near, but not on the interventions. The repetition of these will increase the number of 'city wide' counts, however, a broader and increased spread would be necessary to give a robust view of usage across the city.

6.2.6.2 Active People Survey

In Leeds the APS has shown a 22% decrease in the level of cycling from 2011/2012 to 2012/2013. This was calculated by using the proportions in Table 6-8 with the city population to estimate the number of annual trips. In Leeds this was calculated to be 6,535,186 trips undertaken annually in 2012/13.

Table 6-7 Proportion of residents who cycle at a given frequency

	2011/2012 (sample size =512)	2012/2013 (sample size = 501)
Cycle at least five times per week	2%	1%
Cycle at least three times per week	4%	3%
Cycle at least once per week	8%	8%
Cycle at least once per month	13%	12%

6.2.7 Newcastle

6.2.7.1 ACC and manual count data

The percentage changes in usage that have been calculated for baseline are based on a significant number of ACCs. The percentage change of 4% on CCA interventions between 2012 and 2013 is based upon the change across ten ACCs, and the percentage change of 7% across the city between 2012 and 2013 is based upon the change across 33 ACCs. Between 2013 and 2014 Newcastle installed nine more ACCs and have committed to installing additional ones on new pieces of CCA investment. This number of counters provides robust data to report upon the related metrics.

It is also worth noting that since recording more information, the counters on the CCA interventions are showing a higher level of increase than the rest of the city wide counters.

6.2.7.2 Active People Survey

In Newcastle, the APS has shown a 42% decrease in the frequency of cycling from 2011/2012 to 2012/2013. This was calculated by using the proportions in Table 6-8 with the city population to estimate the number of annual trips. In Newcastle this was calculated to be 2,720,585 trips undertaken annually in 2012/13. This is a 42% decrease in the number of trips calculated in 2011/12.

Table 6-8 Proportion of residents in Newcastle who cycle at a given frequency

	2011/2012 (sample size = 472)	2012/2013 (sample size = 501)
Cycle at least five times per week	4%	2%
Cycle at least three times per week	6%	3%
Cycle at least once per week	10%	7%
Cycle at least once per month	16%	13%

6.2.8 Norwich

6.2.8.1 ACC and manual count data

The percentage changes in usage that have been calculated are based on very few counters. The percentage change of -6% between 2012 and 2013 is based upon the change in just three ACCs. There was an increase of 6% in two ACCs between 2013 and 2014. These changes are not based upon enough counts to be deemed robust enough to report against the metrics.

To increase the amount of data available Norwich has started completing multiple manual counts and will install new ACCs on new pieces of CCA investment. In 2014, 40 city wide counts were undertaken, and if repeated this would provide exemplar levels of counts.

Furthermore, manual counts taken during their Origin and Destination surveys will be extended to twelve hours at all eight locations, providing robust count data at this intervention in future years.

It should also be noted that data from the counter 'A1042 Ring Rd, Norwich' was not included in the calculations. This is because it was showing counts in excess of 2 million a year and was regarded as at fault.

6.2.8.2 Active People Survey

In Norwich, the APS has shown an 18% increase in the frequency of cycling from 2011/2012 to 2012/2013. This was calculated by using the proportions in Table 6-9 with the city population to estimate the number of annual trips. In Norwich this was calculated to be 3,975,734 trips undertaken annually in Norwich in 2012/13, which was an 18% increase from the previous year.

As discussed earlier, the relatively low number of cyclists represented in the APS sample at city level can often lead to high corresponding percentage increases or decreases when compared year on year. Employing 'additional' data collection tools would enable increased levels of rigour in reporting.

Table 6-9 Proportion of residents in Norwich who cycle at a given frequency

	2011/2012 (sample size = 511)	2012/2013 (sample size = 501)
Cycle at least five times per week	4%	8%
Cycle at least three times per week	9%	11%
Cycle at least once per week	20%	17%
Cycles at least once per month	27%	24%

6.2.9 Oxford

6.2.9.1 ACC and manual count data

The percentage changes in usage that have been calculated are based on very few counters. The percentage change of 0% between 2012 and 2013 is based upon the change in just three ACCs across the city, as is the increase of 10% between 2013 and 2014. To increase the amount of data available Oxford has started completing new manual counts and will install new ACCs on new pieces of CCA investment.

These results will not be used to report against the metrics due to the low number of counts they are derived from.

Manual counts have been undertaken at both city wide and intervention level; however there were some outstanding issues that were not clarified in time for inclusion in the analysis. Oxfordshire County Council will be able to include these data in a future submission.

Furthermore, turning counts were carried out using video footage on the intervention. Future iterations of this count will provide percentage changes to report on the related metrics.

6.2.9.2 Active People Survey

The APS has shown a 27% increase in the frequency of cycling from 2011/2012 to 2012/2013. This was calculated by using the proportions in Table 6-8 with the city population to estimate the number of annual trips. In Oxford this was calculated to be 9,778,884 trips in 2012/13. This was 27% higher than in 2011/12.

Table 6-10 Proportion of residents who cycle at a given frequency in Oxford

	2011/2012 (sample size = 515)	2012/2013 (sample size = 497)
Cycle at least five times per week	14%	17%
Cycle at least three times per week	19%	26%
Cycle at least once per week	28%	34%
Cycle at least once per month	34%	43%

7 Summary

7.1 Overview

Sustrans collaborated with the cities when developing and agreeing the monitoring methodologies set out in the prior chapters. A more detailed summary of discussions and each city's plan is set out in accompanying 'city reports' (attached as Appendices). However, an overview of the monitoring approach that has been agreed by the cities is outlined in Table 7-1.

There has been little consistency in the manner or extent to which cities have collected baseline data for their CCA interventions. While some cities have employed significant resource for their monitoring programmes, others have planned to draw upon the existing transport monitoring within the area.

Transport for Greater Manchester (TfGM) was unique in commissioning user and perception surveys at CCA intervention sites prior to construction. Leeds also undertook comprehensive baseline monitoring, including a household survey within a 2km radius of the planned infrastructure. In this case, as the 'superhighway' is a new route, there was no opportunity to conduct user surveys. Norwich also carried out short 'Origin and Destination' surveys on CCA infrastructure. In the absence of prescribed measures for monitoring and evaluation, there are little comparable data from these surveys which all differed vastly in approach and delivery.

Most cities have some count data pre-dating construction, however, in the case of ACCs few were physically on CCA intervention sites and several returned incomplete periods of data.

With the exception of Newcastle, the ACC networks within cities provided insufficient data to establish cycling levels at a true baseline.

Manual counts were conducted before works began in many of the cities, however, these tended to be 'one offs' and therefore don't provide information to calculate a percentage change from the previous year.

In summary, at the 2013/14 baseline, data is too disparate and inconsistent to establish pre-intervention levels of cycling across all the cities.

Part of Sustrans' role in this project was to work with CCA cities to remedy the gaps in data collection, and to enable a programme level baseline to be calculated.

As recommended by Sustrans, cities are using a combination of grant from DfT and their own local budgets to conduct user surveys to gather intervention level data, in addition to strengthening the counter network or are planning manual counts to bridge the gap.

All cities have agreed to monitor the recommended metrics set out in Section 2. Some particular points of note are that:

- All cities agreed to install ACCs on new pieces of infrastructure; it was generally agreed that this was a cost effective and overall reliable means of collecting continuous data.
- The number of user surveys deemed appropriate by Sustrans was also agreed across the board. The number of user surveys in Leeds was lowered from six to five to align with their screenline counts; Sustrans agreed with the logic and concurred that this would provide a robust picture.
- Though many cities planned user surveys as part of their scheme monitoring for CCA, in general the recommended frequency of iterations was more than anticipated. However, in the main most cities were able to offer commitment to the minimum recommendation of every three years, as displayed in Table 7-1.
- Almost all cities are planning to fulfil some 'additional' monitoring metrics. These metrics are being delivered in a manner that is context specific and will help to significantly strengthen important areas of monitoring.

Table 7-1 provides an overview of cities' intentions and commitments towards the future monitoring of the CCA programme.

Table 7-1 City intentions regarding Sustrans recommendations for monitoring the CCA programme

	Birmingham	**Bristol**	**Cambridge**	**Leeds**	**Greater Manchester**	**Newcastle**	**Norwich**	**Oxford**
Grant funding used for:	User surveys	User surveys	User surveys	User surveys	User surveys	User surveys	User surveys	User surveys
Number of recommended User surveys	15	5	3	6	15	6	2	1
Number of user surveys the city plans to undertake (one iteration)	15	5	4	5	15[11]	6	8	1
Frequency	Annual	Every three years	2015, 2018 committed	2017, 2020, 2023	Unconfirmed	Every three years	Every two years	Every three years
Installing ACC on new routes	✓	✓	✓	✓	✓	✓	✓	✓
Additional monitoring planned to be undertaken	Bike Life household survey	Quality of Life survey Big Commuter Survey Bike Life household survey	No current plans	Household survey	Personal Travel Diaries Bike Life household survey	Bike Life household survey	Number and frequency of user surveys	No current plans

[11] Greater Manchester's 15 surveys include seven user survey and eight perception surveys at stations

7.2 Programme level scorecards

This section sets out 'scorecards' that provide a broad summary of the monitoring data that cities should collect, analyse and report upon so to address the overarching themes. Each city has an individual scorecard which will display the year on year change of each metric.

The scorecard will be completed with data as stated in each metric; percentage changes or a specific number, for example 'Amount of CO_2'. In the top right hand corner of each box, a letter represents the data source from which the figure was obtained. The key can be found in Figure 1 below.

As discussed in section 7, in 2013 data was too disparate and inconsistent to establish pre intervention levels of cycling across the cities, and a meaningful baseline could not be formed. The scorecard in Figure 1 shows all cities' data at this point. The user surveys, which cities plan to undertake, will provide data for a considerable number of the metrics. These are largely incomplete in 2013.

The cities should provide DfT with an updated scorecard every year, showing the percentage change from the previous year, or a specified measure (e.g. amount of CO_2) for all of the recommended metrics, and the additional where possible. Sustrans have provided the cities with "How to" guidance documents on how to extract, process and compare data from the recommended sources for the scorecards.

It should be noted that there are some large figures, positive and negative, from the APS results. This was chosen as a recommended data source due to the accessibility of the data to all cities; however, as outlined in section 3.2, there are considerable limitations. Of the sample at the city level (approximately 500), few are cyclists, and so modest change can result in large proportionate increases or decreases, as seen in the scorecard. Employing 'additional' data collection tools, such as a household survey, would enable increased levels of rigour in reporting.

As with the individual city scorecards, distinction has been made between intervention specific metrics and city wide.

Figure 1 Scorecard for all CCA cities in 2013

Data Sources Key:			
*C	Automatic cycle counter data or manual count data from the intervention		
*C+	Automatic cycle counter data or manual count data from the wider city area		
*AP	Active People Survey	*CP	Cycle parking counts
*PD	Personal travel diaries	*WS	Workplace travel surveys
*PS	Perception survey	*H	Household travel survey
*H+	Household travel survey with boosted sample around intervention		
*S19	STATS 19	*VA	Video analysis
*AR	Employer absence records		

Theme	Metric	Birmingham		Bristol		Cambridge		Greater Manchester		Leeds		Newcastle		Norwich		Oxford	
	Intervention change (I) or City Wide change (CW)	I	CW	I	CW	I	CW	I	CW	I	CW	I	CW	I	CW	I	CW
Change in levels of cycling	**Recommended metrics**																
	Percentage change in cycling trips made utilising the intervention	*C		*C		*C		*C		*C		4% *C		*C		*C	
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	*C	*C+	*C	*C+	*C	4% *C+	*C	*C+	*C	*C+	4% *C	2% *C+	*C	*C+	*C	*C+
		*C	-19% *AP	*C	-20% *AP	*C	6% *AP	*C	-11% *AP	*C	-22% *AP	4% *C	-42% *AP	*C	18% *AP	*C	27% *AP
Change in level of integration with public transport links	**Recommended metrics**																
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	29% *CP		*CP		*CP		*CP		*CP		*CP		*CP		*CP	
	Additional metrics																
	Percentage change in people taking integrated cycling and public transport trips	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	*SS		*SS		*SS		*SS		*SS		*SS		*SS		*SS	
The effect on users health	**Recommended metrics**																
	Percentage of users that have increased their frequency of cycling	*US	19% *AP	*US	-20% *AP	*US	6% *AP	*US	-11% *AP	*US	-22% *AP	*US	-42% *AP	*US	18% *AP	*US	27% *AP
	Percentage of users that report a feeling of improved health and/or wellbeing	*US		*US		*US		*US		*US		*US		*US		*US	
	Additional metrics																
	Percentage of users that have increased their frequency of cycling	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS
			*H		*H		*H		*H		*H		*H		*H		*H
		*H+	*H+	*H+	*H+	*H+	*H+	*H+	*H+	*H+	*H+	*H+	*H+	*H+	*H+	*H+	*H+
Change in levels of accidents	**Recommended metrics**																
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	*S19	*S19	*S19	*S19	*S19	*S19	*S19	*S19	*S19	*S19	*S19	*S19	*S19	*S19	*S19	*S19
	Additional metrics																
	Percentage of interactions that are 'unsafe interactions'	*VA		*VA		*VA		*VA		*VA		*VA		*VA		*VA	

The effect on CO2 emissions	**Recommended metrics**																
	Amount of CO2 saved due to modal shift toward cycling	*US		*US		*US		*US		*US		*US		*US		*US	
	Additional metrics																
	Amount of CO2 saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*WS		*WS		*WS		*WS		*WS		*WS		*WS		*WS	
	Amount of local pollutants saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*WS		*WS		*WS		*WS		*WS		*WS		*WS		*WS	
Employment and economic effects	**Recommended metrics**																
	No Recommended																
	Additional metrics																
	Percentage change in levels of absence in the workplace	*AR		*AR		*AR		*AR		*AR		*AR		*AR		*AR	
		*WS		*WS		*WS		*WS		*WS		*WS		*WS		*WS	
The effect on congestion levels	**Recommended metrics**																
	Number of trips made by bicycle which were previously made by car/van during peak periods	*US		*US		*US		*US		*US		*US		*US		*US	
	Additional metrics																
	Number of trips made by bicycle which were previously made by car/van during peak periods	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*WS		*WS		*WS		*WS		*WS		*WS		*WS		*WS	
Levels of awareness and perceptions of safety	**Recommended metrics**																
	Percentage of users that have a positive perception of safety at the intervention	*US		*US		*US		*US		*US		*US		*US		*US	
	Additional metrics																
	Percentage of users that have a positive perception of safety	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H
Changes in levels of cycling by demographic	**Recommended metrics**																
	Ratio of female and male cyclists	*C	*AP	*C	*AP	*C	*AP	*C	*AP	*C	*AP	*C	*AP	*C	*AP	*C	*AP
	Additional metrics																
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS
		*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H	*H+	*H
Value for money	**Additional metrics**																
	Percentage of people that have a positive perception of value for money of the CCA investment	*US		*US		*US		*US		*US		*US		*US		*US	
	Percentage of people that have a positive perception of value for money of investment in carbon based transport projects	*US		*US		*US		*US		*US		*US		*US		*US	

7.3 Next Steps

This report has set out the efforts to understand the planned monitoring activity of CCA grant recipients and to develop a methodology to enhance the comparability of this monitoring activity. This was particularly challenging given that the programmes of infrastructure vary vastly between CCA cities in both scale and nature, as do the cities approaches to monitoring the impacts of the investment.

7.3.1 Baseline data collection

Sustrans has also constructed baseline data for the cities. The only common data held for all cities is usage data, from manual and automated cycle counts. There was little comparability between the duration and frequency of city counts, and some were at the intervention while others were part of the wider traffic monitoring of the area. Sustrans standardised this data by calculating annual estimations of usage for each count location, which provided a comparable baseline for usage.

Going forward one of the most important immediate actions that cities should do is implement measures to strengthen the baseline data through filling any gaps and providing a more complete baseline. This should then be used to monitor changes in the relevant metrics as the impacts of CCA schemes materialise.

7.3.2 Ongoing data collection and report

In collaboration with the cities, this report has set out an overview of the cities' plans for collecting and analysing monitoring data so as to assess the impacts of CCA investment.

As a minimum, all cities are undertaking the recommended monitoring requirements set out in this report. This includes monitoring changes in cycling at the intervention as well as the wider city area, undertaking user surveys that will help to establish the attributable impact of CCA investment and any modal shift that is likely to have occurred, conducting cycle park counts as well as analysing readily available data such as STATS19 data and the Active People Survey.

Additionally, many cities are undertaking additional monitoring activities specific to their CCA investment that could significantly help to strengthen the evidence surrounding the impacts of CCA investment. For example, household surveys which will be conducted in Birmingham, Bristol, Greater Manchester and Newcastle in 2015 and 2017 as part of the 'Bike Life' project.

7.3.3 Methodological limitations

This report has ensured that the method developed fits in with cities' pre-existing plans for monitoring, with a few adjustments to fill what Sustrans deemed to be important gaps. The evidence generated will likely provide information on whether cycling has increased at the intervention site, and also capture self-reported views from users on the impact of the infrastructure on their travel behaviour as well as any modal shift.

However, it is important to note that there are limitations in relation to what the evidence generated by the methodological recommendations within this report will be able to provide. At present, it seems that it will be challenging to attribute any changes in cycling in the cities to the cycling investment. However, the monitoring data that will be collected by cities might enable a 'dosage effect' or quasi-experimental evaluation design in the future. For example, data from the intervention area might be compared with the wider city area and also potentially suitable non-treated areas/cities that have had similar historical trends in cycling to the areas of CCA investment. Through comparing with such areas, this will help to control contextual factors such as a general increase in cycling across the UK as a whole.

Furthermore, the 'recommended' monitoring plans set out in this report only focus on users of cycling infrastructure. This limits the ability to understand who has been affected by the

infrastructure and the barriers to non-users. Additionally, only through additional monitoring activity will the data provided by cities be able to provide robust insight into wider impacts of cycling (e.g. economic impacts, health impacts, whether new cyclists have been generated by the cycling infrastructure, impacts upon congestion). Future work may focus on certain cities to boost evidence in key areas. This is currently beyond the plans of all of the cities, however planned additional data from some cities could help to provide insight into these areas.

7.3.4 Usage data

Sustrans standardised the available data by calculating annual estimations of usage (see section 3.1.3) for each count location, which, when aggregated at intervention and city level, will provide a comparable baseline for usage. Annual estimations of usage were calculated using a seasonal distribution curve (Chart 3-1) calculated from a number of reference counters.

There are, however, limitations to this methodology. The seasonal distribution of usage is unique to each site and depends on a wide variety of factors, not least the variation in trip purposes of route users. More work is needed to identify route types that share similar patterns in usage to strengthen this assumption.

Furthermore, there is substantial variation in the volume of usage across a month, particularly in months where there is a transition between seasons. This means that counts from that month may not be representative of usage for the whole month.

Despite the above limitations, using an annual estimation of usage minimises the risk of using count data, especially when some survey periods are as short as one day. Moreover, this method allows comparable usage figures to be obtained for all CCA cities, regardless of their differences in approach.

Sustrans have provided an Excel tool and user guide, to enable cities to easily calculate annual estimations of usage. The percentage change year on year will be used to update the scorecard (see section 7.2)

7.3.5 City wide levels of cycling

In addition to using count data, the Active People Survey has been selected as a data source to gauge city wide changes in levels of cycling. The sample of 500 respondents per local authority gives a confidence level of 95%. The smaller sample size, compared with England wide figures, results in a much bigger confidence interval.

This was selected as a data source as it provides an overview of cycling levels in each city, with minimal cost to local authorities. Sustrans have provided a “How to” guide to illustrate which data to excerpt from the Active People Survey, and how to compare year on year to provide a figure for the scorecard.

7.3.6 Intervention level impacts

To report on many of the metrics in the scorecard, Sustrans recommended cities undertake user surveys on CCA interventions. To establish accurate levels of usage on the improved and/or newly constructed routes, it is vital that surveys are conducted with those using the infrastructure.

Sustrans have specified questions to gather data on areas such as mode shift, health benefits and demographic information at the survey locations. These are outlined in the “How to” guide on user surveys, which was issued to cities as a separate supporting document.

A drawback of user surveys is that it can be difficult to stop cyclists to interview, particularly in commuting periods; however, Sustrans believe that they are the most effective means of gathering intervention specific data, and are therefore an essential component of the CCA evaluation.

It should also be noted that when a user survey aims to focus on a very specific group, the resulting sample can be low and results should be treated with caution if then scaling up to the population. For example, filtering for ‘new cyclists’, who have changed their mode from car or van since a particular piece of infrastructure has been put in place, may result in a small number of responses.

Appendices

Appendix 1

Birmingham

1 Introduction

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

This report outlines the following:

- the project scope in understanding and enhancing monitoring and evaluation of the CCA programme an overview of the scheme in Birmingham and the expected outcomes
- recommendations for monitoring the impacts of CCA investment so to enable an overall evaluation
- Birmingham City Council's data collection commitments
- next steps, including guidance documents on how to populate a scorecard that summarises findings

1.1 Summary

Project scope in terms of the monitoring and evaluation of CCA Schemes

- Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.
- Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.
- Sustrans worked with the CCA cities to identify gaps in data collection, and made recommendations to ensure that comparable programme wide data is collected.

Birmingham's Cycle Revolution

- Birmingham received £17m in CCA funding in 2013 and £22m in 2015 for phases one and two of the Cycle Revolution programme.
- The 2013 -2016 part of the Cycle Revolution plan focuses on the area within a 20 minute cycle from the city centre, with improvements to 95km of existing routes and 115km of new routes.
- By 2016, Birmingham expects to see an extra 2000 cyclists per day within the bid area, which amounts to a 27% increase. This is estimated to result in a reduction of 8,000 vehicle kilometres per day.

Recommendations

- Sustrans recommendations for monitoring include:
    - counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme
    - user surveys to be conducted at 15 appropriate locations on the CCA

network, to be repeated a minimum of every three years

- counts of parked bicycles at key public transport hubs (if cities choose to report on integration with public transport)

Future monitoring plans

- Birmingham City Council will install new ACCs with new pieces of infrastructure. Birmingham has also committed to install ACCs on the 5 sites identified for user surveys that do not currently have one.
- Birmingham has committed to conducting user surveys at 15 locations across the CCA network on an annual cycle.

Next steps

- Baseline data should be collected at the earliest appropriate opportunity for each location. Birmingham City Council will determine the exact locations and timeframe to suit the programme.
- Throughout the programme cities should provide an annual update of their evaluation findings to DfT.

1.2 Project scope

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in measuring the impact of the CCA investment.

Cities provided Sustrans with their monitoring and evaluation plans for their programmes, and also shared available baseline data.

Ten common themes were identified from the aims and objectives within all cities' bid documents. Based on these themes, Sustrans developed a series of metrics that cities could use to monitor the impacts of the CCA investment through a number of different

Another component of this exercise was the allocation of a £100,000 grant, provided by DfT to support the monitoring and evaluation activities of the CCA cities. Sustrans identified that supporting the cities in the undertaking of user surveys alongside manual cycle counts would be the most effective use of the grant. A recommended number of user surveys was determined for each city, firstly based upon the scale of investment and then adjusted to parallel the number of elements of infrastructure in phase one.

Having provided recommendations for the future monitoring of the CCA programme, a scorecard was created for cities to populate with data against the metrics.

1.3 Cycle City Ambition Grant

In August 2013 funding of £17million was awarded to the city of Birmingham through the Cycle City Ambition (CCA) programme. Match funding of £7.3 million took total investment to £24.3 million which funds the first two years of the ambitious 20 year 'Birmingham Cycle Revolution' plan.

In November 2014, a further £114million was announced for the CCA cities, and Birmingham received £22m of this to fund the second phase of infrastructure.

1.4 Birmingham Cycle Revolution

The 2013 -2016 part of the 'Cycle Revolution' plan focuses on the area within a 20 minute cycle from the city centre (see figure 1), with improvements to 95km of existing routes and 115km of new routes.

The following boxed text is taken directly from the Birmingham Cycle Revolution bid and details the planned measures and objectives:

> The primary objective of the bid is:
>
> • To create a strategic network of radial cycle routes and facilities that will support the economic growth of the city centre and its hinterland within a 20 minute cycling time from the city centre.
>
> Sub-objectives of the bid include:
>
> • Making improvements along major radial roads to demonstrate how segregated cycle facilities, on road cycle lanes, advanced stop lines, bus lanes and traffic management measures can provide continuous coherent measures for cyclists along multi-functional high volume roads.
>
> • Creating new, quieter parallel routes, using roads with lower speed limits and traffic flows linking residential areas, green spaces and local centres to encourage short trips offering an alternative to busy A and B roads.
>
> • Installing a high quality sealed surface and delivering access improvements along canal towpaths to improve the public realm and enable them to fulfil their potential as green transport corridors suitable for all-weather cycling and walking in everyday clothes.
>
> • Incorporating cycling into the 'Interconnect' on-street way-finding totems currently being rolled out across the city centre, and using improved direction signing to assist cyclists with navigation and to promote the convenience and the presence of cycling to other road users.
>
> • Providing safer crossing points across the city centre ring road to address this major barrier to cycling into the city centre.
>
> • Introducing and extending low speed zones/limits and filtered permeability for cyclists within the city centre and residential areas.
>
> • Using segregated cycle contraflow facilities to create new links across the city centre to address severance caused by traffic management measures.
>
> • Improving cycle security with upgraded parking and trip end facilities within the city centre and local centres.
>
> • Increasing access to bicycles with cycle loan and hire opportunities.
>
> The measures will ensure that:

• Improvements for cyclists in the north and south of the city being delivered through the Local Sustainable Transport Fund projects are linked into the city centre, enabling new cyclists engaged through the LSTF programme to access a city-wide network.

• A more extensive off-road network of canal towpaths and green routes is available for leisure and health promotion activities as well as for transport.

• Public realm improvements within the city centre deliver filtered permeability enabling pedestrians and cyclists to make safe, direct movements within the core area.

• Suburban rail stations and mainline stations are fully integrated into the cycle route network and offer safe and secure cycle parking.

• Residents of the most deprived wards in the city have access to affordable and sustainable transport to areas of employment growth.

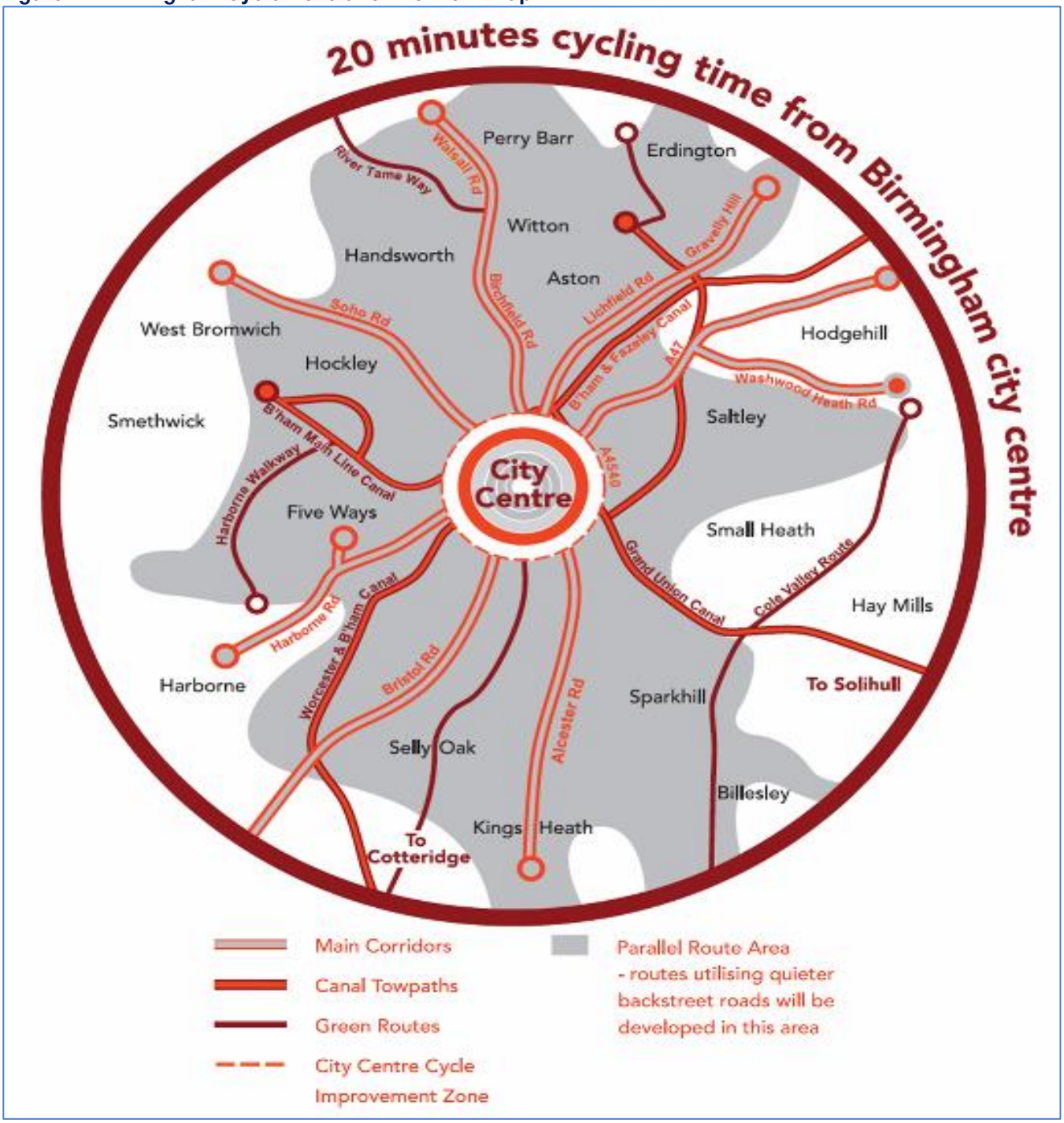
The interventions include:

- Measures along eight main corridors into the city centre; mainly on highway improvements for more experienced/confident cyclists
- Developing a network of quieter routes running parallel to main corridors but also linking to schools and other community facilities
- Improvements to and extensions of the existing off road 'green routes'
- Extensive improvements of the canal towpaths.

Source: Birmingham Cycle City Ambition bid

Figure 1 gives a graphic overview of the planned improvements.

Figure 1– Birmingham Cycle Revolution network map



Source: Birmingham Cycle Revolution bid

This series of infrastructure developments is being supported by city centre Brompton hire, the introduction of cycle hubs and parking, and the rolling out of 20mph zones. Furthermore there are behaviour change measures through the Local Sustainable Transport Fund (LSTF) Smarter Choices programme and Big Birmingham Bikes, which provides free bicycles and training in disadvantaged communities.

Birmingham's vision is to make cycling an everyday way to travel over the next twenty years. The Cycle Revolution aims to deliver a 'step change' in levels of cycling and the CCA works build upon existing projects such as Bike North Birmingham and the Smart Network Smarter Choices LSTF programme.

1.5 Impacts

In the last ten years, cycling in Birmingham has increased 73%[12].However; this is from a relatively low base in the amount of cycling with approximately 1.4% of journeys to work by cycling and less than 2% of all other trips in 2011.

By 2016, Birmingham expects to see an extra 2000 cyclists per day within the bid area, which amounts to a 27% increase. This is estimated to result in a reduction of 8,000 vehicle kilometres per day. By 2023 the aim is to achieve modal split of at least 5%, rising to more than 10% by 2033.

The improved infrastructure proposes to support all types of cycle trip and encourage more commuters, utility and leisure/tourism trips.

Residents from Birmingham's most deprived wards will have increased access to areas of economic growth, so the programme hopes that unemployment will be reduced with the alleviation of 'transport poverty'. The scheme also aims to "reduce severance between communities and promulgate social inclusion" by alleviating transport poverty.

In addition to widening employment horizons, the economy is predicted to benefit from the improved health and wellbeing linked to higher levels of cycling.

Another key outcome of the programme is improvements in safety for cyclists and pedestrians, and Birmingham expects to see a "noticeable reduction in the number of accidents involving cyclists on the roads".

A Value for Money assessment following the approaches set out in WebTAG 3.14.3 for cycling schemes found the Benefit to Cost Ratio (BCR) to be 3.08. Through monitoring the impacts of the investment it is recommended that a BCR of actual impacts is constructed and compared to those estimated prior to the investment (discussed further in the following sections).

2 Key research questions

2.1 Themes and research questions

The aims and objectives from the original city bid documents were reviewed and ten common themes were identified within the predicted outcomes. These themes were used as the basis for formulating the following research questions, and are common to all cities:

1) What impact has the CCA investment had upon levels of cycling?
2) What are the related benefits of mode shift from car or van to bicycle in terms of user's health, congestion levels and carbon emissions?
3) To what extent has the CCA investment affected the number of people taking integrated cycling and public transport journeys
4) To what extent has the CCA investment altered perceptions of the safety of cycling?
5) To what extent has the CCA investment affected the demographic balance of cyclists?
6) What is the Benefit to Cost Ratio (BCR) of the investment?

[12] Cycling Trends in Birmingham Technical Report

7) What opportunities are there for further evaluation, and how will this enhance current data collection?

2.2 Recommended and additional metrics

A series of consultation meetings between Sustrans and each of the cities' monitoring leads took place to establish current and planned monitoring provision for CCA. Sustrans worked with cities to understand the existing data that was available to them. This existing data was shared with Sustrans with a view to formulating the programme baseline.

Within each theme, metrics were determined against which programme impacts could be monitored throughout the project lifespan. Furthermore, potential data sources were defined against each metric, specifying how these metrics would be reported on. The results of this exercise are detailed in Table 2-1.

The data and monitoring information provided by cities were mapped to the research questions, and an assessment was made as to whether they were sufficient to measure the impacts of the CCA investment at intervention level, and more broadly in the city.

Table 2-1 differentiates between 'recommended' and 'additional' metrics. Recommended metrics are those which cities must address in order to report on the theme. Recommended metrics are monitored by data from counts, user surveys and the Active People Survey (APS)[13]. For consistency across the programme, it should be noted that all the cities have exactly the same metrics. The exception is for the theme 'Integration with levels of public transport', for which parked bicycle counts are required: these are only required when cities aim to impact upon this area. In phase one of investment Birmingham will report on this theme.

The 'additional' metrics draw upon a wider range of data sources and would help to deliver stronger insight into answering the research questions. As some of these can be quite context specific (e.g. of limited applicability to some cities' schemes) and resource intensive, these are not a recommended monitoring requirement of cities. However, a number of cities are planning, where appropriate, to undertake additional monitoring. This will help to strengthen the evidence base regarding the impacts of the CCA investment in a number of ways (see Section 3 for more details).

Thus, the recommended measures are the minimum monitoring that all cities will undertake and the additional metrics are ones that would allow stronger statements about impact to be made more robust and their uptake will vary across the cities.

2.3 Monitoring and evaluation

Sustrans recommend that cities should collect data periodically throughout the ten year programme at the location of intervention(s). This data will provide important evidence as part of the wider evaluation of the scheme's impacts in response to the research questions outlined above.

Furthermore, to effectively evaluate the outcomes Sustrans also recommends that city wide data is collected. The changes at the intervention can therefore be compared with the city wide picture to make a stronger statement about attribution and impact.

Within Table 2-1 there are therefore columns note whether a data source provides information at intervention or a city wide level. By intervention it is meant that the user surveys or counts are undertaken on the CCA intervention or at a point where cyclists using the improved route must pass (e.g. further along a canal towpath where there are no entrances or exits past the intervention). City wide data refers to cycle and transport monitoring within the city that is not specific to users of CCA infrastructure; for example, the wider ACC network or a travel behaviour survey exploring the habits

[13] Sport England Active People Survey www.gov.uk/government/organisations/department-for-transport/series/walking-and-cycling-statistics

of the city or regional population. In the case of the Active People Survey (APS), this is a national dataset available to all cities to draw upon. At city or regional level there could also be complementary data sources that would enable a more robust picture to be built up.

Table 2-1 Themes, metrics and data sources for monitoring the impacts of CCA investment

Theme	Metric	Proposed Data Source	Intervention	City Wide
Change in levels of cycling	**Recommended**			
	Percentage change in cycling trips made utilising the intervention.	Automatic cycle counter data from the intervention/manual count data from the intervention	✓	
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	Automatic cycle counter/manual count data from the intervention and from the whole city area	✓	✓
		Automatic cycle counter/manual count data from the intervention and the Active People survey	✓	✓
Change in level of integration with public transport links	**Recommended**			
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	Cycle parking counts	✓	✓
	Additional			
	Percentage change in people taking integrated cycling and public transport trips	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	Perception survey of people parking at public transport hubs	✓	✓
The effect on users' health	**Recommended**			
	Percentage of users that have increased their frequency of cycling	User survey at the intervention linked to the count changes to calculate number	✓	
		Active People Survey (city as a whole) linked to the count changes		✓
	Percentage of users that report a feeling of improved health and/or wellbeing	User survey at the intervention linked to the count changes	✓	
	Additional			
	Percentage of users that have increased their frequency of cycling	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
		Household travel survey		✓
		Household survey with boosted sample at intervention location	✓	✓
Change in levels of	**Recommended**			
	Percentage change in total	STATS19	✓	✓

Theme	Metric	Proposed Data Source	Intervention	City Wide
accidents	number of cycling accidents recorded as KSI (killed or seriously injured)			
	Additional			
	Percentage of interactions that are 'unsafe interactions'	Video analysis	✓	
The effect on CO_2 emissions	**Recommended**			
	Amount of CO_2 saved due to modal shift toward cycling	User survey at the intervention linked to the count changes to calculate amount	✓	
	Additional			
	Amount of CO_2 saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
	Amount of local pollutants saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
Employment and economic effects	**Recommended**			
	No recommended metric			
	Additional			
	Percentage change in levels of absence in the workplace	Absence records	✓	✓
		Workplace travel surveys	✓	✓
The effect of congestion levels	**Recommended**			
	Number of trips made by bicycle which were previously made by car/van during peak periods	User surveys linked to the count changes to calculate number	✓	
	Additional			
	Number of trips made by bicycle which were previously made by car/van during peak periods	Workplace travel surveys	✓	✓
		Personal travel diaries		✓
Levels of awareness and perceptions of safety	**Recommended**			
	Percentage of users that have a positive perception of safety at the intervention	User survey at the intervention	✓	
	Additional			
	Percentage change in users	Household survey	✓	✓

Theme	Metric	Proposed Data Source	Intervention	City Wide
	perceptions of safety at the intervention Percentage of users that have a positive perception of safety	Personal travel diary	✓	
Changes in levels of cycling by demographic	**Recommended**			
	Ratio of female and male cyclists	User surveys Active People Survey	✓	 ✓
	Additional			
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	Household survey Workplace surveys Personal travel diary	 ✓	✓ ✓ ✓
Value for money	**Recommended**			
	BCR	Users surveys combined with intervention specific counts	✓	
	Additional			
	Percentage of people that have a positive perception of value for money of the CCA investment	Perceptions surveys linked to the count changes Perception surveys linked to the count changes	✓ ✓	
	Percentage of people that have a positive perception of value for money of investment in highways projects that aim to benefit users of motorised transport	Perception surveys linked to the count changes	✓	

3 Recommendations for monitoring the ten-year programme

This section sets out recommendations for data collection when monitoring the recommended metrics set out in the previous section. The following focuses upon collection of primary data and therefore secondary sources of data such as the Active People Survey and STATS19 national datasets are not included. The "How to" guides provide details on how to process and analyse the data.

3.1 Counts

There should be a comprehensive network of counts within the city to establish the numbers cycling, and this must include intervention specific sites. Cities will decide which typology of count is most appropriate for their cycle network and CCA programme; whether these are screenline, cordon, routes to particular destinations or multiple counts on selected keys routes will be a matter for the cities to decide. Within each group, manual or automatic counts can be selected accordingly.

3.1.1 Manual counts

To establish usage at a particular point or points on a network using a manual count, Sustrans recommends the following:

- counts should be a minimum of twelve hours 07:00 until 19:00
- manual counts can be taken as part of a user survey
- counts should be conducted at a consistent location
- counts should be conducted at the same time of year
- where feasible, pre intervention counts should be conducted

Counts taken as part of the baseline should be repeated periodically throughout the ten year programme. These should be at the same location and manual counts should also be conducted at the same time of year.

Best practice: Four day counts annually, one per season or clustered. Gender and age category (child under 16 / adult / 65+) recorded.

Minimum: Annually. Gender and age category (child under 16 / adult / 65+) recorded.

3.1.2 Automatic cycle counters

ACCs should be installed with new infrastructure where viable. Appropriate intervals will again be determined by the nature and scale of the intervention, and the number should be proportionate. For example, a minimum of one ACC should be installed on a new linear route, though practical considerations, such as whether paths are traffic free will also be factors. Data taken from ACCs need to be checked regularly, and should be calibrated.

Minimum: one ACC installed on a new linear route.

3.2 User surveys

User surveys with cyclists at the intervention should be conducted throughout the programme. User surveys at 15 locations was deemed appropriate for Birmingham at phase one. Surveys should include specific and consistent questions (please see the user survey “How to” guide for example questions) to establish:

- journey purpose and length
- any change in mode of transport away from car or van use
- whether the user could have used a car/van for the journey
- whether the scheme has impacted on the user’s behaviour
- reported improvement in health/wellbeing
- perceptions of safety of the route
- demographic information (age, gender, employment status, ethnicity, income)

Best practice: annual surveys at the same location.

Minimum: every three years at the same location.

Delivery of the surveys will be determined by cities; however it is essential that sites are selected to interview cyclists either on CCA routes or where this is not practical, at a location that will capture flows from the intervention.

The number of user surveys should increase to provide adequate coverage as the network grows with future investment.

3.2.1 Cycle parking counts

To report on integration with public transport links, Sustrans recommend cycle parking counts at key public transport hubs. This should be measured consistently throughout the programme and include the number of bicycles at the relevant transport hubs.

Best practice: Four day counts annually, one per season or clustered.

Minimum: Annually.

4 Birmingham's monitoring data

This section sets out the data that Sustrans have collected from Birmingham when compiling this report.

4.1 ACC and manual count data

It is important to note that this report does not quote actual count figures, but rather percentage changes from a previous point in time (one to three years before). This is to ensure that the counts compared are alike, and to minimise the risks associated with the number of counts varying both within and between cities from year to year.

ACC and manual count data have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Change in levels of cycling)

All of these data have been provided in the '**Collated Counter'** spreadsheet.

It should be noted that the percentage changes in usage of 28% between 2012 and 2013, and 3% between 2013 and 2014 have been calculated using 13 ACCs. This has increased from six ACCs in 2012. There are no ACCs at intervention level to report changes on.

Six and 13 counters were deemed insufficient in providing a picture of usage across a city as large as Birmingham, and therefore these percentage changes will not be used to report on the metrics.

As of 2014 Birmingham has 38 operational ACCs across the city, although between 2013 and 2014 only 13 of those were comparable. This increase shows commitment to improving the network and, if continued and maintained, will provide robust count data for future years.

It should also be noted that data from the counter 'Pershore Road nr Calthorpe Park' was not included in the calculations. This is because it was showing counts in excess of 10 million a year and was regarded as at fault.

4.2 Active People Survey

The Active People's Survey (APS) have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Change in levels of cycling)
- Percentage of users that have increased their frequency of cycling. (Effect on users' health)

The APS was chosen as a recommended data source due to the accessibility of the data to all cities; however, as outlined in section 3.2 in the main report there are considerable limitations. Of the sample at the city level (approximately 500), few are cyclists, and so modest change can result in large proportionate increases or decreases, as seen below.

Table 4-1 Proportion of residents who cycle at a given frequency in Birmingham

	2011/2012 (sample size= 593)	2012/2013 (sample size =510)
Cycles at least five times per week	1%	2%
Cycles at least three times per week	3%	2%
Cycles at least once per week	8%	5%
Cycles at least once per month	12%	11%

The APS has shown a 19% decrease in the level of cycling from 2011/2012 to 2012/2013. Applying the proportions in Table 4-1 to Birmingham's population suggests that an estimated 1,092,300 trips were undertaken annually in 2012/13. This was a 19% decrease in the number of trips in 2011/2012. However, as discussed previously, the reliability of these estimates is questionable due to the relatively low number of cyclists represented in the APS sample at the city level

Furthermore, percentage changes derived from a small base result in high corresponding increases or decreases. Employing additional data collection tools, such as the household survey, would enable increased levels of rigour in reporting.

The 2012/13 and 2013/2014 APS figures should be used to calculate the percentage change for the next APS report.

4.3 Cycle Parking Counts

Cycle parking counts have been used to calculate the following metric:

a. Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs

This metric has shown a 29% growth in bicycles parked at central train stations in Birmingham between 2012 and 2013. The inputs to this percentage change are below; the 2013 figures should be used to calculate the percentage change for 2014:

Table 4-2 Bicycle Parking Counts in Birmingham

		Average Usage		**Change**	
Location	**BCC_Ref**	**2012**	**2013**	**Change**	**Percentage change**
New Street Station	67	3.89	2.94	-0.94	-24%
New Street Station	341	4.89	10.15	5.26	108%
New Street Station	342	3.89	6.85	2.96	76%

		Average Usage		Change	
Location	**BCC_Ref**	**2012**	**2013**	**Change**	**Percentage change**
New Street Station	343	5.26	4.11	-1.15	-22%
New Street Station	344	3.52	4.11	0.59	17%
New Street Station	501	4.44	5.06	0.61	14%
New Street Station Racks	502	3.56	3.61	0.06	2%
New Street outside near HSBC	549	3.11	3.81	0.7	23%
Colmore Row opposite Snow Hill Station	50	3.07	5.19	2.11	69%
	Totals	35.63	45.83	10.2	**29%**
excluded Moor Street at Carrs Lane	68	0	0.37	0.37	

Please note that Moor Street at Carrs Lane was excluded as its amount of data was viewed as insufficient to input into the calculation.

4.4 Populating the scorecard

The percentage changes obtained from the data sources discussed above can be used to report against a number of metrics.

An example of the related section of the scorecard (see section 5) is illustrated below in Figure 2. There is a box for results from each data source (denoted by an asterisk and letter in the top right hand corner – the key is below the table).

As the ACC and manual count figures were not deemed robust to be included, only the results from the APS are entered into the related box in the example metric.

Figure 1 Example section of the scorecard

	Year 1		Year 2		Year 3	
Metric	Intervention	City	Intervention	City Wide	Intervention	City Wide
Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	*C	*C+		*C+		*C+
	*C	*AP -19%		*AP		*AP

*C Automatic cycle counter data or manual count data from the intervention
*C+ Automatic cycle counter data from the wider city area
*AP Active People Survey

5 Scorecard

This section provides the scorecard in which percentage changes will be reported against the related metrics.

In the top right hand corner of each box, a letter represents the data source from which the figure was obtained. The key is in Figure 3 below.

Sustrans have provided "How to" guidance documents on how to extract, process and compare data from the recommended sources for the scorecards. The user surveys which cities have committed too will provide data for a considerable number of the metrics, which are largely incomplete at baseline.

Cities should provide DfT with an updated scorecard every year, showing the percentage change from the previous year for all of the recommended metrics, and the additional where possible.

Figure 3: Birmingham scorecard

Data Sources Key:			
C	Automatic cycle counter data or manual count data from the intervention		
C+	Automatic cycle counter data or manual count data from the wider city area		
AP	Active People Survey	CP.	Cycle parking counts
PD.	Personal travel diaries	WS.	Workplace travel surveys
PS.	Perception survey	H.	Household travel survey
H+	Household travel survey with boosted sample around intervention		
S19	STATS 19	VA.	Video analysis
AR.	Employer absence records		

Theme	Metric	2013		2014		2015		.....	2024	
	Intervention change (I) or City Wide change (CW)	I	CW	I	CW	I	CW		I	CW
Change in levels of cycling	**Recommended metrics**									
	Percentage change in cycling trips made utilising the intervention	*C		*C		*C			*C	
	Percentage change in cycling trips made utilising the intervention, and percentage	*C	*C+	*C	*C+	*C	*C+		*C	*C+
		*C	-19% *AP	*C	*AP	*C	*AP		*C	*AP
Change in level of integration with public transport links	**Recommended metrics**									
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	29% *CP		*CP		*CP			*CP	
	Additional metrics									
	Percentage change in people taking integrated cycling and public transport trips	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	*SS		*SS		*SS			*SS	
The effect on users' health	**Recommended metrics**									
	Percentage of users that have increased their frequency of cycling	*US	19% *AP	*US	*AP	*US	*AP		*US	*AP
	Percentage of users that report a feeling of improved health and/or wellbeing	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have increased their frequency of cycling	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
			*H		*H		*H			*H
		*H+	*H+	*H+	*H+	*H+	*H+		*H+	*H+
Change in levels of accidents	**Recommended metrics**									
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	*S19	*S19	*S19	*S19	*S19	*S19		*S19	*S19
	Additional metrics									
	Percentage of interactions that are 'unsafe interactions'	*VA		*VA		*VA			*VA	

The effect on CO2 emissions	**Recommended metrics**									
	Amount of CO2 saved due to modal shift toward cycling	*US		*US		*US			*US	
	Additional metrics									
	Amount of CO2 saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
	Amount of local pollutants saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Employment and economic effects	**Recommended metrics**									
	No requisite									
	Additional metrics									
	Percentage change in levels of absence in the workplace	*AR		*AR		*AR			*AR	
		*WS		*WS		*WS			*WS	
The effect on congestion levels	**Recommended metrics**									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*US		*US		*US			*US	
	Additional metrics									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Levels of awareness and perceptions of safety	**Recommended metrics**									
	Percentage of users that have a positive perception of safety at the intervention	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have a positive perception of safety	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Changes in levels of cycling by demographic	**Recommended metrics**									
	Ratio of female and male cyclists	*C	*AP	*C	*AP	*C	*AP		*C	*AP
	Additional metrics									
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Value for money	**Additional metrics**									
	Percentage of people that have a positive perception of value for money of the CCA investment	*US		*US		*US			*US	
	Percentage of people that have a positive perception of value for money of investment in carbon based transport projects	*US		*US		*US			*US	

6 Summary of communications and plans

The gaps analysis exercise highlighted a need for fifteen user surveys on CCA intervention sites at the 2015 baseline, and the DfT grant towards monitoring and evaluation provided £28,302 towards the cost of these surveys.

Further to the announcement of this additional grant, a meeting was held between Birmingham City Council and Sustrans to discuss the finer detail of the recommendations and future implications.

A brief summary of the points clarified and committed to is as follows:

Table 6-1 Summary of communications and commitments

User surveys
Recommendation: User surveys to be conducted at 15 appropriate locations on the CCA network. These should be repeated at appropriate intervals throughout the programme, best practice being every year, the minimum frequency being every 3 years.
Clarification was provided on: Birmingham City Council will determine the locations and timescale of the user surveys. Sustrans clarified that these must be on phase one Cycle City Ambition interventions to report on the recommended metrics. The grant will provide funding towards the cost of the first iteration of user surveys, though it is not anticipated that the grant will cover the cost of all fifteen surveys. To what extent the cost is covered will depend upon how Birmingham choose to deliver the surveys; there is no obligation to use the Sustrans Route User Intercept Survey. Sustrans clarified that type of intervention that user surveys are located on should reflect the scheme; for example, if 20% of the interventions were upgraded routes and 80% new paths, then user surveys should have suitable coverage on both types of improvement. There is an expectation that cities will source funding for the surveys not covered by the grant, and for future iterations. The user surveys must collect data on themes specified in the recommendations section of this report (section 3) to enable reporting on the metrics in the scorecard (section 5)
Commitments and additional monitoring Birmingham confirmed that it will conduct user surveys at 15 locations across the CCA network. Birmingham has committed to repeat these on an annual cycle. Each one of these would be one day each. Of the 15 locations that Birmingham has identified, ten already have ACCs and five do not. Birmingham has committed to install automatic counters on the additional 5 locations.
Counts of users
Recommendation Counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme.
Clarification was provided on: Birmingham already has a good network of 43 operational ACCs with the majority in the city centre, where CCA investment is focused.

Commitments and additional monitoring: Birmingham City Council will install new ACCs with new pieces of infrastructure. Birmingham has also committed (as mentioned above) to install ACCs on the 5 sites identified for user surveys that do not currently have an ACC.
Additional levels of monitoring and evaluation
The additional monitoring as part of the Bike Life project will enable Birmingham to report on additional metrics at the city wide level. This includes a household survey which will provide data across a number of the themes specified by Sustrans. There are also plans to create green travel districts which will include working more closely with businesses to improve upon current travel planning, which could give opportunity for better workplace data collection. These, however are still in early stages so it is not possible to provide the finer detail on exactly what data this will provide and how they it will feed into the CCA evaluation.

7 Next Steps and timeline

7.1 Next steps

Birmingham City council will determine the locations and timeframe of the recommended user surveys, but baseline data should be collected at the earliest appropriate opportunity for each location.

Alongside this report are guides detailing, step by step, how to use results from recommended data sources to populate the scorecard.

Throughout the programme cities should provide an annual update of their monitoring and evaluation findings to DfT.

As outlined in section 2.1 'Recommendations for monitoring the ten year programme', counts and user surveys should be increased accordingly so that the programme of monitoring provides adequate coverage of the interventions.

7.2 Timeline

August 2013 DfT £77m Cycle City Ambition funding announced - £17m for Birmingham, match funding of £7.3m

2013 Birmingham starts to implement phase one of the 'Cycle Revolution'

November 2014 a further £22m announced for Birmingham's CCA scheme

March 2015 Sustrans gaps analysis document issued to Birmingham, with recommendation for user surveys at 15 locations

March 2015 DfT awards Birmingham £28,302 towards the recommended user surveys

2015 Birmingham City Council to select sites and conduct user surveys at 15 locations

2015/16 Baseline data to be collected for phase two of investment

2016 – 2023 Monitoring and evaluation data sent to DfT annually and scorecard populated

2016 - 2023 Repeat user surveys annually, including any additional locations added for further rounds of funding, in the same locations and at the same time of year.

Appendix 2

Bristol

1 Introduction

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

This report outlines the following:

- the project scope in understanding and enhancing monitoring and evaluation of the CCA programme
- an overview of the scheme in Bristol and the expected outcomes
- recommendations for monitoring and evaluating the CCA investment
- Bristol City Council's data collection commitments
- Next steps, including guidance documents on how to populate the scorecard.

1.1 Summary

Project scope in terms of the monitoring and evaluation of CCA Schemes

- Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.
- Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.
- Sustrans worked with the CCA cities to identify gaps in data collection, and made recommendations to ensure that comparable programme wide data is collected.

West of England 'Cycle Transformation'

- The West of England was awarded £7.8m of the (CCA) Grant in 2013, and £19m in 2015.
- The 'West of England Cycle Transformation' is a £50m investment programme, utilising funding from LSTF, CCA and local match funds. The primary focus is linking people to major employment opportunities across Greater Bristol.
- The CCA interventions in Bristol are a series of segregated pedestrian and cycle promenades and paths (City Promenade and River Crossings) running east to west across the city.
- The West of England hopes to see an increase in cycling of 76% as a result of the 'Cycle Transformation' programme.

Recommendations

- Recommendations for monitoring (for all cities) include:
    - counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme

- user surveys to be conducted at five appropriate locations on the CCA network, to be repeated a minimum of every three years
- counts of parked bicycles at key public transport hubs (if cities choose to report on integration with public transport)

Future monitoring plans

- Bristol City Council is in the process of updating the current ACC network and will install new ACCs with new pieces of infrastructure.
- Bristol City Council will conduct user surveys at five locations across the CCA network. There will be three iterations of the surveys.
- Bristol does not intend to report integration with public transport for phase one, as it is not relevant to their programme, and therefore bicycle parking surveys will not be conducted.

Next steps

- Baseline data should be collected at the earliest appropriate opportunity for each location; Bristol City Council will determine the exact locations and timeframe to suit the programme.
- Throughout the programme cities should provide an annual update of their evaluation findings to DfT.

1.2 Project scope

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

Cities provided their monitoring and evaluation plans for their programmes, and also shared available baseline data.

Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.

Another component of this exercise was the allocation of a £100,000 grant, provided by DfT to support the monitoring and evaluation activities of the CCA cities. Sustrans identified that supporting the cities in the undertaking of user surveys alongside manual cycle counts would be the most effective use of the grant. A recommended number of user surveys was determined for each city, firstly based upon the scale of investment and then adjusted to parallel the number of elements of infrastructure in phase one.

In conclusion, recommendations were made for the future monitoring and evaluation of the CCA programme. A scorecard was produced for cities to populate with data against the metrics.

1.3 Cycle City Ambition Grant

In August 2013, the West of England was awarded £7.8m of the Cycle City Ambition (CCA) Grant, match funding took this amount to £11.1m for the first two years of their 'Cycle Transformation' programme.

In November 2014, a further £114m of funding was announced for the CCA cities, with £19m going to West of England.

1.4 West of England Cycle Transformation

The 'West of England Cycle Transformation' is a £50m investment programme, utilising funding from LSTF, CCA and local match funds. The primary focus is linking people to major employment opportunities across Greater Bristol. The package consists of the City Promenade and River Crossings project in Bristol, Cribbs Causeway-Emerson's Green Trunk Cycle Route in South Gloucestershire, and the Seven Dials National Cycle Route scheme in Bath and North East Somerset.

The West of England's vision is as follows:

> A safe and attractive road environment for cycling, including quality off-road routes, will be the foundation of a vibrant cycling culture throughout the area. Children will be regularly cycling to school and employees regularly cycling to work and using their bikes for short business trips. There will be '…more people cycling, more safely, more often…'

The main objectives outlined in the bid are the following:

1. Enhance active and sustainable transport links across the West of England.
2. Support the local economy and facilitate economic development, including enterprise zones/areas.
3. Address recognised environmental impacts including air quality, CO_2 and noise issues.
4. Deliver cycle modal shift to inactive and hard to reach groups, improving health.
5. Deliver better access to jobs for disadvantaged groups.
6. Improve the public realm and support walking.
7. Unlock capacity on roads and public transport networks through large scale shifts to more active commuting patterns.

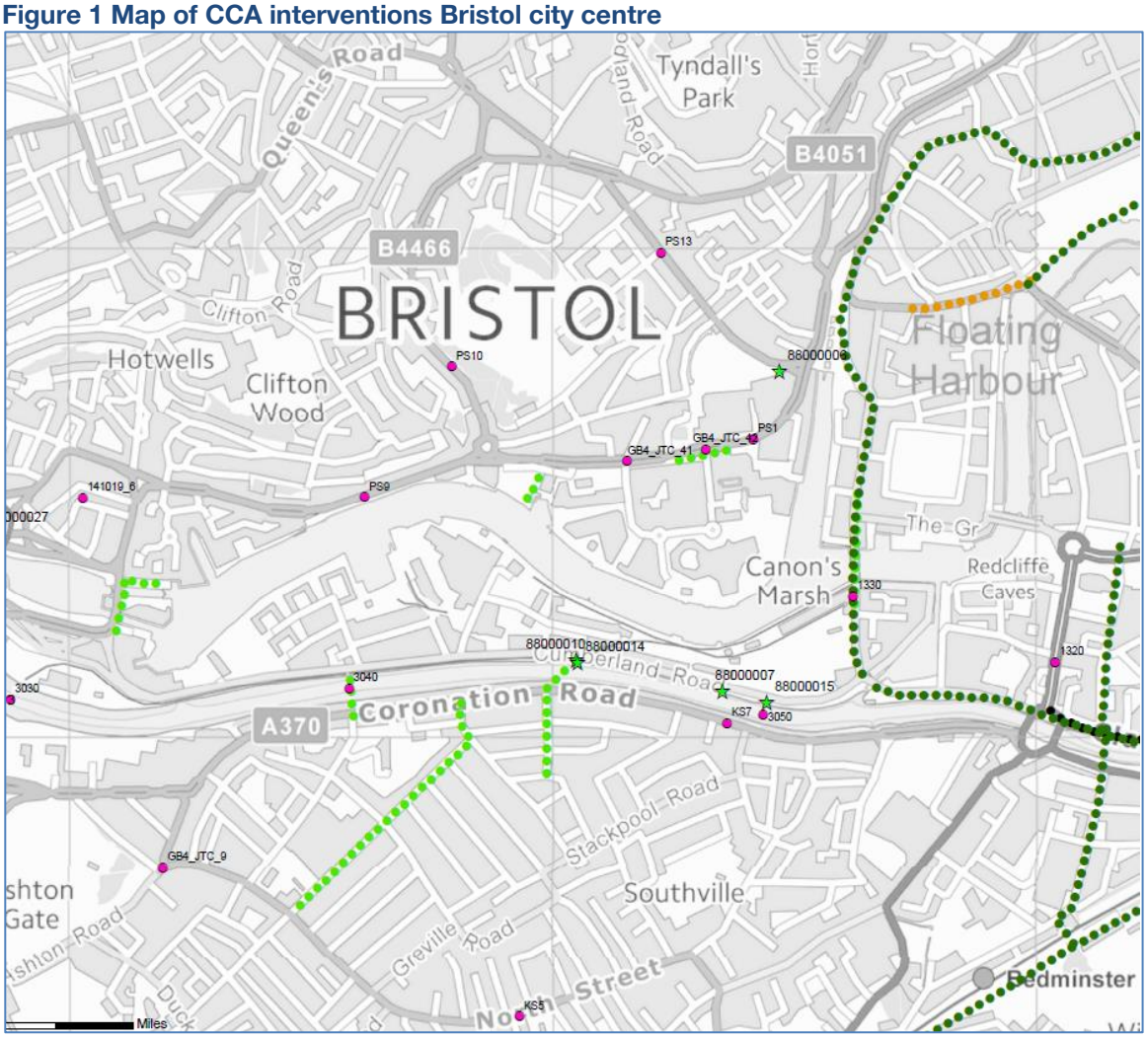
Using recent government investment, the West of England have already seen significant growth in the number of people cycling and plan to build upon this success with infrastructure improvements consolidated by 'Smarter Choices' behaviour change measures.

The CCA interventions in Bristol are a series of segregated pedestrian and cycle promenades and paths (City Promenade and River Crossings) running east to west across the city. This will follow the route of the River Avon and terminating at Bristol Temple Meads station, where a new enterprise zone aims to bring 17,000 new jobs to the city. The scheme will also create five new or improved river crossings for cyclists linking to the promenade and north to south cycle routes. A key element of the package in central Bristol is the roll out of an ambitious Residential Parking Zone as a demand restraint measure to enhance the travelling environment for cyclists and walkers alike by reducing car trips in and to the city centre.

The scheme addresses existing physical (motorway, main roads, rivers), socio-economic (age, gender, deprivation) and perception (safety, distance) barriers to cycling. It aims to provide economic benefits through improved access to Enterprise Zones and Areas, and health benefits through increased cycling levels, particularly targeting inactive and hard to reach groups such as the elderly or young women. Other benefits include enhanced sustainable transport links across Bristol and positive environmental impacts against adverse noise, air quality and CO_2 emissions.

The map in figure 1 shows the locations around the promenade benefitting from CCA investment.

Figure 1 Map of CCA interventions Bristol city centre



CCA phase one CCA phase two

Cycle Safety Fund scheme ACCs Manual counts

1.5 Impacts

Currently, more people in Bristol commute to work by bicycle than in any other local authority in England and Wales[14]. This number has increased by 99.9% from 8,108 to 16,211 between 2001 and 2011. Authorities in the West of England aim to build upon this success of recent cycling investment and enjoy the significant benefits to the economy, environment and health of the region.

Headline targets for the West of England Cycle Transformation programme are:

- a 16% reduction in CO_2 by 2020
- a 76% increase in cycling by 2016

The principal intended outcome is to increase the number of people cycling, preferably at the expense of sedentary modes of transport such as the private car and thus directly result in positive environmental impacts against adverse noise, air quality and CO_2 issues. The reduction in car use would provide wider air quality benefits.

[14] ONS, 2013

The modelling work undertaken as part of the CCA bid forecasted the following forecast for the Cycle Transformation scheme implementation:

- increase in cycle trips of 2.9 million
- reduction in car trips 2.1 million
- reduction of car km 7.4 million per annum

The programme also aims to impact upon the costs, which are estimated to be more than £15m, associated with the 67% of adults at risk of ill health due to low levels of physical activity in the West of England. To help provide cultural change the 20mph speed limit areas and residential parking zones aim to encourage new cyclists, including harder-to-reach groups, by creating friendly and safe environments. The World Health Organisation's Health Economic Assessment Tool (HEAT) was used to forecast impacts of this uptake and fed into benefit to cost ratio (BCR) calculations below.

A value for money (VfM) assessment forecasted the main benefits as decongestion (49%), health (44%) and 'other' (7%). The BCR was estimated to be 11.84 for the interventions in Bristol, and 12.56 for the West of England Transformation overall programme, placing the potential VfM in the 'very high' band.

2 Key research questions

2.1 Themes and research questions

The aims and objectives from the original city bid documents were reviewed and ten common themes were identified within the predicted outcomes. These themes were used as the basis for formulating the following research questions, and are common to all cities:

1) What impact has the CCA investment had upon levels of cycling?
2) What are the related benefits of mode shift from car or van to bicycle in terms of user's health, congestion levels and carbon emissions?
3) To what extent has the CCA investment affected the number of people taking integrated cycling and public transport journeys?
4) To what extent has the CCA investment altered perceptions of the safety of cycling?
5) To what extent has the CCA investment affected the demographic balance of cyclists?
6) What is the Benefit to Cost Ratio (BCR) of the investment?
7) What opportunities are there for further evaluation, and how will this enhance current data collection?

2.2 Recommended and additional metrics

A series of consultation meetings between Sustrans and each of the cities' monitoring leads took place to establish current and planned monitoring provision for CCA. Sustrans worked with cities to understand the existing data that was available to them. This existing data was shared with Sustrans with a view to formulating the programme baseline.

Within each theme, metrics were determined against which programme impacts could be monitored throughout the project lifespan. Furthermore, potential data sources were defined against each metric, specifying how these metrics would be reported on. The results of this exercise are detailed in Table 2-1.

The data and monitoring information provided by cities were mapped to the research questions, and an assessment was made as to whether they were sufficient to measure the impacts of the CCA investment at intervention level, and more broadly in the city.

Table 2-1 differentiates between recommended and 'additional' metrics. Recommended metrics are those which cities must address in order to report on the theme. Recommended metrics are monitored by data from counts, user surveys and the Active People Survey (APS)[15]. For consistency across the programme, it should be noted that all the cities have exactly the same metrics.

The exception is for the theme 'Integration with levels of public transport', for which parked bicycle counts are required: these are only required when cities aim to impact upon this area. In phase one of investment Bristol will not report on this theme.

The 'additional' metrics draw upon a wider range of data sources and would help to deliver stronger insight into answering the research questions. As some of these can be quite context specific (e.g. of limited applicability to some cities' schemes) and resource intensive, these are not a monitoring requirement of cities. However, a number of cities are planning, where appropriate, to undertake additional monitoring. This will help to strengthen the evidence base regarding the impacts of the CCA investment in a number of ways (see Section 3 for more details).

Thus, the recommended measures are the minimum monitoring that all cities will undertake and the additional metrics are ones that would allow stronger statements about impact to be made more robust and their uptake will vary across the cities.

2.3 Monitoring and evaluation

Sustrans recommend that cities should collect data periodically throughout the ten year programme at the location of intervention(s). This data will provide important evidence as part of the wider evaluation of the scheme's impacts in response to the research questions outlined above.

Furthermore, to effectively evaluate the outcomes Sustrans also recommends that city wide data is collected. The changes at the intervention can therefore be compared with the city wide picture to make a stronger statement about attribution and impact.

Subsequently, within Table 2-1 the columns note whether a data source provides information at an 'intervention' or a 'city wide' level. By 'intervention' it is meant that the user surveys or counts are undertaken on the CCA intervention or at a point where cyclists using the improved route must pass (e.g. further along a canal towpath where there are no entrances or exits past the intervention). 'City wide' data refers to cycle and transport monitoring within the city that is not specific to users of CCA infrastructure; for example, the wider ACC network or a travel behaviour survey exploring the habits of the city or regional population. In the case of the Active People Survey (APS), this is a national dataset available to all cities to draw upon. At city or regional level there could also be complementary data sources that would enable a more robust picture to be built up.

Table 2-1 Themes, metrics and data sources for monitoring the impacts of CCA investment

Theme	Metric	Proposed Data Source	Intervention	City Wide
Change in levels of cycling	**Recommended**			
	Percentage change in cycling trips made utilising the	Automatic cycle counter data from the intervention/manual	✓	

[15] Sport England Active People Survey www.gov.uk/government/organisations/department-for-transport/series/walking-and-cycling-statistics

Theme	Metric	Proposed Data Source	Intervention	City Wide
	intervention	count data from the intervention		
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	Automatic cycle counter/manual count data from the intervention and from the whole city area	✓	✓
		Automatic cycle counter/manual count data from the intervention and the Active People survey	✓	✓
Change in level of integration with public transport links	**Recommended***			
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs *Not a recommended metric for Bristol at phase one of investment	Cycle parking counts	✓	✓
	Additional			
	Percentage change in people taking integrated cycling and public transport trips	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	Perception survey of people parking at public transport hubs	✓	✓
The effect on users health	**Recommended**			
	Percentage of users that have increased their frequency of cycling	User survey at the intervention linked to the count changes to calculate number	✓	
		Active People Survey (city as a whole) linked to the count changes		✓
	Percentage of users that report a feeling of improved health and/or wellbeing	User survey at the intervention linked to the count changes	✓	
	Additional			
	Percentage of users that have increased their frequency of cycling	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
		Household travel survey		✓
		Household survey with boosted sample at intervention location	✓	✓
Change in levels of accidents	**Recommended**			
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	STATS19	✓	✓
	Additional			
	Percentage of interactions that are 'unsafe interactions'	Video analysis	✓	

Theme	Metric	Proposed Data Source	Intervention	City Wide
The effect on CO_2 emissions	**Recommended**			
	Amount of CO_2 saved due to modal shift toward cycling	User survey at the intervention linked to the count changes to calculate amount	✓	
	Additional			
	Amount of CO_2 saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
	Amount of local pollutants saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
Employment and economic effects	**Recommended**			
	No recommended metric			
	Additional			
	Percentage change in levels of absence in the workplace	Absence records	✓	✓
		Workplace travel surveys	✓	✓
The effect of congestion levels	**Recommended**			
	Number of trips made by bicycle which were previously made by car/van during peak periods	User surveys linked to the count changes to calculate number	✓	
	Additional			
	Number of trips made by bicycle which were previously made by car/van during peak periods	Workplace travel surveys	✓	✓
		Personal travel diaries		✓
Levels of awareness and perceptions of safety	**Recommended**			
	Percentage of users that have a positive perception of safety at the intervention	User survey at the intervention	✓	
	Additional			
	Percentage change in users perceptions of safety at the intervention Percentage of users that have a positive perception of safety	Household survey	✓	✓
		Personal travel diary	✓	
Changes in levels of	**Recommended**			

Theme	Metric	Proposed Data Source	Intervention	City Wide
cycling by demographic	Ratio of female and male cyclists	User surveys Active People survey	✓	 ✓
	Additional			
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	Household survey Workplace surveys Personal travel diary	 ✓	✓ ✓ ✓
Value for money	**Recommended**			
	BCR	Users surveys combined with intervention specific counts	✓	
	Additional			
	Percentage of people that have a positive perception of value for money of the CCA investment	Perceptions surveys linked to the count changes Perception surveys linked to the count changes	✓ ✓	
	Percentage of people that have a positive perception of value for money of investment in highways projects that aim to benefit users of motorised transport	Perception surveys linked to the count changes	✓	

3 Recommendations for monitoring the ten-year programme

This section sets out recommendations for data collection when monitoring the 'recommended metrics' set out in the previous section. The following focuses upon collection of primary data and therefore secondary sources of data such as the Active People Survey and STATS19 national datasets are not included. The "How to" guides provide details on how to process and analyse the data.

Recommendations for data collection are as follows:

3.1 Counts

There should be a comprehensive network of counts within the city to establish the numbers cycling, and this must include intervention specific sites. Cities will decide which typology of count is most appropriate for their cycle network and CCA programme, e.g. whether to adopt screenline, cordon, routes to particular destinations or multiple counts on selected keys routes. Within each group, manual or automatic counts can be selected accordingly.

3.1.1 Manual counts

To establish usage at a particular point or points on a network using a manual count, Sustrans recommends the following:

- counts should be a minimum of twelve hours 07:00 until 19:00
- manual counts can be taken as part of a user survey
- counts should be conducted at a consistent location
- counts should be conducted at the same time of year
- where feasible, pre intervention counts should be conducted

Counts taken as part of the baseline should be repeated periodically throughout the ten year programme. These should be at the same location and should also be conducted at the same time of year.

Best practice: Four day counts annually, one per season or clustered. Gender and age category (child under 16 / adult / 65+) recorded.

Minimum: Annually. Gender and age category (child under 16 / adult / 65+) recorded.

3.1.2 Automatic cycle counters

ACCs should be installed with new infrastructure where viable. Appropriate intervals will again be determined by the nature and scale of the intervention, and the number should be proportionate. For example, a minimum of one ACC should be installed on a new linear route, though practical considerations, such as whether paths are traffic free will also be factors. Data taken from ACCs need to be checked regularly, and should be calibrated.

Minimum: one ACC installed on a new linear route.

User surveys

User surveys with cyclists at the intervention should be conducted throughout the programme. User surveys at five locations was deemed appropriate for Bristol at phase one. Surveys should include specific and consistent questions (please see the user survey "How to" guide for example questions) to establish:

- journey purpose and length
- any change in mode of transport away from car or van use
- whether the user could have used a car/van for the journey
- whether the scheme has impacted on the user's behaviour
- reported improvement in health/wellbeing
- perceptions of safety of the route
- demographic information (age, gender, employment status, ethnicity, income)

Best practice: annual surveys at the same location.

Minimum: every three years at the same location.

Delivery of the surveys will be determined by cities; however it is essential that sites are selected to interview cyclists either on CCA routes or where this is not practical, at a location that will capture flows from the intervention.

The number of user surveys should increase to provide adequate coverage as the network grows with future investment.

3.2 Cycle parking counts

To report on integration with public transport links, Sustrans recommend cycle parking counts at key public transport hubs. This should be measured consistently throughout the programme and include the number of bicycles at the relevant transport hubs.

Best practice: Four day counts annually, one per season or clustered.

Minimum: Annually.

4 Bristol's monitoring data

This section sets out the data that Sustrans have collected from Bristol when compiling this report.

4.1 ACC and manual count data

It is important to note that this report does not quote actual count figures, but rather percentage changes from a previous point in time (one to three years before). This is to ensure that the counts compared are alike, and to minimise the risks associated with the number of counts varying both within and between cities from year to year.

ACC and manual count data have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention.
- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area.

All of these data have been provided in the 'Collated Counter' spreadsheet.

It should be noted that the percentage changes in usage that have been calculated at the intervention are based on very few counters. Percentage changes of -36% between 2011 and 2013 and 20% between 2013 and 2014 are based upon the change in just one manual count. This particular manual count has produced readings that differ greatly from year to year. This is as the count is greatly affected by commuter cyclists and sees a dip in usage during the summer holidays. Historically it has been completed at different times of year and therefore sometimes capturing the commuter flow and sometimes missing the commuter flow. To rectify this going forward, Bristol City Council has agreed to complete this count at the same time of year.

These results were not deemed robust enough to report against the metrics.

At city wide level, there were no comparable counts.

Overall Bristol is planning to increase levels of manual and automatic counts throughout the city. They have also committed to installing ACCs on new pieces of CCA investment.

4.2 Active People Survey

The APS was chosen as a recommended data source due to the accessibility of the data to all cities; however, as outlined in section 3.2 in the main report there are considerable limitations. Of the sample at the city level (approximately 500), few are cyclists, and so modest change can result in large proportionate increases or decreases, as seen below.

The Active People Survey (APS) has been used to calculate the following metrics:

a. Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Change in levels of cycling)

b. Percentage of users that have increased their frequency of cycling. (Effect on users' health)

Table 4-1 Proportion of residents who cycle at a given frequency in Bristol

	2011/2012 (sample size=484)	2012/2013 (sample size=507)
Cycle at least five times per week	7%	5%
Cycle at least three times per week	11%	9%
Cycle at least once per week	18%	16%
Cycle at least once per month	23%	22%

The APS has shown a 20% decrease in the frequency of cycling from 2011/2012 to 2012/2013. Applying the proportions in Table 4-1 to Bristol's population suggests that an estimated 10,076,742 trips were undertaken annually in 2012/13. This was a 20% decrease in the number of trips in 2011/12. However, as discussed previously, the reliability of these estimates is questionable due to the relatively low number of cyclists represented in the APS sample at the city level.

Furthermore, percentage changes derived from a small base result in high corresponding increases or decreases. Employing additional data collection tools, such as the household survey, would enable increased levels of rigour in reporting.

The 2013/2014 figures should be used to calculate the percentage change for the next APS report.

4.3 Populating the scorecard

The percentage changes obtained from the data sources discussed above can be used to report against a number of metrics.

An example of the related section of the scorecard (see section 5) is illustrated below in Figure 2 below. There is a box for results from each data source (denoted by an asterisk and letter in the top right hand corner – the key is below the table).

Figure 2 Example section of the scorecard

	Year 1		Year 2	
Metric	Intervention	City	Intervention	City Wide
Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	*C	*C+		*C+
	*C	*AP -20%		*AP

5 Scorecard

This section provides the scorecard in which percentage changes will be reported against the related metrics.

In the top right hand corner of each box, a letter represents the data source from which the figure was obtained. The key is in Figure 3 below.

Sustrans have provided "How to" guidance documents on how to extract, process and compare data from the recommended sources for the scorecards. The user surveys which cities have committed too will provide data for a considerable number of the metrics, which are largely incomplete at baseline.

Cities should provide DfT with an updated scorecard every year, showing the percentage change from the previous year for all of the recommended metrics, and the additional where possible.

Figure 3: Bristol Scorecard

Data Sources Key:			
C	Automatic cycle counter data or manual count data from the intervention		
C+	Automatic cycle counter data or manual count data from the wider city area		
AP	Active People Survey	CP.	Cycle parking counts
PD.	Personal travel diaries	WS.	Workplace travel surveys
PS.	Perception survey	H.	Household travel survey
H+	Household travel survey with boosted sample around intervention		
S19	STATS 19	VA.	Video analysis
AR.	Employer absence records		

Theme	Metric	2013		2014		2015		.....	2024	
	Intervention change (I) or City Wide change (CW)	I	CW	I	CW	I	CW		I	CW
Change in levels of cycling	**Recommended metrics**									
	Percentage change in cycling trips made utilising the intervention	*C		*C		*C			*C	
	Percentage change in cycling trips made utilising the intervention, and percentage	*C	*C+	*C	*C+	*C	*C+		*C	*C+
		*C	-20% *AP	*C	*AP	*C	*AP		*C	*AP
Change in level of integration with public transport links	**Recommended metrics**									
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	*CP		*CP		*CP			*CP	
	Additional metrics									
	Percentage change in people taking integrated cycling and public transport trips	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	*SS		*SS		*SS			*SS	
The effect on users' health	**Recommended metrics**									
	Percentage of users that have increased their frequency of cycling	*US	-20% *AP	*US	*AP	*US	*AP		*US	*AP
	Percentage of users that report a feeling of improved health and/or wellbeing	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have increased their frequency of cycling	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
			*H		*H		*H			*H
		*H+	*H+	*H+	*H+	*H+	*H+		*H+	*H+
Change in levels of accidents	**Recommended metrics**									
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	*S19	*S19	*S19	*S19	*S19	*S19		*S19	*S19
	Additional metrics									
	Percentage of interactions that are 'unsafe interactions'	*VA		*VA		*VA			*VA	

The effect on CO2 emissions	**Recommended metrics**									
	Amount of CO2 saved due to modal shift toward cycling	*US		*US		*US			*US	
	Additional metrics									
	Amount of CO2 saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
	Amount of local pollutants saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Employment and economic effects	**Recommended metrics**									
	No requisite									
	Additional metrics									
	Percentage change in levels of absence in the workplace	*AR		*AR		*AR			*AR	
		*WS		*WS		*WS			*WS	
The effect on congestion levels	**Recommended metrics**									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*US		*US		*US			*US	
	Additional metrics									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Levels of awareness and perceptions of safety	**Recommended metrics**									
	Percentage of users that have a positive perception of safety at the intervention	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have a positive perception of safety	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Changes in levels of cycling by demographic	**Recommended metrics**									
	Ratio of female and male cyclists	*C	*AP	*C	*AP	*C	*AP		*C	*AP
	Additional metrics									
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Value for money	**Additional metrics**									
	Percentage of people that have a positive perception of value for money of the CCA investment	*US		*US		*US			*US	
	Percentage of people that have a positive perception of value for money of investment in carbon based transport projects	*US		*US		*US			*US	

6 Summary of communications and plans for future monitoring

The gaps analysis exercise highlighted a need for user surveys at five locations on CCA intervention sites at the 2015 baseline, and the DfT grant towards monitoring and evaluation provided £9,434 towards the cost of these surveys.

A brief summary of the points clarified and committed to is as follows:

User Surveys
Recommendation: User surveys to be conducted at five appropriate locations on the CCA network. These should be repeated at appropriate intervals throughout the programme, best practice being every year, the minimum frequency being every three years.
Clarification was provided on the following areas: The number of user surveys was reached by applying the scale of the investment to the available grant, then considering the elements of infrastructure change in phase one investment. Bristol City Council will determine the locations and timescale of the user surveys. Sustrans clarified that these must be on phase one Cycle City Ambition interventions to report on the recommended metrics. The monitoring grant should be spent at an appropriate time for the relevant intervention; either before or after. The grant will provide funding towards the cost of the first iteration of user surveys, though it is not anticipated that the grant will cover the cost of all five surveys. To what extent the cost is covered will depend upon how Bristol chooses to deliver the surveys; there is no obligation to use the Sustrans Route User Intercept Survey. There is an expectation that cities will source funding for the surveys not covered by the grant, and for future iterations. The user surveys must collect data on themes specified in the recommendations section of this report (section 3) to enable reporting on the metrics in the scorecard (section 5), however, questions within surveys do not have to be identical between cities.. Bristol explored the possibility of achieving this recommended by boosting the sample of the Bike Life survey near CCA routes, but after consideration feel the user surveys would be more appropriate.
Commitments and additional monitoring Bristol's plans for monitoring the CCA programme include user surveys as a tool already, so the grant funding would fund the additional iterations of surveys. Bristol plans to conduct three rounds of user surveys at five CCA locations.
Counts of Users

Recommendation Counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme.
Clarification was provided on: Bristol is in the process of rebuilding the ACC network, and at the end of March 2015 17 ACCs had been upgraded and six new ones installed.
Commitments and additional monitoring: Bristol City Council will install new ACCs with new pieces of infrastructure.
Cycle Parking Counts
Recommendation To report on integration with public transport links, it is necessary to conduct cycle parking counts and key public transport hubs.
Clarification was provided on Not all CCA programmes will aim to impact upon integration with public transport links, and therefore not all cities will report on this metric. Bristol does not intend to report on this metric, as it is not relevant to their programme, and therefore do not plan to conduct bicycle parking surveys.
Commitments and additional monitoring N/A
Additional Levels of Monitoring and Evaluation
The monitoring as part of the Bike Life project will enable Bristol to report on additional metrics at the city wide level. This includes a household survey which will provide data across a number of the themes. In addition to the Active People Survey, Bristol has the 'Quality of Life survey' which provides data on cycling in the wider population. Bristol also conducts an annual 'Big Commuter Survey', which provides mode split on journeys to work. Otherwise, there are no current plans to undertake any of the additional levels of monitoring within the recommendations.

7 Next Steps and Timelines

Bristol City Council will determine the locations and timeframe of the recommended user surveys, but baseline data should be collected at the earliest appropriate opportunity for each location.

Alongside this report are guides detailing step by step how to use results from recommended data sources to populate the scorecard.

Throughout the programme cities should provide an annual update of their evaluation findings to DfT.

As outlined in section 3 'Recommendations for monitoring and evaluation of the ten-year programme', counts and user surveys should be increased accordingly so that the programme of monitoring provides adequate coverage of the intervention.

7.1 Timeline

August 2013 DfT £77m Cycle City Ambition funding announced - £7.8m for West of England, match funding of £3.3m

2013 Bristol starts to implement phase one of CCA works

November 2014 A further £19 m announced for The West of England's CCA scheme

March 2015 Sustrans gaps analysis document issued to Bristol, with recommendation for user surveys at five locations

March 2015 DfT awards Bristol £9,434 towards the recommended user surveys

2015 Bristol City Council to select sites and conduct user surveys at five locations

2015/16 Baseline data to be collected for phase two of investment

2018, 2021 and 2024 Repeat user surveys including any additional locations added for further rounds of funding, in the same locations and at the same time of year.

2016-2023 Monitoring and evaluation data sent to DfT annually and scorecard populated

Appendix 3

Cambridge

1 Introduction

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measuring measure the impact of the CCA investment.

This report outlines the following:

- the project scope in understanding and enhancing monitoring and evaluation of the CCA programme
- an overview of the scheme in Cambridge and the expected outcomes
- recommendations for monitoring and evaluating the CCA investment
- Cambridgeshire County Council's data collection commitments
- next steps, including guidance documents on how to populate the scorecard

1.1 Summary

Monitoring and evaluation of CCA Schemes

- Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.
- Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.
- Sustrans worked with the CCA cities to identify gaps in data collection, and made recommendations to ensure that comparable programme wide data is collected.

Greater Cambridge Cycle City (GC^3)

- Cambridge received £4.1m in CCA funding in 2013 and £6m in 2015 for phases one and two of the GC^3 programme.
- The aim of the project is to deliver a comprehensive integrated network for cycling and walking between key destinations such as rail stations, major settlements, secondary schools and large employment sites to enhance accessibility and cycling as a principal mode of transport.
- The ultimate aim of the CCA investment in the Cambridge is to achieve modal shift to cycling to an ambitious 40% across the city region.

Recommendations

- Recommendations for monitoring include:
    - counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme
    - user surveys to be conducted at three appropriate locations on the CCA network, to be repeated a minimum of every three years

- counts of parked bicycles at key public transport hubs (if cities choose to report on integration with public transport)

Future monitoring plans

- Cambridgeshire County Council has committed to installing new ACCs with new pieces of infrastructure
- Cambridgeshire County Council will undertake four user surveys; three on CCA intervention sites as required, plus an additional survey in the city centre

Next steps

- Baseline data should be collected at the earliest appropriate opportunity for each location, Cambridge City Council will determine the exact locations and timeframe to suit the programme
- Throughout the programme cities should provide an annual update of their evaluation findings to DfT

1.2 Project scope

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

Cities provided their monitoring and evaluation plans for their programmes, and also shared available baseline data.

Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.

Another component of this exercise was the allocation of a £100,000 grant, provided by DfT to support the monitoring and evaluation activities of the CCA cities. Sustrans identified that supporting the cities in the undertaking of user surveys alongside manual cycle counts would be the most effective use of the grant. A recommended number of user surveys was determined for each city, firstly based upon the scale of investment and then adjusted to parallel the number of elements of infrastructure in phase one.

In conclusion, recommendations were made for the future monitoring and evaluation of the CCA programme, and scorecards were produced for cities to populate with data against the metrics.

1.3 Cycle City Ambition Grant

In August 2013, Cambridgeshire County Council was awarded £4.1m of the Cycle City Ambition (CCA) grant. Local match funding brought the total investment to £8.2m for the first two years of the programme.

In November 2014, further funding of £114m was announced for the CCA cities, of which Cambridge received £6m to progress their programme.

1.4 Greater Cambridge Cycle City (GC^3)

Cambridge has relatively high levels of cycle usage; based on 2012 data, the mode share of cycling in Cambridge is 22%. In ten years' time, Cambridge aims to have 40% of all journeys in the city done

by bike, bringing it in line with some of the best cycling cities in Europe. Congestion in the city is seen as one of the major risks to its future success and cycling is seen as an intrinsic part of the solution.

The aim of the project is to deliver a comprehensive integrated network for cycling and walking between key destinations such as rail stations, major settlements, secondary schools and large employment sites to enhance accessibility and cycling as a principal mode of transport.

The programme links appropriately with the region's Transport Strategy for the City and South Cambridgeshire (TSCSC) and the City Deal where the aim is to provide sustainable transport links between economic hubs and areas of housing and services.

The CCA funding will create new, segregated cycle paths along some of Cambridge's most used cycle routes and will also provide much improved cycle facilities to some of the major employment sites in the South Cambridgeshire district. Local match funding will provide parking for 3,000 bicycles at Cambridge station and a new direct foot/cycle route between the station and Cambridge Science Park - a major employment centre for the city that has a new station planned to open in 2015.

In the city of Cambridge phase one of investment focuses on improvements in Trumpington Rd, Huntingdon Rd and Hills Rd and interventions include building segregated sections of infrastructure and some on highway improvements. Figure 1.1 shows these on a map.

1.5 Impacts

The ultimate aim of the CCA investment in Cambridge is to achieve modal shift to cycling to an ambitious 40% across the city region.

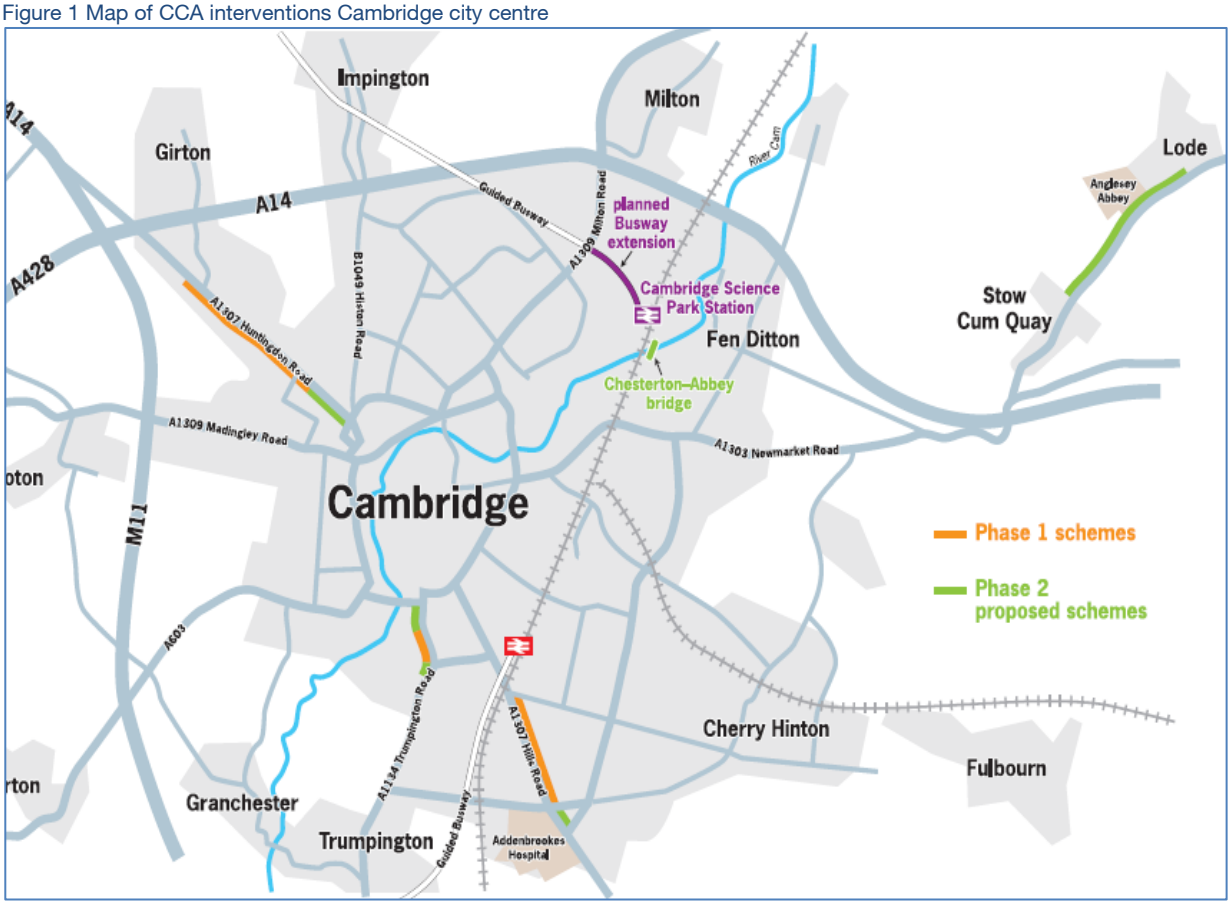
Though the GC[3] programme is for ten years, Cambridgeshire County Council initially calculated the Average Annual Value (AAV) of the first two years of investment to reflect the funding situation at that time.

The forecast calculated as part of the bid predicted the following:

- accident reductions: £28,633,363
- anticipated savings to the NHS: £1,982,808
- reduced pollution: £2,147,144
- journey ambience improvements: £2,612,752
- life years saved: 845
- CO_2 emissions reduction: 1,466.7 tonnes

The Benefit-Cost Ratio (BCR) for the scheme was estimated to be 11.3:1.

Figure 1 Map of CCA interventions Cambridge city centre



Source: Cambridgeshire County Council

2 Key research questions

2.1 Themes and research questions

The aims and objectives from the original city bid documents were reviewed and ten common themes were identified within the predicted outcomes. These themes were used as the basis for formulating the following research questions, and are common to all cities:

1) What impact has the CCA investment had upon levels of cycling?
2) What are the related benefits of mode shift from car or van to bicycle in terms of user's health, congestion levels and carbon emissions?
3) To what extent has the CCA investment affected the number of people taking integrated cycling and public transport journeys?
4) To what extent has the CCA investment altered perceptions of the safety of cycling?
5) To what extent has the CCA investment affected the demographic balance of cyclists?
6) What is the Benefit to Cost Ratio (BCR) of the investment?
7) What opportunities are there for further evaluation, and how will this enhance current data collection?

2.2 Recommended and additional metrics

A series of consultation meetings between Sustrans and each of the cities' monitoring leads took place to establish current and planned monitoring provision for CCA. Sustrans worked with cities to understand the existing data that was available to them. This existing data was shared with Sustrans with a view to formulating the programme baseline.

Within each theme, metrics were determined against which programme impacts could be monitored throughout the project lifespan. Furthermore, potential data sources were defined against each metric, specifying how these metrics would be reported on. The results of this exercise are detailed in Table 2-1.

The data and monitoring information provided by cities were mapped to the research questions, and an assessment was made as to whether they were sufficient to measure the impacts of the CCA investment at intervention level, and more broadly in the city.

Table 2-1 differentiates between recommended and additional metrics. Recommended metrics are those which cities must address in order to report on the theme. Recommended metrics are monitored by data from counts, user surveys and the Active People Survey (APS)[16]. For consistency across the programme, it should be noted that all the cities have exactly the same metrics.

The exception is for the theme 'Integration with levels of public transport', for which parked bicycle counts are required: these are only required when cities aim to impact upon this area. In phase one of investment Cambridge will not report on this theme.

The additional metrics draw upon a wider range of data sources and would help to deliver stronger insight into answering the research questions. As some of these can be quite context specific (e.g. of limited applicability to some cities' schemes) and resource intensive, these are not a monitoring requirement of cities. However, a number of cities are planning, where appropriate, to undertake additional monitoring. This will help to strengthen the evidence base regarding the impacts of the CCA investment in a number of ways (see Section 3 for more details).

Thus, the recommended measures are the minimum monitoring that all cities will undertake and the additional metrics are ones that would allow stronger statements about impact to be made more robust and their uptake will vary across the cities.

2.3 Monitoring and evaluation

Sustrans recommend that cities should collect data periodically throughout the ten year programme at the location of intervention(s). This data will provide important evidence as part of the wider evaluation of the scheme's impacts in response to the research questions outlined above.

Furthermore, to effectively evaluate the outcomes, it is recommended that city wide data is collected. The changes at the intervention can therefore be compared with the city wide picture to make a stronger statement about attribution and impact.

Within Table 2-1 there are therefore columns note whether a data source provides information at intervention or a city wide level. By intervention it is meant that the user surveys or counts are undertaken on the CCA intervention or at a point where cyclists using the improved route must pass (e.g. further along a canal towpath where there are no entrances or exits past the intervention). City wide data refers to cycle and transport monitoring within the city that is not specific to users of CCA infrastructure; for example, the wider ACC network or a travel behaviour survey exploring the habits of the city or regional population. In the case of the Active People Survey (APS), this is a national

[16] Sport England Active People Survey www.gov.uk/government/organisations/department-for-transport/series/walking-and-cycling-statistics

dataset available to all cities to draw upon. At city or regional level there could also be complementary data sources that would enable a more robust picture to be built up.

Table 2-1 Themes, metrics and data sources for monitoring the impacts of CCA investment

Theme	Metric	Proposed Data Source	Intervention	City Wide
Change in levels of cycling	**Recommended**			
	Percentage change in cycling trips made utilising the intervention	Automatic cycle counter data from the intervention/manual count data from the intervention	✓	
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	Automatic cycle counter/manual count data from the intervention and from the whole city area	✓	✓
		Automatic cycle counter/manual count data from the intervention and the Active People survey	✓	✓
Change in level of integration with public transport links	**Recommended***			
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs *Not a recommended metric for Cambridge at phase one of investment	Cycle parking counts	✓	✓
	Additional			
	Percentage change in people taking integrated cycling and public transport trips	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	Perception survey of people parking at public transport hubs	✓	✓
The effect on users health	**Recommended**			
	Percentage of users that have increased their frequency of cycling	User survey at the intervention linked to the count changes to calculate number	✓	
		Active People Survey (city as a whole) linked to the count changes		✓
	Percentage of users that report a feeling of improved health and/or wellbeing	User survey at the intervention linked to the count changes	✓	
	Additional			
	Percentage of users that have increased their frequency of cycling	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
		Household travel survey		✓
		Household survey with boosted sample at intervention location	✓	✓

Theme	Metric	Proposed Data Source	Intervention	City Wide
Change in levels of accidents	**Recommended**			
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	STATS19	✓	✓
	Additional			
	Percentage of interactions that are 'unsafe interactions'	Video analysis	✓	
The effect on CO_2 emissions	**Recommended**			
	Amount of CO_2 saved due to modal shift toward cycling	User survey at the intervention linked to the count changes to calculate amount	✓	
	Additional			
	Amount of CO_2 saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
	Amount of local pollutants saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
Employment and economic effects	**Recommended**			
	No recommended metric			
	Additional			
	Percentage change in levels of absence in the workplace	Absence records	✓	✓
		Workplace travel surveys	✓	✓
The effect of congestion levels	**Recommended**			
	Number of trips made by bicycle which were previously made by car/van during peak periods	User surveys linked to the count changes to calculate number	✓	
	Additional			
	Number of trips made by bicycle which were previously made by car/van during peak periods	Workplace travel surveys	✓	✓
		Personal travel diaries		✓
Levels of awareness and perceptions of safety	**Recommended**			
	Percentage of users that have a positive perception of safety at the intervention	User survey at the intervention	✓	

Theme	Metric	Proposed Data Source	Intervention	City Wide
	Additional			
	Percentage change in users perceptions of safety at the intervention Percentage of users that have a positive perception of safety	Household survey Personal travel diary	✓ ✓	✓
Changes in levels of cycling by demographic	**Recommended**			
	Ratio of female and male cyclists	User surveys Active People survey	✓	 ✓
	Additional			
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	Household survey Workplace surveys Personal travel diary	 ✓	✓ ✓ ✓
Value for money	**Recommended**			
	BCR	Users surveys combined with intervention specific counts	✓	
	Additional			
	Percentage of people that have a positive perception of value for money of the CCA investment Percentage of people that have a positive perception of value for money of investment in highways projects that aim to benefit users of motorised transport	Perceptions surveys linked to the count changes Perception surveys linked to the count changes Perception surveys linked to the count changes	✓ ✓ ✓	

3 Recommendations for monitoring the ten-year programme

This section sets out recommendations for data collection when monitoring the 'recommended metrics' set out in the previous section. The following focuses upon collection of primary data and therefore secondary sources of data such as the Active People Survey and STATS19 national datasets are not included. The "How to" guides provide details on how to process and analyse the data.

Recommendations for data collection are as follows:

3.1 Counts

There should be a comprehensive network of counts within the city to establish the numbers cycling, and this must include intervention specific sites. Cities will decide which typology of count is most

appropriate for their cycle network and CCA programme; whether these are screenline, cordon, routes to particular destinations or multiple counts on selected keys routes will be a matter for the cities to decide. Within each group, manual or automatic counts can be selected accordingly.

3.1.1 Manual counts

To establish usage at a particular point or points on a network using a manual count, Sustrans recommends the following:

- counts should be a minimum of twelve hours 07:00 until 19:00
- manual counts can be taken as part of a user survey
- counts should be conducted at a consistent location
- counts should be conducted at the same time of year
- where feasible, pre intervention counts should be conducted

Counts taken as part of the baseline should be repeated periodically throughout the ten year programme. These should be at the same location and should also be conducted at the same time of year.

Best practice: Four day counts annually, one per season or clustered. Gender and age category (child under 16 / adult / 65+) recorded.

Minimum: Annually. Gender and age category (child under 16 / adult / 65+) recorded.

3.1.2 Automatic cycle counters

ACCs should be installed with new infrastructure where viable. Appropriate intervals will again be determined by the nature and scale of the intervention, and the number should be proportionate. For example, a minimum of one ACC should be installed on a new linear route, though practical considerations, such as whether paths are traffic free will also be factors. Data taken from ACCs need to be checked regularly, and should be calibrated.

Minimum: one ACC installed on a new linear route.

3.2 User surveys

User surveys with cyclists at the intervention should be conducted throughout the programme. User surveys at three locations was deemed appropriate for Cambridge at phase one. Surveys should include specific and consistent questions (please see the user survey “How to” guide for example questions) to establish:

- journey purpose and length
- any change in mode of transport away from car or van use
- whether the user could have used a car/van for the journey
- whether the scheme has impacted on the user’s behaviour
- reported improvement in health/wellbeing
- perceptions of safety of the route
- demographic information (age, gender, employment status, ethnicity, income)

Best practice: annual surveys at the same location.

Minimum: every three years at the same location.

Delivery of the surveys will be determined by cities; however it is essential that sites are selected to interview cyclists either on CCA routes or where this is not practical, at a location that will capture flows from the intervention.

The number of user surveys should increase to provide adequate coverage as the network grows with future investment.

3.2.1 Cycle parking counts

To report on integration with public transport links, Sustrans recommend cycle parking counts at key public transport hubs. This should be measured consistently throughout the programme and include the number of bicycles at the relevant transport hubs.

Best practice: Four day counts annually, one per season or clustered.

Minimum: Annually.

4 Cambridge's monitoring data

This section sets out the data that Sustrans have collected from Cambridge when compiling this report.

4.1 ACC and manual count data

It is important to note that this report does not quote actual count figures, but rather percentage changes from a previous point in time (one to three years before). This is to ensure that the counts compared are alike, and to minimise the risks associated with the number of counts varying both within and between cities from year to year.

ACC and manual count data have been used to calculate the following metrics:

a. Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Change in levels of cycling)

All of these data have been provided in the **'Collated Counter'** spreadsheet.

The percentage change of 4% between 2012 and 2013 is based upon the change in eight ACCs. Cambridge is actively increasing its number of counts by conducting manual counts and installing new ACCs. There was a further 14% increase on eight ACCs between 2013 and 2014.

Six manual counts were undertaken in 2013 on CCA interventions. Future iterations of these counts will provide comparisons to report against the related metrics.

Table 4-1 Percentage change in counter data 2012-2014

	2012/13	2013/14
Intervention		
City level	4%	14%

4.2 Active People Survey

The Active People Survey (APS) have been used to calculate the following metrics:

a. Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Change in levels of cycling)

b. Percentage of users that have increased their frequency of cycling. (Effect on users' health)

The APS was chosen as a recommended data source due to the accessibility of the data to all cities; however, as outlined in section 3.2 in the main report, there are considerable limitations. Of the sample at the city level (approximately 500), few are cyclists, and so modest change can result in large proportionate increases or decreases, as seen below.

Table 4-2 Proportion of residents who cycle at a given frequency in Cambridge

	2011/2012 (sample size =501)	2012/2013 (sample size =500)
Cycle at least five times per week	25%	26%
Cycle at least three times per week	35%	38%
Cycle at least once per week	47%	49%
Cycle at least once per month	51%	58%

The APS has shown a 6% increase in the level of cycling from 2011/2012 to 2012/2013. Applying the proportions in Table 4-2 to Cambridge's population suggests that an estimated 667,646 trips were undertaken annually in 2012/13. This was a 6% increase in the number of trips in 2011/12. As discussed previously, it should be noted that the reliability of these estimates is questionable due to the relatively low number of cyclists represented in the APS sample at the city level.

Furthermore, percentage changes derived from a small base result in high corresponding increases or decreases. Employing additional data collection tools would enable increased levels of rigour in reporting.

The 2013/2014 figures should be used to calculate the percentage change for the next APS report.

4.3 Populating the scorecard

The percentage changes obtained from the data sources discussed above can be used to report against a number of metrics.

An example of the related section of the scorecard (see section 5) is illustrated below in Figure 2. There is a box for results from each data source (denoted by an asterisk and letter in the top right hand corner – the key is below the table).

Figure 1 Example section of the scorecard

	2013		2014	
Metric	Intervention	City	Intervention	City Wide
Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	*C	*C+ 4%		*C+ 14%
	*C	*AP 6%		*AP

*C Automatic cycle counter data or manual count data from the intervention
*C+ Automatic cycle counter data from the wider city area
*AP Active People Survey

5 Scorecard

This section provides the scorecard in which percentage changes will be reported against the related metrics.

In the top right hand corner of each box, a letter represents the data source from which the figure was obtained. The key is above Figure 3 below.

Sustrans have provided "How to" guidance documents on how to extract, process and compare data from the recommended sources for the scorecards. The user surveys which cities have committed too will provide data for a considerable number of the metrics, which are largely incomplete at baseline.

Cities will provide DfT with an updated scorecard every year, showing the percentage change from the previous year for all of the recommended metrics, and the additional where possible.

Figure 3 Cambridge scorecard

Data Sources Key:			
C	Automatic cycle counter data or manual count data from the intervention		
C+	Automatic cycle counter data or manual count data from the wider city area		
AP	Active People Survey	CP.	Cycle parking counts
PD.	Personal travel diaries	WS.	Workplace travel surveys
PS.	Perception survey	H.	Household travel survey
H+	Household travel survey with boosted sample around intervention		
S19	STATS 19	VA.	Video analysis
AR.	Employer absence records		

Theme	Metric	2013		2014		2015		.....	2024	
	Intervention change (I) or City Wide change (CW)	I	CW	I	CW	I	CW		I	CW
Change in levels of cycling	**Recommended metrics**									
	Percentage change in cycling trips made utilising the intervention	*C		*C		*C			*C	
	Percentage change in cycling trips made utilising the intervention, and percentage	*C	4% *C+	*C	14% *C+	*C	*C+		*C	*C+
		*C	6% *AP	*C	*AP	*C	*AP		*C	*AP
Change in level of integration with public transport links	**Recommended metrics**									
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	*CP		*CP		*CP			*CP	
	Additional metrics									
	Percentage change in people taking integrated cycling and public transport trips	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	*SS		*SS		*SS			*SS	
The effect on users' health	**Recommended metrics**									
	Percentage of users that have increased their frequency of cycling	*US	6% *AP	*US	*AP	*US	*AP		*US	*AP
	Percentage of users that report a feeling of improved health and/or wellbeing	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have increased their frequency of cycling	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
			*H		*H		*H			*H
		*H+	*H+	*H+	*H+	*H+	*H+		*H+	*H+
Change in levels of accidents	**Recommended metrics**									
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	*S19	*S19	*S19	*S19	*S19	*S19		*S19	*S19
	Additional metrics									
	Percentage of interactions that are 'unsafe interactions'	*VA		*VA		*VA			*VA	
The effect on CO2 emissions	**Recommended metrics**									
	Amount of CO2 saved due to modal shift toward cycling	*US		*US		*US			*US	
	Additional metrics									
	Amount of CO2 saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
	Amount of local pollutants saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Employment and economic effects	**Recommended metrics**									
	No requisite									
	Additional metrics									
	Percentage change in levels of absence in the workplace	*AR		*AR		*AR			*AR	
		*WS		*WS		*WS			*WS	

The effect on congestion levels	**Recommended metrics**									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*US		*US		*US			*US	
	Additional metrics									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Levels of awareness and perceptions of safety	**Recommended metrics**									
	Percentage of users that have a positive perception of safety at the intervention	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have a positive perception of safety	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Changes in levels of cycling by demographic	**Recommended metrics**									
	Ratio of female and male cyclists	*C	*AP	*C	*AP	*C	*AP		*C	*AP
	Additional metrics									
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Value for money	**Additional metrics**									
	Percentage of people that have a positive perception of value for money of the CCA investment	*US		*US		*US			*US	
	Percentage of people that have a positive perception of value for money of investment in carbon based transport projects	*US		*US		*US			*US	

6 Summary of communications and future monitoring plans

The gaps analysis exercise highlighted a need for user surveys at three locations on CCA intervention sites at the 2015 baseline, and the DfT grant towards monitoring and evaluation provided £5,660 towards the cost of these surveys.

A brief summary of the points clarified and committed to is as follows:

User surveys
Recommendation: User surveys at three locations to be conducted at appropriate locations on the CCA network. These should be repeated at appropriate intervals throughout the programme, best practice being every year, the minimum frequency being every three years.

Clarification was provided on the following areas:

Cambridgeshire County Council will determine the locations and timescale of the user surveys. Sustrans clarified that these must be on phase one Cycle City Ambition interventions to report on the recommended metrics.

The grant will provide funding towards the cost of the first iteration of user surveys, though it is not anticipated that the grant will cover the cost of all three surveys.

To what extent the cost is covered will depend upon how Cambridge chooses to deliver the surveys; there is no obligation to use the Sustrans Route User Intercept Survey.

There is an expectation that cities will source funding for the surveys not covered by the grant, and for future iterations.

The user surveys must collect data on themes specified in the recommendations section of this report (section 3) to enable reporting on the metrics in the scorecard (section 5).

Commitments and additional monitoring

Cambridgeshire County Council will undertake four user surveys; three on CCA intervention sites as required, plus an additional survey in the city centre to follow up on the Route User Intercept Survey conducted by Sustrans in 2011.

The first iteration of these surveys will take place in 2015, and be repeated in 2018. Cambridgeshire County Council will endeavour to repeat the survey in 2021.

Counts of users

Recommendation

Counts of users, ACC or manual, to be conducted at CCA intervention sites, periodically throughout programme.

Clarification was provided on:

Cambridgeshire County Council confirmed that the additional manual counts conducted as part of CCA baseline monitoring will continue throughout the programme.

Commitments and additional monitoring:

Cambridgeshire County Council has given commitment that it will:

Install an automatic counter on each of the four rural schemes/routes of the phase one CCA projects.

Install a city bound and an outbound automatic counter on Hills Road.

Install a city bound automatic counter on Huntingdon Road.

Install an outbound automatic counter on Trumpington Road.

Cycle parking counts

Recommendation

To report on integration with public transport links, it is necessary to conduct cycle parking counts and key public transport hubs.

Clarification was provided on

Not all CCA programmes will aim to impact upon integration with public transport links, and therefore not all cities will report on this metric.

To report on this metric the counts have to be taken at public transport hubs directly benefitting from CCA interventions.

Commitments and additional monitoring

Cambridgeshire County Council has previously recorded the number of parked bikes at Cambridge railway station and there are also data available from park and ride schemes.

Additional levels of monitoring and evaluation

Though there was a household survey conducted in 2009, there are currently no plans to repeat this.

Cambridgeshire County Council conducts workplace travel surveys, and has provided Sustrans with the cycling mode share of employees cycling to work.

From 2015 the percentage of people taking integrated trips will be available from workplace surveys.

Phase Two of Cycle City Ambition

As part of the discussion around the gaps analysis report, Sustrans and Cambridgeshire City Council also talked about the monitoring and evaluation of future investment.

For phase two Cambridgeshire County Council is committed to the following measures:

Undertake baseline manual counts on CCA intervention;

Compile before accident data;

Compile data on existing cycling mode share for an employer based near each scheme;

Install an ACC on Lode to Quy and Cambridge to Foxton routes once completed;

Install an ACC on an approach to Abbey-Chesterton bridge;

Conduct user surveys on Abbey-Chesterton bridge once completed.

7 Next Steps and timeline

Cambridgeshire County Council will determine the locations and timeframe of the recommended user surveys, but baseline data should be collected at the earliest appropriate opportunity for each location.

Alongside this report are guides detailing step by step how to use results from recommended data sources to populate the scorecard.

Throughout the programme cities should provide an annual update of their evaluation findings to DfT. As outlined in section 2.1 'recommendations for monitoring and evaluation of the ten year programme', counts and user surveys should be increased accordingly so that the programme of monitoring provides adequate coverage of the interventions.

7.1 Timeline

August 2013 DfT £77m Cycle City Ambition funding announced - £4.1m for Cambridge, match funding of £4.1m

2013 Cambridge starts to implement phase one of the 'Cycle Revolution'

November 2014 A further £6m announced for Cambridge's CCA scheme

March 2015 Sustrans gaps analysis document issued to Cambridge, with recommendation for user surveys at three locations

March 2015 DfT awards Cambridge £5,660 towards the recommended user surveys

2015 Cambridge County Council to select sites and conduct four user surveys

2015/16 Baseline data to be collected for phase two of investment

2016 – 2023 Monitoring and evaluation data sent to DfT annually and scorecard populated

2018 - 2023 Repeat user surveys every three years, including any additional locations added for further rounds of funding, in the same locations and at the same time of year.

Appendix 4

Greater Manchester

1 Introduction

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

This report outlines the following:

- The project scope in understanding and enhancing monitoring and evaluation of the CCA programme
- An overview of the scheme in Manchester and the expected outcomes
- Sustrans' recommendations for monitoring and evaluating the CCA investment
- Transport for Greater Manchester (TFGM)'s data collection commitments
- next steps, including guidance documents on how to populate the scorecard

1.1 Summary

Project scope in terms of monitoring and evaluation of CCA schemes

- Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.
- Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.
- Sustrans worked with the CCA cities to identify gaps in data collection, and made recommendations to ensure that comparable programme wide data is collected.

Velocity

- Manchester received £20m in CCA funding in 2013 and £22m in 2015 for phases one and two of the Cycle Revolution programme.
- The CCA programme provides the following interventions:
    - seven Cycleways
    - seven Cycle and Ride stations
    - a programme of cycle-related investment at schools and colleges
- The target outcome is to secure at least a 300% increase in levels of cycling across Greater Manchester by 2025.
- The three main objectives of the scheme are carbon reduction, congestion reduction and access to employment.

Recommendations

- Recommendations for monitoring include:
    - counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted

at CCA intervention sites, periodically throughout programme

- fifteen user surveys to be conducted at appropriate locations on the CCA network, and to be repeated a minimum of every three years
- counts of parked bicycles at key public transport hubs (if cities choose to report on integration with public transport)

Commitments

- TFGM have given commitment that they will install new ACCs with new pieces of infrastructure.
- TfGM is confirming how often it will carry out its cycle parking counts at CCA stations.
- TfGM is confirming how often it will carry out perception surveys at each CCA station.
- TfGM is confirming how often it will carry out a count of users by age (child under 16 / adult / over 65) at each CCA station. It should be noted that these can be completed as part of a perception survey.

Next steps

- baseline data should be collected at the earliest appropriate opportunity for each location, TFGM will determine the exact locations and timeframe to suit the programme
- throughout the program, cities should provide an annual update of their evaluation findings to DfT

1.2 Project scope

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

Cities provided their monitoring and evaluation plans for their programmes, and also shared available baseline data.

Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.

Another component of this exercise was the allocation of a £100,000 grant, provided by DfT to support the monitoring and evaluation activities of the CCA cities. Sustrans identified that supporting the cities in the undertaking of user surveys alongside manual cycle counts would be the most effective use of the grant. A recommended number of user surveys was determined for each city, firstly based upon the scale of investment and then adjusted to parallel the number of elements of infrastructure in phase one.

In conclusion, recommendations were made for the future monitoring and evaluation of the CCA programme, and a scorecard was produced for cities to populate with data against the metrics.

1.3 Cycle City Ambition Grant

In August 2013 the CCA programme in Greater Manchester received £20 million in DfT funding – the largest of the CCA grants - and £11.1 million in local match funding, giving a total of £31.1 million to implement the proposed measures.

In November 2014, a further £22m was awarded to Greater Manchester.

1.4 Velocity

The CCA funded schemes are part of the wider TfGM Velocity 2025 strategy, which has a vision of '…a healthy, safe, sustainable city region where people want to live and work'. To meet this vision, TfGM designed a programme of investment that, within a generation, will make cycling a mainstream, everyday, aspirational form of transport for all, regardless of age or ability.

The following interventions are funded by CCA investment:

- seven Cycleways
- seven Cycle and Ride stations
- a programme of cycle-related investment at schools and colleges

Cycleways The core of the CCA scheme is a 56km network of continuous cycle routes, largely segregated, improving cycle access to key destinations of employment, education and training. These will be implemented as a series of 'spokes' (see figure 1) from the regional centre towards the M60. Figure 1.1 illustrates the cycle ways in a spokes map.

The Prestwich "City View" Cycleway is a new cycle link to Manchester City Centre from Prestwich and Heaton Park using quiet roads and a mix of both on and off-highway segregated cycle paths.

The Ashton Canal Cycleway provides an off-highway cycle route from Ashton to Manchester City Centre by upgrading 8km of the Ashton canal towpath.

The Mersey Valley and Stockport Cycleway bridges the severance caused by the M60 motorway and the River Mersey. Fully-segregated cycle tracks will link Cheadle to The Corridor SuperCycleway alongside upgrades to the TransPennine Trail.

The Bridgewater Cycleway is a final 4km section of improvements to the Bridgewater Canal towpath to provide a traffic free cycle route from the south west of the conurbation right into the heart of Manchester City Centre.

The Media City and Quays Cycleway consists of expanding routes being provided under LSTF to provide facilities that will be used by cyclists of differing abilities to access to Media City and Salford Quays via Salford University.

The Corridor SuperCycleway is a continuation of investment in cycle improvements as part of the Cross City Bus Priority package together with 7km of on-highway, largely segregated, cycle route improvements on Wilmslow Road to East Didsbury.

The Airport City Enterprise Cycleway comprises new and improved cycle routes between the proposed developments at Manchester Airport and adjacent residential areas to the east, north and west.

Cycle & Ride Stations Gatley, Guide Bridge and Flixton rail stations and Prestwich, East Didsbury and Hillinwood Metrolink stops will have improved access and parking for cyclists.

Schools & Colleges Investment will be at those located close to the proposed cycle route upgrades where the schools are committed to behavioural change programmes for their students. Improved cycle parking and access arrangements for selected secondary schools and colleges will be provided.

TfGM will also deliver a programme of 'behaviour change' travel choice interventions alongside infrastructure changes.

Figure 1 Velocity Spokes map

Source: TfGM

1.5 Impacts

The target outcome of the Vélocity 2025 programme is to secure at least a 300% increase in the levels of cycling across Greater Manchester by 2025.

The Vélocity programme aims to increase the proportion of trips by bicycle to 10% over the next 12 years. Furthermore, Greater Manchester aim to double, and double again the proportion of trips made by bicycle, whether for commuting, utility or recreational cycling.

The CCA investment, by 2015, aims to:

- deliver 56km of largely segregated cycle route across Greater Manchester;
- generate 26,800 new cycle trips per day on these routes;
- improve the health and wellbeing to the value of £7.3m per year;
- provide business financial savings by reducing absenteeism of 1,000 days per year;
- remove 1.7m traffic km per year from Greater Manchester's roads reducing congestion

The Benefit to Cost Ratio (BCR) for the capital programme was estimated to be 6.7. With the locally funded Travel Choice programme, the estimated BCR rises to 7.15.

2 Key research questions

2.1 Themes and research questions

The aims and objectives from the original city bid documents were reviewed and ten common themes were identified within the predicted outcomes. These themes were used as the basis for formulating the following research questions, and are common to all cities:

1) What impact has the CCA investment had upon levels of cycling?
2) What are the related benefits of mode shift from car or van to bicycle in terms of user's health, congestion levels and carbon emissions?
3) To what extent has the CCA investment affected the number of people taking integrated cycling and public transport journeys?
4) To what extent has the CCA investment altered perceptions of the safety of cycling?
5) To what extent has the CCA investment affected the demographic balance of cyclists?
6) What is the Benefit to Cost Ratio (BCR) of the investment?
7) What opportunities are there for further evaluation, and how will this enhance current data collection?

2.2 Recommended and additional metrics

A series of consultation meetings between Sustrans and each of the cities' monitoring leads took place to establish current and planned monitoring provision for CCA. Sustrans worked with cities to understand the existing data that was available to them. This existing data was shared with Sustrans with a view to formulating the programme baseline.

Within each theme, metrics were determined against which programme impacts could be monitored throughout the project lifespan. Furthermore, potential data sources were defined against each metric, specifying how these metrics would be reported on. The results of this exercise are detailed in Table 2-1.

The data and monitoring information provided by cities were mapped to the research questions, and an assessment was made as to whether they were sufficient to measure the impacts of the CCA investment at intervention level, and more broadly in the city.

Table 2-1 differentiates between recommended and additional metrics. Recommended metrics are those which cities must address in order to report on the theme. Recommended metrics are monitored by data from counts, user surveys and the Active People Survey (APS). For consistency across the programme, it should be noted that all the cities have exactly the same metrics.

The additional metrics draw upon a wider range of data sources and would help to deliver stronger insight into answering the research questions. As some of these can be quite context specific (e.g. of limited applicability to some cities' schemes) and resource intensive, these are not a recommended monitoring requirement of cities. However, a number of cities are planning, where appropriate, to undertake additional monitoring. This will help to strengthen the evidence base regarding the impacts of the CCA investment in a number of ways (see Section 3 for more details).

Thus, the recommended measures are the minimum monitoring that all cities will undertake and the additional metrics are ones that would allow stronger statements about impact to be made more robust and their uptake will vary across the cities.

The exception is for the theme 'Integration with levels of public transport', for which parked bicycle counts are required: these are only required when cities aim to impact upon this area. In phase one of investment Greater Manchester will report on this theme.

Furthermore, for this theme Greater Manchester have an additional recommended metric of 'Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above'. This is because a significant amount of their funding has gone into improvement works at stations, which is unique within the CCA programme.

2.3 Monitoring and evaluation

Sustrans recommend that cities should collect data periodically throughout the ten year programme at the location of intervention(s). This data will provide important evidence as part of the wider evaluation of the scheme's impacts in response to the research questions outlined above.

Furthermore, to effectively evaluate the outcomes Sustrans also recommends that city wide data is collected. The changes at the intervention can therefore be compared with the city wide picture to make a stronger statement about attribution and impact.

Within Table 2-1 there are therefore columns that note whether a data source provides information at intervention or a city wide level. By intervention it is meant that the user surveys or counts are undertaken on the CCA intervention or at a point where cyclists using the improved route must pass (e.g. further along a canal towpath where there are no entrances or exits past the intervention). City wide data refers to cycle and transport monitoring within the city that is not specific to users of CCA infrastructure; for example, the wider ACC network or a travel behaviour survey exploring the habits of the city or regional population. In the case of the Active People Survey (APS), this is a national dataset

available to all cities to draw upon. At city or regional level there could also be complementary data sources that would enable a more robust picture to be built up.

Table 2-1 Themes, metrics and data Sources for monitoring the impacts of CCA investment

Theme	Metric	Proposed Data Source	Intervention	City Wide
Change in levels of cycling	**Recommended**			
	Percentage change in cycling trips made utilising the intervention	Automatic cycle counter data from the intervention/manual count data from the intervention	✓	
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	Automatic cycle counter/manual count data from the intervention and from the whole city area	✓	✓
		Automatic cycle counter/manual count data from the intervention and the Active People survey	✓	✓
Change in level of integration with public transport links	**Recommended**			
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	Cycle parking counts	✓	✓
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	Station survey of users of parking at public transport hubs	✓	
	Additional			
	Percentage change in people taking integrated cycling and public transport trips	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
			✓	✓
The effect on users health	**Recommended**			
	Percentage of users that have increased their frequency of cycling	User survey at the intervention linked to the count changes	✓	
		Active People Survey (city as a whole) linked to the count changes		✓
	Percentage of users that report a feeling of increased health and/or wellbeing	User survey at the intervention linked to the count changes	✓	
	Additional			
	Percentage of users that have increased their frequency of cycling	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
		Household travel survey		✓
		Household survey with boosted		

Theme	Metric	Proposed Data Source	Intervention	City Wide
		sample at intervention location	✓	✓
Change in levels of accidents	**Recommended**			
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	STATS19 and count data at the intervention	✓	✓
	Additional			
	Percentage of interactions that are 'unsafe interactions'	Video analysis	✓	
The effect on CO_2 emissions	**Recommended**			
	Amount of CO_2 saved due to modal shift toward cycling	User survey at the intervention linked to the count changes to calculate amount	✓	
	Additional			
	Amount of CO_2 saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
	Amount of local pollutants saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
Employment and economic effects	**Recommended**			
	No recommended			
	Additional			
	Percentage change in levels of absence in the workplace	Absence records	✓	✓
		Workplace travel surveys	✓	✓
The effect of congestion levels	**Recommended**			
	Number of cars taken off the road during peak periods	User surveys linked to the count changes to calculate number	✓	
	Additional			
	Number of cars taken off the road during peak periods	Workplace travel surveys	✓	✓
		Personal travel diaries		✓
Levels of awareness and perceptions of safety	**Recommended**			
	Percentage of users that have a positive perception of safety at the intervention	User survey at the intervention	✓	

Theme	Metric	Proposed Data Source	Intervention	City Wide
	Additional			
	Percentage change in users perceptions of safety at the intervention Percentage of users that have a positive perception of safety	Household survey Personal travel diary	✓ ✓	✓
Changes in levels of cycling by demographic	**Recommended**			
	Ratio of female and male cyclists	User surveys Active People survey	✓	 ✓
	Additional			
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	Household survey Workplace surveys Personal travel diary	 ✓	✓ ✓ ✓
Value for money	**Recommended**			
	BCR	Users surveys and with intervention specific counts	✓	
	Additional			
	Percentage of people that have a positive perception of value for money of the CCA investment Percentage of people that have a positive perception of value for money of investment in highways projects that aim to benefit users of motorised transport	User surveys linked to the count changes User surveys linked to the count changes User surveys linked to the count changes	✓ ✓ ✓	

3 Recommendations for monitoring the ten-year programme

This section sets out recommendations for data collection when monitoring the 'recommended metrics' set out in the previous section. Though it is recommended that cities also use secondary sources of data such as the Active People Survey and STATS19 national datasets, this section covers the collection of primary data only. Alongside this report are "How to" guides, which provide instructions as to how the data should then be processed.

Recommendations for data collection are as follows:

3.1 Counts

There should be a comprehensive network of counts within the city to establish the numbers cycling, and this must include intervention specific sites. Cities will decide which typology of count is most appropriate for their cycle network and CCA programme; whether these are screenline, cordon, routes to particular destinations or multiple counts on selected keys routes will be a matter for the cities to decide. Within each group, manual or automatic counts can be selected accordingly.

3.1.1 Manual counts

To establish usage at a particular point or points on a network using a manual count, Sustrans recommends the following:

- counts should be a minimum of twelve hours 07:00 until 19:00
- manual counts can be taken as part of a user survey
- counts should be conducted at a consistent location
- counts should be conducted at the same time of year
- where feasible, pre intervention counts should be conducted

Counts taken as part of the baseline should be repeated periodically throughout the ten year programme. These should be at the same location and should also be conducted at the same time of year.

Best practice: Four day counts annually, one per season or clustered. Gender and age category (child under 16 / adult / 65+) recorded.

Minimum: Annually. Gender and age category (child under 16 / adult / 65+) recorded.

3.1.2 Automatic cycle counters

ACCs should be installed with new infrastructure where viable. Appropriate intervals will again be determined by the nature and scale of the intervention, and the number should be proportionate. For example, a minimum of one ACC should be installed on a new linear route, though practical considerations, such as whether paths are traffic free will also be factors. Data taken from ACCs need to be checked regularly, and should be calibrated.

Minimum: one ACC installed on a new linear route.

3.2 User surveys

User surveys with cyclists at the intervention should be conducted throughout the programme. Surveys should include specific and consistent questions (please see the user survey “How to” guide for example questions) to establish:

- journey purpose and length
- any change in mode of transport away from car or van use
- whether the user could have used a car/van for the journey
- whether the scheme has impacted on the user’s behaviour
- reported improvement in health/wellbeing
- perceptions of safety of the route

- demographic information (age, gender, employment status, ethnicity, income)

Best practice: annual surveys at the same location.

Minimum: every three years at the same location.

Delivery of the surveys will be determined by cities; however it is essential that sites are selected to interview cyclists either on CCA routes or where this is not practical, at a location that will capture flows from the intervention.

The number of user surveys should increase to provide adequate coverage as the network grows with future investment.

3.3 Cycle parking counts

To report on integration with public transport links, cycle parking counts at key public transport hubs are recommended. This should be measured consistently throughout the programme and include the number of bicycles at the relevant transport hubs.

Best practice: Four day counts annually, one per season or clustered.

Minimum: Annually.

3.4 Station surveys

Station surveys at CCA train and metro stations should be conducted throughout the programme. Surveys should include consistent questions to ascertain the quality of cycle parking at key public transport hubs.

Best practice: annual surveys at the same location.

Minimum: every three years at the same location.

4 Greater Manchester's monitoring data

This section sets out the data that Sustrans have collected from Greater Manchester when compiling this report.

4.1 ACC and manual count data

It is important to note that this report does not quote actual count figures, but rather percentage changes from a previous point in time (one to three years before). This is to ensure that the counts compared are alike, and to minimise the risks associated with the number of counts varying both within and between cities from year to year.

ACC and manual data have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Change in levels of cycling)

All of these data have been provided in the '**Collated Counter'** spreadsheet.

It should be noted that the percentage changes in usage are based on a low number of counters. There is a percentage change of 48% between 2012 and 2013 is for just one ACC at city wide level. An decrease of 13% in cycling between 2013 and 2014 was calculated using 18 ACCs across Greater Manchester.

These percentage changes were not deemed robust to report against the metrics, due to the low number of counters providing data on a region of this size. However, TfGM are actively repairing their ACC network and aim to have 50 ACCs recording data across the city in the near future.

Manual counts were also conducted 'pre-' intervention, so the changes between these and the next iteration will be reported against the related metrics.

4.2 Active People Survey

The Active People Survey (APS) has been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Change in levels of cycling)

- Percentage of users that have increased their frequency of cycling. (Effect on users' health)

The APS was chosen as a recommended data source due to the accessibility of the data to all cities; however, as outlined in section 3.2 of the main report there are considerable limitations. Of the sample at the city level (approximately 500), few are cyclists, and so modest change can result in large proportionate increases or decreases, as seen below.

Table 4-1 Proportion of residents who cycle at a given frequency in Greater Manchester

	2011/2012 (sample size =5,079)	2012/2013 (sample size = 5,503)
Cycle at least five times per week	2%	1%
Cycle at least three times per week	3%	3%
Cycle at least once per week	7%	8%
Cycle at least once per month	12%	12%

The APS has shown an 11% decrease in the frequency of cycling from 2011/2012 to 2012/2013. Applying the proportions in Table 4-1 to Greater Manchester's population suggests that an estimated 22,920,223 trips were undertaken annually in 2012/13. This was an 11% decrease in the number of trips in 2011/2012. However, as discussed previously, the reliability of these estimates is questionable due to the relatively low number of cyclists represented in the APS sample at the city level. Furthermore, percentage changes derived from a small base can result in high corresponding increases or decreases. Employing 'additional' data collection tools, such as TRADS, would enable increased levels of rigour in reporting.

The 2012/13 and 2013/2014 APS figures should be used to calculate the percentage change for the next APS report.

4.3 Cycle parking counts

Cycle parking counts will be used to calculate the following metric:

- Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs. (Change in levels of integration with public transport)

TfGM does conduct cycle parking counts at stations and has committed to doing this for the duration of the CCA programme. The cycle parking counts supplied for baseline recorded little and sporadic data, and it was deemed that it was not possible to create any meaningful percentage change figure from this data.

4.4 Travel diaries

TfGM has supplied data from travel diaries (TRADS) to Sustrans for evaluation, however, they were submitted too late for the analysis to be included this report. TfGM can use the data to complete the scorecard where information on the relevant metrics is provided.

4.5 User surveys

User surveys have been used to provide the baseline data for the following metrics:

- percentage of users that have increased their frequency of cycling (Effect on users' health)
- percentage of users that report a feeling of increased health and/or wellbeing (Effect on users' health)
- amount of CO2 saved due to modal shift toward cycling (The effect on CO_2 emissions)
- number of cars taken off the road during peak periods (The effect on congestion levels)
- percentage of users that have a positive perception of safety at the intervention (Levels of awareness and perceptions of safety)

Data for the metric 'Percentage of users that have increased their frequency of cycling or new cycling trips' has been collected in 2014 and needs to be collected in a subsequent iteration to get a comparison figure and percentage – see the 'how to' guide for instructions. In 2014 the data points are:

- cycle 5+ days a week = 17%
- cycle 3 day a week = 11%
- cycle 1 day a week = 10 %
- cycle 1 day a month = 5%

For the metric 'Percentage of users that report a feeling of improved health and/or wellbeing' users were asked whether the presence of the route had helped then to increase the amount of physical activity they take. 43% answered that it increased their physical activity a large amount and 41% answered that it increased their physical activity a small amount, equalling 84% in total.

The user surveys TfGM is currently delivering will provide data to calculate the 'Amount of CO_2 saved due to modal shift toward cycling'. The surveys explore respondents' previous mode for making the same journey prior to the infrastructure being complete
The metric 'Number of cars taken off the road during peak periods' is derived from the same question.

For the metric 'Percentage of users that have a positive perception of safety at the intervention' users where asked whether the safety of the route had influenced their decision to cycle on that day. 42% strongly agreed and 33% agreed, equalling 75% in total.

4.6 Station surveys

Perception surveys are rail stations have been used to calculate the following metric:

- Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above.

Station users where asked whether they rated the station for cycle parking; 4% ranked it very good and 16% ranked in good equalling 20% in total.

4.7 Populating the scorecard

The percentage changes obtained from the data sources discussed above can be used to report against a number of metrics.

An example of the related section of the scorecard (see section 5) is illustrated below in Figure 2. There is a box for results from each data source (denoted by an asterisk and letter in the top right hand corner – the key is below the table).

Figure 1 Example section of the scorecard

	Year 1		Year 2	
Metric	Intervention	City	Intervention	City Wide
Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	*C	*C+	*C	*C+
	*C	*APS -11%	*C	*APS

*C Automatic cycle counter data or manual count data from the intervention
*C+ Automatic cycle counter data from the wider city area
*APS Active People Survey

5 Scorecard

This section provides the scorecard in which percentage changes will be reported against the related metrics.

In the top right hand corner of each box, a letter represents the data source from which the figure was obtained. The key is above Figure 2 below.

Sustrans have provided "How to" guidance documents on how to extract, process and compare data from the recommended sources for the scorecards. The user surveys which cities have committed too will provide data for a considerable number of the metrics, which are largely incomplete at baseline.

Cities should provide DfT with an updated scorecard every year, showing the percentage change from the previous year for all of the recommended metrics, and the additional where possible.

Figure 2: Greater Manchester Scorecard

Data Sources Key:

*C	Automatic cycle counter data or manual count data from the intervention		
*C+	Automatic cycle counter data or manual count data from the wider city area		
*AP	Active People Survey	*CP	Cycle parking counts
*PD	Personal travel diaries	*WS	Workplace travel surveys
*PS	Perception survey	*H	Household travel survey
*H+	Household travel survey with boosted sample around intervention		
*S19	STATS 19	*VA	Video analysis
*AR	Employer absence records		

Theme	Metric	2013		2014		2015		.....	2024	
	Intervention change (I) or City Wide change (CW)	I	CW	I	CW	I	CW		I	CW
Change in levels of cycling	**Recommended metrics**									
	Percentage change in cycling trips made utilising the intervention	*C		*C		*C			*C	
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	*C	*C+	*C	*C+	*C	*C+		*C	*C+
		*C	-11% *AP	*C	*AP	*C	*AP		*C	*AP
Change in level of integration with public transport links	**Recommended metrics**									
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	*CP		*CP		*CP			*CP	
	Additional metrics									
	Percentage change in people taking integrated cycling and public transport trips	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	*SS		20% *SS		*SS			*SS	
The effect on users' health	**Recommended metrics**									
	Percentage of users that have increased their frequency of cycling	*US	-11% *AP	*US	*AP	*US	*AP		*US	*AP
	Percentage of users that report a feeling of improved health and/or wellbeing	*US		84% *US		*US			*US	
	Additional metrics									
	Percentage of users that have increased their frequency of cycling	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
			*H		*H		*H			*H
		*H+	*H+	*H+	*H+	*H+	*H+		*H+	*H+

Change in levels of accidents	**Recommended metrics**									
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	*S19	*S19	*S19	*S19	*S19	*S19		*S19	*S19
	Additional metrics									
	Percentage of interactions that are 'unsafe interactions'	*VA		*VA		*VA			*VA	
The effect on CO2 emissions	**Recommended metrics**									
	Amount of CO2 saved due to modal shift toward cycling	*US		*US		*US			*US	
	Additional metrics									
	Amount of CO2 saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
	Amount of local pollutants saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Employment and economic effects	**Recommended metrics**									
	No requisite									
	Additional metrics									
	Percentage change in levels of absence in the workplace	*AR		*AR		*AR			*AR	
		*WS		*WS		*WS			*WS	
The effect on congestion levels	**Recommended metrics**									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*US		*US		*US			*US	
	Additional metrics									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Levels of awareness and perceptions of safety	**Recommended metrics**									
	Percentage of users that have a positive perception of safety at the intervention	*US		75% *US		*US			*US	
	Additional metrics									
	Percentage of users that have a positive perception of safety	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Changes in levels of cycling by demographic	**Recommended metrics**									
	Ratio of female and male cyclists	*C	*AP	24:76 *C	*AP	*C	*AP		*C	*AP
	Additional metrics									
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Value for money	**Additional metrics**									
	Percentage of people that have a positive perception of value for money of the CCA investment	*US		*US		*US			*US	
	Percentage of people that have a positive perception of value for money of investment in carbon based transport projects	*US		*US		*US			*US	

6 Summary of communications and commitments

The gaps analysis exercise highlighted a need for user surveys at 15 locations on CCA intervention sites at the 2015 baseline. The DfT grant towards monitoring and evaluation provided £28,302 towards the cost of these surveys.

A brief summary of the points clarified and committed to is as follows:

User surveys
Recommendation: User surveys at 15 locations to be conducted at appropriate locations on the CCA network. These should be repeated at appropriate intervals throughout the programme, best practice being every year, the minimum frequency being every three years.
Clarification was provided on the following: The number of user surveys was reached by applying the scale of the investment to the available grant, then considering the elements of infrastructure change in phase one investment. TfGM is already conducting user surveys at 15 locations on CCA intervention sites; seven Sustrans' Route User Intercept Surveys' and eight 'Access to Station' surveys. Although TfGM is already undertaking the recommended amount of user surveys, the number of repetitions is more than in the current plan for Greater Manchester. Therefore the grant funding will support funding future iterations of surveys. There is an expectation that cities will source funding for the surveys not covered by the grant, and for future iterations. The user surveys must collect data on themes specified in the recommendations section of this report (section 4) to enable reporting on the metrics in the scorecard (section 5), however, questions within surveys do not have to be identical between cities. for each city.
Commitments and additional monitoring TfGM is conducting user surveys at 15 locations as part of CCA monitoring; seven are on CCA cycle routes and eight at stations. TfGM will confirm how often these will be carried out. Surveys at Heaton Mersey and Stockport Branch Canal were conducted pre intervention.
Counts of users
Recommendation Counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme.
Clarification was provided on the following: TfGM is rebuilding the ACC network and the plan is to have 50 operational counters by the end of the month.

Commitments and additional monitoring:

TfGM has collected travel diaries and will endeavour to repeat this.

TFGM will aim to install a new ACC on new pieces of infrastructure.

Cycle parking counts

Recommendation

To report on integration with public transport links, it is necessary to conduct cycle parking counts and key public transport hubs.

Clarification was provided on the following:

How TfGM could monitor the changes that it has made, and is still making, to rail and Metrolink stations as part of the CCA programme. It was Sustrans' recommendation to count both the number of bicycles parked at the relevant stations and the number, age (child under 16 / adult / over 65) and gender of bicycle users at each station. It was also Sustrans recommendation to ask questions relating to users perceptions of quality of cycle parking at each of the stations. This information is currently being collected through an Access to Stations perception survey. For all of these recommendations the minimum frequency should match that of the user surveys above.

TfGM's CCA programme is unique in the way that it is investing heavily in improving cycle access to stations. For this reason it is also Sustrans' recommendation that the additional metric of 'Percentage change in perception of quality, security and convenience of cycle parking at key public transport hubs' is a recommended, rather than additional, metric.

Commitments and additional monitoring

TfGM is confirming how often it will carry out its cycle parking counts at CCA stations.

TfGM is confirming how often it will carry out perception surveys at each CCA station.

TfGM is confirming how often it will carry out a count of users by age (child under 16 / adult / over 65) at each CCA station. It should be noted that these can be completed as part of a perception survey.

Aspirational levels of monitoring and evaluation

TfGM collects a wealth of data on travel behaviour in Greater Manchester through the TRADS personal travel diaries. However, as this is a snapshot, there are limitations in reporting on some of the metrics for which a personal travel diary is a potential data source.

TfGM is conducting household surveys as part of the 'Bike Life' project which will provide additional levels of data collection in 2015 and 2017.

Future phases of Cycle City Ambition

Sustrans explained to TfGM that the recommended number of user surveys would be expected to grow as the network increased to provide adequate coverage of the investment.

7 Next steps and timeline

TFGM will determine the locations and timeframe of the recommended user surveys, but baseline data should be collected at the earliest appropriate opportunity for each location.

Alongside this report are guides detailing step by step how to use results from recommended data sources to populate the scorecard.

Throughout the programme cities should provide an annual update of their evaluation findings to DfT.

As outlined in section 3 'recommendations for monitoring the ten-year programme', counts and user surveys should be increased accordingly so that the programme of monitoring provides adequate coverage of the interventions.

7.1 Timeline

August 2013 DfT £77m Cycle City Ambition funding announced - £20m for Greater Manchester, match funding of £11.1

2013 Greater Manchester starts to implement phase one of the 'Cycle Revolution'

September 2014 Baseline user surveys conducted at Heaton Mersey and Stockport Branch Canal

November 2014 A further £22m announced for Greater Manchester's CCA scheme

November/December 2014 Baseline user surveys conducted at Gatley, East Didsbury and Hollinwood stations

March 2015 Sustrans gaps analysis document issued to Greater Manchester, with recommendation for user surveys at 15 locations

March 2015 DfT awards Greater Manchester £28,302 towards the recommended user surveys

2015/16 Baseline data to be collected for phase two of investment

2016 – 2023 Monitoring and evaluation data sent to DfT annually and scorecard populated

2016 - 2023 Repeat user surveys including any additional locations added for further rounds of funding, in the same locations and at the same time of year

Appendix 5

Leeds

1 Introduction

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measuring measure the impact of the CCA investment.

This report outlines the following:

- the background to Sustrans' role in the monitoring and evaluation of the CCA programme
- an overview of the scheme in Leeds and the expected outcomes
- recommendations for monitoring and evaluating the CCA investment
- Leeds City Council's data collection commitments
- next steps, including guidance documents on how to populate the scorecard

1.1 Summary

Project scope in terms of the monitoring and evaluation of CCA schemes

- Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.
- Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.
- Sustrans worked with the CCA cities to identify gaps in data collection, and made recommendations to ensure that comparable programme wide data is collected.

City Connect

- Leeds received £18.052m in CCA funding in 2013 and £22m in 2015 for phases one and two of the Cycle Revolution programme.
- The funding is delivering 23km of a mostly segregated Cycle Superhighway from the east of Leeds through to Bradford City Centre.
- Leeds predict that CCA funding will enable acceleration of delivery of key outcomes, resulting in meeting the LTP target on tripling cycle use across West Yorkshire by 2019, seven years sooner than anticipated, and reaching 7.5% cycle use by 2026.

Recommendations

- Recommendations for monitoring include:
    - counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme
    - user surveys to be conducted at five appropriate locations on the CCA network, and to be repeated a minimum of every three years
    - counts of parked bicycles at key public transport hubs (if cities choose to report on integration with public transport)

Commitments

- Leeds City Council has given a commitment that it will install new ACCs with new pieces of infrastructure.
- Leeds has committed to conducting user surveys at five locations that will correspond with screen line count locations on the CCA network every three years.

Next steps

- Leeds City Council will conduct user surveys in 2017, 2020 and 2023.
- Throughout the programme cities should provide an annual update of their evaluation findings to DfT.

1.2 Project scope

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

Cities provided their monitoring and evaluation plans for their programmes, and also shared available baseline data.

Ten common themes were identified from the aims and objectives within all cities' bid documents and explored means by which they could collect adequate data to report, on each theme, changes which are attributable to the CCA investment.

Another component of this exercise was the allocation of a £100,000 grant, provided by DfT to support the monitoring and evaluation activities of the CCA cities. Sustrans identified that supporting the cities in the undertaking of user surveys alongside manual cycle counts would be the most effective use of the grant. A recommended number of user surveys was determined for each city, firstly based upon the scale of investment and then adjusted to parallel the number of elements of infrastructure in phase one.

In conclusion, recommendations were made for the future monitoring and evaluation of the CCA programme, and scorecards were produced for cities to populate with data against the metrics.

1.3 Cycle City Ambition Grant

In August 2013, Leeds City Council, City of Bradford Metropolitan District Council and Metro were awarded £18.052 million of CCA funding to implement their scheme: City Connect (formerly known as Highway to Health). Local match funding totals £11.2 million, giving an overall total of £29.2 million.

In November 2014, a further £114m was announced for the CCA cities, and Leeds received £22m of this to fund the second phase of infrastructure.

1.4 City Connect

The funding is delivering 23km of a mostly segregated Cycle Superhighway from the east of Leeds through to Bradford City Centre; a package of improvements in Leeds City Centre; upgrades to the Leeds-Liverpool canal towpath and a package of communication and engagement activities. There will also be 20mph zones in neighbourhoods in Leeds and Bradford either side of the cycle superhighway.

The Working Group who is responsible for implementing the Leeds CCA scheme has focused on improving health outcomes and access to employment and enhancing links to regeneration areas. The group agreed a set of overarching objectives which are:

- to increase cycling and walking so that it becomes part of residents healthy living plan
- to make cycling a natural and popular choice for short journeys
- to make cycling accessible to all low income and vulnerable groups
- to improve access to employment, skills and education
- to reduce CO_2 and to improve local air quality
- to create a safe environment for active modes

Interventions are focused on improving:

Routes: providing a greater degree of segregation and separation, off-road greenways and improved junction layouts;

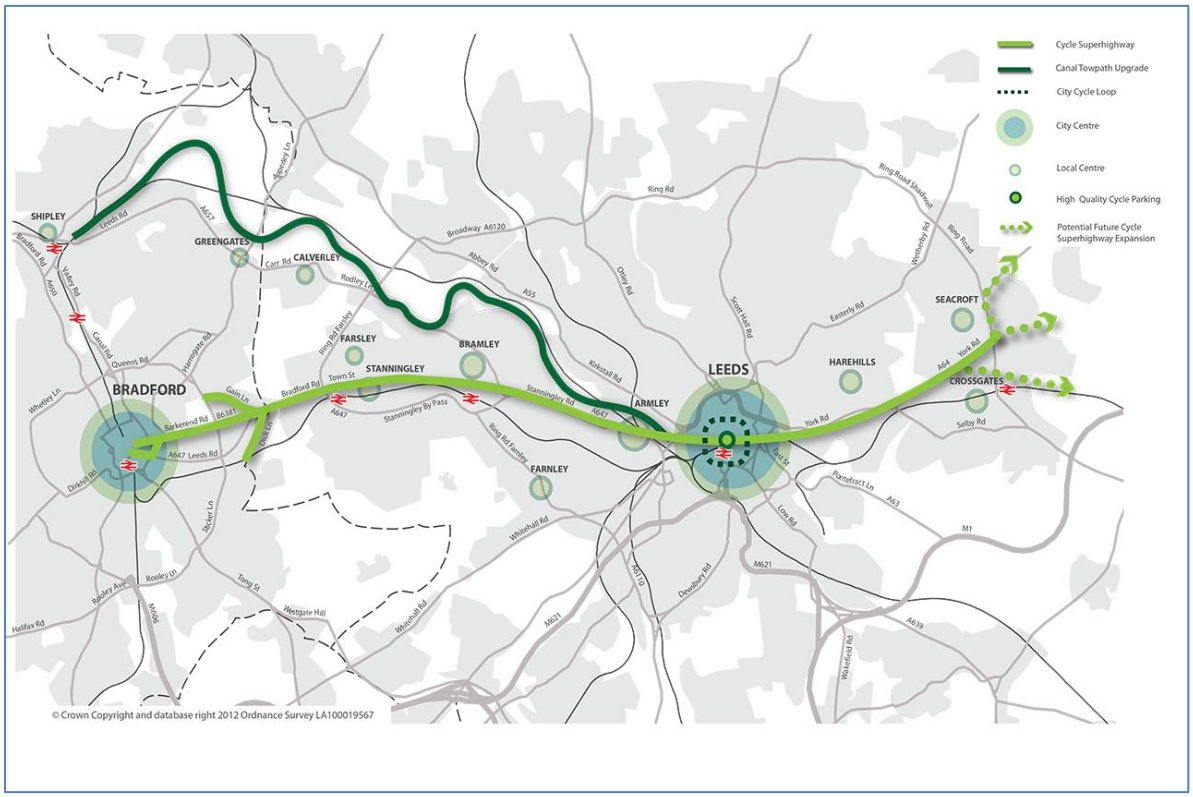
Networks: linked routes in coherent networks and interchange opportunities with public transport;

Traffic: extensive 20mph zones, accident reduction measures and safer routes to school schemes;

Facilities: secure high quality covered parking at prime locations and showers/lockers at all destinations.

Figure 1 shows a schematic of the first phase of investment

Figure 1 City Connect 2013-2015



Source: City Connect

1.5 Impacts

The West Yorkshire Local Transport Plan has six key targets of which four of the key indicators and targets are directly relevant to cycling:

- 30% reduction in CO_2
- satisfaction with transport to 7+ from 6.6
- 50% reduction in all road casualties
- 6% increased mode share by sustainable mode – this includes an increase of at least 300% on current levels of cycling, with much greater increases in urban areas.

Leeds predicts that CCA funding will enable acceleration of delivery of key outcomes, resulting in meeting the LTP target on tripling cycle use across West Yorkshire by 2019. This is seven years sooner than anticipated, and reaching 7.5% cycle use by 2026. This represents 12% of journeys being made by bike in the target geographical area – an 800% increase.

The anticipated outcomes and impacts of the CCA investment are as follows:

- to make cycling accessible to all low incomes and vulnerable groups
- increased walking and cycling
- improved health of residents and reduced mortality rate
- reduced propensity to use the private car/reduced car mode share
- reduction in the number of accidents involving cyclists
- reduced CO2 and improved local air quality

- improved access to employment, education and skills
- create a safe environment for active modes

The Benefits to Cost Ration (BCR) for the scheme was estimated to be 2.12:1. The majority of benefits within the appraisal are from the Journey Ambience benefits provided by the introduction of the three cycle corridors, along with further cycle routes within Leeds City Centre; these form around 50% of overall benefits.

In addition, new users to cycling drive a number of other benefits within the appraisal - this includes the impacts of decongestion benefits due to a transfer from car to cycling trips. The appraisal also includes savings from a reduction in absenteeism in addition to health benefits through reduced mortality rates. A small level of accident reduction is also included due to a reduction in car accidents due to a transfer to cycling, with existing highway cycling replaced with fully segregated cycle corridors.

2 Key research questions

The aims and objectives from the original city bid documents were reviewed and ten common themes were identified within the predicted outcomes. These themes were used as the basis for formulating the following research questions, and are common to all cities:

1) What impact has the CCA investment had upon levels of cycling?

2) What are the related benefits of mode shift from car or van to bicycle in terms of user's health, congestion levels and carbon emissions?

3) To what extent has the CCA investment affected the number of people taking integrated cycling and public transport journeys.

4) To what extent has the CCA investment altered perceptions of the safety of cycling?

5) To what extent has the CCA investment affected the demographic balance of cyclists?

6) What is the Benefit to Cost Ratio (BCR) of the investment?

7) What opportunities are there for further evaluation, and how will this enhance current data collection?

2.1 Recommended and additional metrics

A series of consultation meetings between Sustrans and each of the cities' monitoring leads took place to establish current and planned monitoring provision for CCA. Sustrans worked with cities to understand the existing data that was available to them. This existing data was shared with Sustrans with a view to formulating the programme baseline.

Within each theme, metrics were determined against which programme impacts could be monitored throughout the project lifespan. Furthermore, potential data sources were defined against each metric, specifying how these metrics would be reported on. The results of this exercise are detailed in Table 2-1.

The data and monitoring information provided by cities were mapped to the research questions, and an assessment was made as to whether they were sufficient to measure the impacts of the CCA investment at intervention level, and more broadly in the city.

Table 2-1 differentiates between recommended and additional metrics. Recommended metrics are those which cities must address in order to report on the theme. Recommended metrics are monitored by data from counts, user surveys and the Active

People Survey (APS)[17]. For consistency across the programme, it should be noted that all the cities have exactly the same metrics.

The exception is for the theme 'Integration with levels of public transport', for which parked bicycle counts are required: these are only required when cities aim to impact upon this area. In phase one of investment Leeds will report on this theme.

The additional metrics draw upon a wider range of data sources and would help to deliver stronger insight into answering the research questions. As some of these can be quite context specific (e.g. of limited applicability to some cities' schemes) and resource intensive, these are not a monitoring requirement of cities. However, a number of cities are planning, where appropriate, to undertake additional monitoring. This will help to strengthen the evidence base regarding the impacts of the CCA investment in a number of ways (see section 3 for more details).

Thus, the recommended measures are the minimum monitoring that all cities will undertake and the additional metrics are ones that would allow stronger statements about impact to be made more robust and their uptake will vary across the cities.

2.2 Monitoring and evaluation

Sustrans recommend that cities should collect data periodically throughout the ten year programme at the location of intervention(s). This data will provide important evidence as part of the wider evaluation of the scheme's impacts in response to the research questions outlined above.

Furthermore, to effectively evaluate the outcomes Sustrans also recommends that city wide data is collected. The changes at the intervention can therefore be compared with the city wide picture to make a stronger statement about attribution and impact.

Within Table 2-1 there are therefore columns note whether a data source provides information at 'intervention' or a 'city wide' level. By 'intervention' it is meant that the user surveys or counts are undertaken on the CCA intervention or at a point where cyclists using the improved route must pass (e.g. further along a canal towpath where there are no entrances or exits past the intervention). 'City wide' data refers to cycle and transport monitoring within the city that is not specific to users of CCA infrastructure; for example, the wider ACC network or a travel behaviour survey exploring the habits of the city or regional population. In the case of the Active People Survey (APS), this is a national dataset available to all cities to draw upon. At city or regional level there could also be complementary data sources that would enable a more robust picture to be built up.

Table 2-1 Themes, metrics and data sources for monitoring the impacts of CCA investment

Theme	Metric	Proposed Data Source	Intervention	City Wide
	Recommended			
Change in levels of cycling	Percentage change in cycling trips made utilising the intervention	Automatic cycle counter data from the intervention/manual count data from the intervention	✓	
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made	Automatic cycle counter/manual count data from the intervention and from the whole city area	✓	✓

[17] Sport England Active People Survey www.gov.uk/government/organisations/department-for-transport/series/walking-and-cycling-statistics

Theme	Metric	Proposed Data Source	Intervention	City Wide
	across the whole city area	Automatic cycle counter/manual count data from the intervention and the Active People survey	✓	✓
Change in level of integration with public transport links	**Recommended**			
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	Cycle parking counts	✓	✓
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	Station survey of users of parking at public transport hubs	✓	
	Additional			
	Percentage change in people taking integrated cycling and public transport trips	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
			✓	✓
The effect on users health	**Recommended**			
	Percentage of users that have increased their frequency of cycling	User survey at the intervention linked to the count changes	✓	
		Active People Survey (city as a whole) linked to the count changes		✓
	Percentage of users that report a feeling of increased health and/or wellbeing	User survey at the intervention linked to the count changes	✓	
	Additional			
	Percentage of users that have increased their frequency of cycling	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
		Household travel survey		✓
		Household survey with boosted sample at intervention location	✓	✓
Change in levels of accidents	**Recommended**			
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	STATS19 and count data at the intervention	✓	✓
	Additional			
	Percentage of interactions that are 'unsafe interactions'	Video analysis	✓	
The effect on CO_2 emissions	**Recommended**			
	Amount of CO_2 saved due to modal shift toward cycling	User survey at the intervention linked to the count changes to calculate amount	✓	
	Additional			
	Amount of CO_2 saved due to modal shift toward cycling	Household travel behaviour survey linked to the count		✓

Theme	Metric	Proposed Data Source	Intervention	City Wide
		changes to calculate amount		
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
	Amount of local pollutants saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
Employment and economic effects	**Recommended**			
	No recommended			
	Additional			
	Percentage change in levels of absence in the workplace	Absence records	✓	✓
		Workplace travel surveys	✓	✓
The effect of congestion levels	**Recommended**			
	Number of cars taken off the road during peak periods	User surveys linked to the count changes to calculate number	✓	
	Additional			
	Number of cars taken off the road during peak periods	Workplace travel surveys	✓	✓
		Personal travel diaries		✓
Levels of awareness and perceptions of safety	**Recommended**			
	Percentage of users that have a positive perception of safety at the intervention	User survey at the intervention	✓	
	Additional			
	Percentage change in users perceptions of safety at the intervention	Household survey	✓	✓
		Personal travel diary	✓	
	Percentage of users that have a positive perception of safety			
Changes in levels of cycling by demographic	**Recommended**			
	Ratio of female and male cyclists	User surveys	✓	
		Active People survey		✓
	Additional			
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	Household survey		✓
		Workplace surveys	✓	✓
		Personal travel diary		✓
Value for money	**Recommended**			
	BCR	Users surveys and with	✓	

Theme	Metric	Proposed Data Source	Intervention	City Wide
		intervention specific counts		
	Additional			
	Percentage of people that have a positive perception of value for money of the CCA investment	User surveys linked to the count changes	✓	
		User surveys linked to the count changes	✓	
	Percentage of people that have a positive perception of value for money of investment in highways projects that aim to benefit users of motorised transport	User surveys linked to the count changes	✓	

3 Recommendations for monitoring the ten-year programme

This section sets out recommendations for data collection when monitoring the recommended metrics set out in the previous section. The following focuses upon collection of primary data and therefore secondary sources of data such as the Active People Survey and STATS19 national datasets are therefore not included. The "How to" guides provide details on how to process and analyse the data.

3.1 Counts

There should be a comprehensive network of counts within the city to establish the numbers cycling, and this must include intervention specific sites. Cities will decide which typology of count is most appropriate for their cycle network and CCA programme; whether these are screenline, cordon, routes to particular destinations or multiple counts on selected keys routes will be a matter for the cities to decide. Within each group, manual or automatic counts can be selected accordingly.

3.1.1 Manual counts

To establish usage at a particular point or points on a network using a manual count, Sustrans recommends the following:

- counts should be a minimum of twelve hours 07:00 until 19:00
- manual counts can be taken as part of a user survey
- counts should be conducted at a consistent location
- counts should be conducted at the same time of year
- where feasible, pre intervention counts should be conducted

Counts taken as part of the baseline should be repeated periodically throughout the ten year programme. These should be at the same location and should also be conducted at the same time of year.

Best practice: Four day counts annually, one per season or clustered. Gender and age category (child under 16 / adult / 65+) recorded.

Minimum: Annually. Gender and age category (child under 16 / adult / 65+) recorded.

3.1.2 Automatic cycle counters

ACCs should be installed with new infrastructure where viable. Appropriate intervals will again be determined by the nature and scale of the intervention, and the number should be proportionate. For example, a minimum of one ACC should be installed on a new linear route, though practical considerations, such as whether paths are traffic free will also be factors. Data taken from ACCs need to be checked regularly, and should be calibrated.

Minimum: one ACC installed on a new linear route.

3.2 User surveys

User surveys with cyclists at the intervention should be conducted throughout the programme. Surveys should include specific and consistent questions (please see the user survey "How to" guide for example questions) to establish:

- journey purpose and length
- any change in mode of transport away from car or van use
- whether the user could have used a car/van for the journey
- whether the scheme has impacted on the user's behaviour
- reported improvement in health/wellbeing
- perceptions of safety of the route
- demographic information (age, gender, employment status, ethnicity, income)

Best practice: annual surveys at the same location.

Minimum: every three years at the same location.

Delivery of the surveys will be determined by cities; however it is essential that sites are selected to interview cyclists either on CCA routes or where this is not practical, at a location that will capture flows from the intervention.

The number of user surveys should increase to provide adequate coverage as the network grows with future investment.

3.2.1 Cycle parking counts

To report on integration with public transport links, Sustrans recommend cycle parking counts at key public transport hubs. This should be measured consistently throughout the programme and include the number of bicycles at the relevant transport hubs.

Best practice: Four day counts annually, one per season or clustered.

Minimum: Annually.

4 Leeds' monitoring data

This section sets out the data that Sustrans have collected from Leeds when compiling this report.

4.1 ACC and manual count data

It is important to note that this report does not quote actual count figures, but rather percentage changes from a previous point in time (one to three years before). This is to

ensure that the counts compared are alike, and to minimise the risks associated with the number of counts varying both within and between cities from year to year.

ACC and manual count data will be used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention.
- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area.

All of these data have been provided in the '**Collated Counter'** spreadsheet.

Leeds City Council undertook comprehensive baseline monitoring for the CityConnect scheme, and this included seven day manual counts at five Screenlines along the proposed route. These counts will be repeated one year after route completion, and the percentage change will provide robust figures at intervention to report upon the metrics.

Between 2012 and 2013 there was a 59% increase in four ACCs and between 2013 and 2014, five comparable ACCs showed an increase of 7%. Leeds has recognised that they require more counter data to create robust figures from and have committed to installing new ACCs on new pieces of CCA investment. Though these increases are a positive indicator in cycle usage, the number of counters they are derived from is too low to provide a robust figure for the scorecard.

The screenline counts also include locations not on, but near the intervention. The repetition of these will increase the number of 'city wide' counts, however, a broader and increased spread would be necessary to give a robust view of usage across the city.

4.2 Active People Survey

The Active People Survey (APS) have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Increase in levels of cycling)
- Percentage of users that have increased their frequency of cycling. (Effect on users' health)

The APS was chosen as a recommended data source due to the accessibility of the data to all cities; however, as outlined in section 3.2, there are considerable limitations. Of the sample at the city level (approximately 500), few are cyclists, and so modest change can result in large proportionate increases or decreases, as seen below.

Table 4-1 Proportion of residents who cycle at a given frequency

	2011/2012 (sample size =512)	**2012/2013 (sample size = 501)**
Cycle at least five times per week	2%	1%
Cycle at least three times per week	4%	3%
Cycle at least once per week	8%	8%
Cycle at least once per month	13%	12%

In Leeds the APS has shown a 22% decrease in the level of cycling from 2011/2012 to 2012/2013. Applying the proportions in Table 4-1 to Leeds' population suggests that an

estimated 6,535,186 trips were undertaken annually in 2012/13. This was a 22% decrease in the number of trips in 2011/12. However, as discussed previously, the reliability of these estimates is questionable due to the relatively low number of cyclists represented in the APS sample at the city level. Furthermore, percentage changes derived from a small base result in high corresponding increases or decreases. Employing additional data collection tools, such as the household survey, would enable increased levels of rigour in reporting.

The 2012/13 and 2013/2014 APS figures should be used to calculate the percentage change for the next report.

4.3 Populating the scorecard

The percentage changes obtained from the data sources discussed above can be used to report against a number of metrics.

An example of the related section of the scorecard is illustrated below. There is a box for results from each data source (denoted by an asterisk and letter in the top right hand corner – the key is below the table).

Figure 2 Example section of the scorecard

	2013		2014	
Metric	Intervention	City	Intervention	City Wide
Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	*C	*C+		*C+
	*C	*AP -22%		*AP

*C Automatic cycle counter data or manual count data from the intervention
*C+ Automatic cycle counter data from the wider city area
*AP Active People Survey

5 Scorecard

This section provides the scorecard in which percentage changes will be reported against the related metrics.

In the top right hand corner of each box, a letter represents the data source from which the figure was obtained. The key is above Figure 3 below.

Sustrans have provided “How to” guidance documents on how to extract, process and compare data from the recommended sources for the scorecards. The user surveys which cities have committed too will provide data for a considerable number of the metrics, which are largely incomplete at baseline.

Cities should provide DfT with an updated scorecard every year, showing the percentage change from the previous year for all of the recommended metrics, and the additional where possible.

Figure 3: Leeds scorecard

Data Sources Key:			
C	Automatic cycle counter data or manual count data from the intervention		
C+	Automatic cycle counter data or manual count data from the wider city area		
AP	Active People Survey	CP.	Cycle parking counts
PD.	Personal travel diaries	WS.	Workplace travel surveys
PS.	Perception survey	H.	Household travel survey
H+	Household travel survey with boosted sample around intervention		
S19	STATS 19	VA.	Video analysis
AR.	Employer absence records		

Theme	Metric	2013		2014		2015		.....	2024	
	Intervention change (I) or City Wide change (CW)	I	CW	I	CW	I	CW		I	CW
Change in levels of cycling	**Recommended metrics**									
	Percentage change in cycling trips made utilising the intervention	*C		*C		*C			*C	
	Percentage change in cycling trips made utilising the intervention, and percentage	*C	*C+	*C	*C+	*C	*C+		*C	*C+
		*C	-22% *AP	*C	*AP	*C	*AP		*C	*AP
Change in level of integration with public transport links	**Recommended metrics**									
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	*CP		*CP		*CP			*CP	
	Additional metrics									
	Percentage change in people taking integrated cycling and public transport trips	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	*SS		*SS		*SS			*SS	
The effect on users' health	**Recommended metrics**									
	Percentage of users that have increased their frequency of cycling	*US	-22% *AP	*US	*AP	*US	*AP		*US	*AP
	Percentage of users that report a feeling of improved health and/or wellbeing	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have increased their frequency of cycling	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
			*H		*H		*H			*H
		*H+	*H+	*H+	*H+	*H+	*H+		*H+	*H+
Change in levels of accidents	**Recommended metrics**									
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	*S19	*S19	*S19	*S19	*S19	*S19		*S19	*S19
	Additional metrics									
	Percentage of interactions that are 'unsafe interactions'	*VA		*VA		*VA			*VA	

The effect on CO2 emissions	**Recommended metrics**								
	Amount of CO2 saved due to modal shift toward cycling	*US		*US		*US		*US	
	Additional metrics								
	Amount of CO2 saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H	*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*WS		*WS		*WS		*WS	
	Amount of local pollutants saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H	*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*WS		*WS		*WS		*WS	
Employment and economic effects	**Recommended metrics**								
	No requisite								
	Additional metrics								
	Percentage change in levels of absence in the workplace	*AR		*AR		*AR		*AR	
		*WS		*WS		*WS		*WS	
The effect on congestion levels	**Recommended metrics**								
	Number of trips made by bicycle which were previously made by car/van during peak periods	*US		*US		*US		*US	
	Additional metrics								
	Number of trips made by bicycle which were previously made by car/van during peak periods	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*WS		*WS		*WS		*WS	
Levels of awareness and perceptions of safety	**Recommended metrics**								
	Percentage of users that have a positive perception of safety at the intervention	*US		*US		*US		*US	
	Additional metrics								
	Percentage of users that have a positive perception of safety	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*H+	*H	*H+	*H	*H+	*H	*H+	*H
Changes in levels of cycling by demographic	**Recommended metrics**								
	Ratio of female and male cyclists	*C	*AP	*C	*AP	*C	*AP	*C	*AP
	Additional metrics								
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	*PD	*PD	*PD	*PD	*PD	*PD	*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS	*WS	*WS
		*H+	*H	*H+	*H	*H+	*H	*H+	*H
Value for money	**Additional metrics**								
	Percentage of people that have a positive perception of value for money of the CCA investment	*US		*US		*US		*US	
	Percentage of people that have a positive perception of value for money of investment in carbon based transport projects	*US		*US		*US		*US	

6 Summary of communications and future monitoring plans

The gaps analysis exercise highlighted a need for user surveys at six locations on CCA intervention sites at the 2015 baseline, and the DfT grant towards monitoring and evaluation provided £11,321 towards the cost of these surveys.

A brief summary of the points clarified and committed to is as follows:

User surveys
Recommendation: User surveys to be conducted at six appropriate locations on the CCA network. These should be repeated at appropriate intervals throughout the programme, best practice being every year, the minimum frequency being every three years.
Clarification provided on: Leeds City Council proposed to reduce the number of user surveys from six to five, to correspond with the screenline counts. Sustrans agree with this rationale and confirmed that this will have no impact on the amount of funding provided. The grant will provide funding towards the cost of the first iteration of user surveys, though it is not anticipated that the grant will cover the cost of all five surveys. Leeds County Council will determine the locations and timescale of the user surveys. Sustrans clarified that these must be on phase one Cycle City Ambition interventions to report on the recommended metrics. To what extent the cost is covered will depend upon how Leeds choose to deliver the surveys; there is no obligation to use the Sustrans Route User Intercept Survey. The user surveys must collect data on themes specified in the recommendations section of this report (section 3) to enable reporting on the metrics in the scorecard (section 5), however, questions within surveys do not have to be identical between cities. Leeds asked how the user surveys could ally with their main aim to target commuter cyclists on the superhighway and not leisure cyclists. Sustrans agreed that surveys could all be completed on weekdays during school term, though they are still conducted over four days.

Commitments and additional monitoring

Leeds will conduct user surveys at five locations every three years throughout the programme on the superhighway routes.

Leeds has confirmed that the dates of these are to be 2017, 2020 and 2023. The reason that none will be delivered sooner is to make sure that they are completed a minimum of one year after the CCA work has finished on the superhighway and at the same time of year as the pre-scheme surveys (Spring).

Counts of users

Recommendation

Counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme.

Clarification was provided on the following areas:

Leeds is installing new ACCs on the new cycle superhighway. There were plans to install twelve ACCs at ten sites on the superhighway and two on the canal. Leeds had expressed interest in accessing the DfT's monitoring and evaluation grant to cover the shortfall in budget.

Sustrans explained that while installing ACCs is a recommended for monitoring the CCA programme, and that this aspirational coverage aimed for on the cycle superhighway is encouraged, the grant was intended to help cities meet the recommended number and iteration of user surveys. This is because this is where Sustrans identified that there was a potential gap in recommended or minimum data collection.

Commitments and additional monitoring:

Leeds City Council will install five new ACCs on the cycle superhighway and two on the canal towpath. The two ACCs on the canal tow path will be operational from Autumn (2015). ACCs on the superhighway will be installed after completion of the works at the end of 2016.

Leeds has committed to two further iterations of the screenline surveys at the same 26 sites, grouped into five Screenlines. Leeds aspires to maintain the length of these at seven weekdays, and commit to a minimum of four. These will be conducted one year after completion and four years after that.

Leeds commits to conducting city centre cycle parking counts that includes one public transport hub at Leeds City Station, one year after completion and four years after that.

Additional levels of monitoring and evaluation

Leeds will repeat the household survey one year after completion and four years after that.

Speed surveys in 20 mph areas to be repeated one year after completion and four years after that.

Accident data will be collected and analysed five years after phase one interventions have opened.

7 Next Steps and Timelines

It was agreed that the user surveys would be conducted at locations that correspond with the five Screenlines, and that iterations would occur in 2017, 2020 and 2023.

Alongside this report are guides detailing step by step how to use results from recommended data sources to populate the scorecard.

Throughout the programme cities should provide an annual update of their evaluation findings to DfT.

As outlined in section 3 ‘recommendations for monitoring the ten-year programme’, counts and user surveys should be increased accordingly so that the programme of monitoring provides adequate coverage of the interventions.

7.1 Timeline

August 2013 DfT £77m Cycle City Ambition funding announced - £18.052 for Leeds, match funding of £11.1m

2013 Leeds starts to implement phase one of CCA works

November 2014 A further £22m announced for Leeds CCA scheme

March 2015 Sustrans gaps analysis document issued to Leeds, with a recommendation for user surveys at five locations

March 2015 DfT awards Leeds £11,321 towards the recommended user surveys

2017 Leeds City Council to conduct user surveys at five locations which will correspond with screenline counts

2015/16 Baseline data to be collected for phase two of investment

2020 and 2023 Repeat user surveys including any additional locations added for further rounds of funding, in the same locations and at the same time of year.

2016-2023 Monitoring and evaluation data sent to DfT annually and scorecard populated

Appendix 6

Newcastle

1 Introduction

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measuring measure the impact of the CCA investment.

This report outlines the following:

- an overview of the scheme in Newcastle and the expected outcomes
- Sustrans' recommendations for monitoring and evaluating the CCA investment
- Newcastle City Council's data collection commitments
- next steps, including guidance documents on how to populate the scorecard

1.1 Summary

Project scope in terms of monitoring and evaluation of CCA schemes

- Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.
- Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.
- Sustrans worked with the CCA cities to identify gaps in data collection, and made recommendations to ensure that comparable programme wide data is collected.

Newcastle 'Fit for Cycling'

- Newcastle received £5.7m in CCA funding in 2013 and £10.6m in 2015 for phases one and two of the 'Fit for Cycling' programme.
- Newcastle's 'Fit for Cycling' programme is a network of seven major cycle routes across the city making the best use of existing infrastructure and linking in with the major improvements currently underway in the city centre.
- In the first two years of the programme, Newcastle aims to have four out of the seven cycling routes operational.
- The aims for the first two years of the 'Fit for Cycling' programme the aim is to increase cycling trips by 73%.

Recommendations

- Recommendations for monitoring include:
    - counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme
    - user surveys to be conducted at six appropriate locations on the CCA network, and to be repeated a minimum of every three years
    - counts of parked bicycles at key public transport hubs (if cities choose to report on integration with public transport)

Future plans for monitoring

- Newcastle City Council will install new ACCs with new pieces of infrastructure
- Newcastle is conducting user surveys at six locations across the CCA network every three years

Next steps

- baseline data should be collected at the earliest appropriate opportunity for each location, Newcastle City Council will determine the exact locations and timeframe to suit the programme
- throughout the programme cities should provide an annual update of their evaluation findings to DfT

1.2 Project scope

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

Cities provided their monitoring and evaluation plans for their programmes, and also shared available baseline data.

Ten common themes were identified from the aims and objectives within all cities' bid documents and explored means by which they could collect adequate data to report, on each theme, changes which are attributable to the CCA investment.

Another component of this exercise was the allocation of a £100,000 grant, provided by DfT to support the monitoring and evaluation activities of the CCA cities. Sustrans identified that supporting the cities in the undertaking of user surveys alongside manual cycle counts would be the most effective use of the grant. A recommended number of user surveys was determined for each city, firstly based upon the scale of investment and then adjusted to parallel the number of elements of infrastructure in phase one.

In conclusion, recommendations were made for the future monitoring and evaluation of the CCA programme, and a scorecard was produced for cities to populate with data against the metrics.

1.3 Cycle City Ambition Grant

In 2013, Newcastle received £5.7 million from DfT and £6 million in local match funding, giving a total of £11.7 million to implement the first phase of their CCA scheme.

In November 2014, additional funding of £114m was announced for the CCA cities, of this Newcastle was awarded £10.6m.

1.4 Newcastle Fit for Cycling

The Newcastle 'Fit for Cycling' programme aims to build a strategic cycling network, supporting city centre regeneration, housing growth and access to employment, training and services across the City Deal area.

Within ten years, Newcastle will:

- have made significant progress towards achieving European levels of cycling
- be a safer, more attractive place to move through and live in
- be healthier, more prosperous and sustainable

Central to the CCA programme is linking employment and training opportunities to new housing developments in Newcastle and to existing communities where people are currently least likely to

cycle. The programme prioritises changes to the urban core and to the inner suburbs, within two miles of the city centre. Newcastle's vision is to achieve 12% of all journeys less than five miles by bike in the next ten years.

Newcastle's 'Fit for Cycling' programme is a network of seven major cycle routes (Figures 1 and 2) across the city making the best use of existing infrastructure and linking in with the major improvements currently underway in the city centre. Three radial cycle routes will be constructed through CCA funding, east through Byker, west to Elswick and north to Gosforth. The Northern Route will be extended along the Great North Road to Newcastle Great Park which is the main housing growth areas for Newcastle. These infrastructure improvements will be supported by an Active Travel Centre where people can go for cycle maintenance, parking and information.

In the first two years of the programme, Newcastle aims to have four out of the seven cycling routes operational, linking Newcastle's densely populated inner suburbs to a revitalised urban core.

1.5 Impacts

The aims for the first two years of the 'Fit for Cycling' programme aim to:

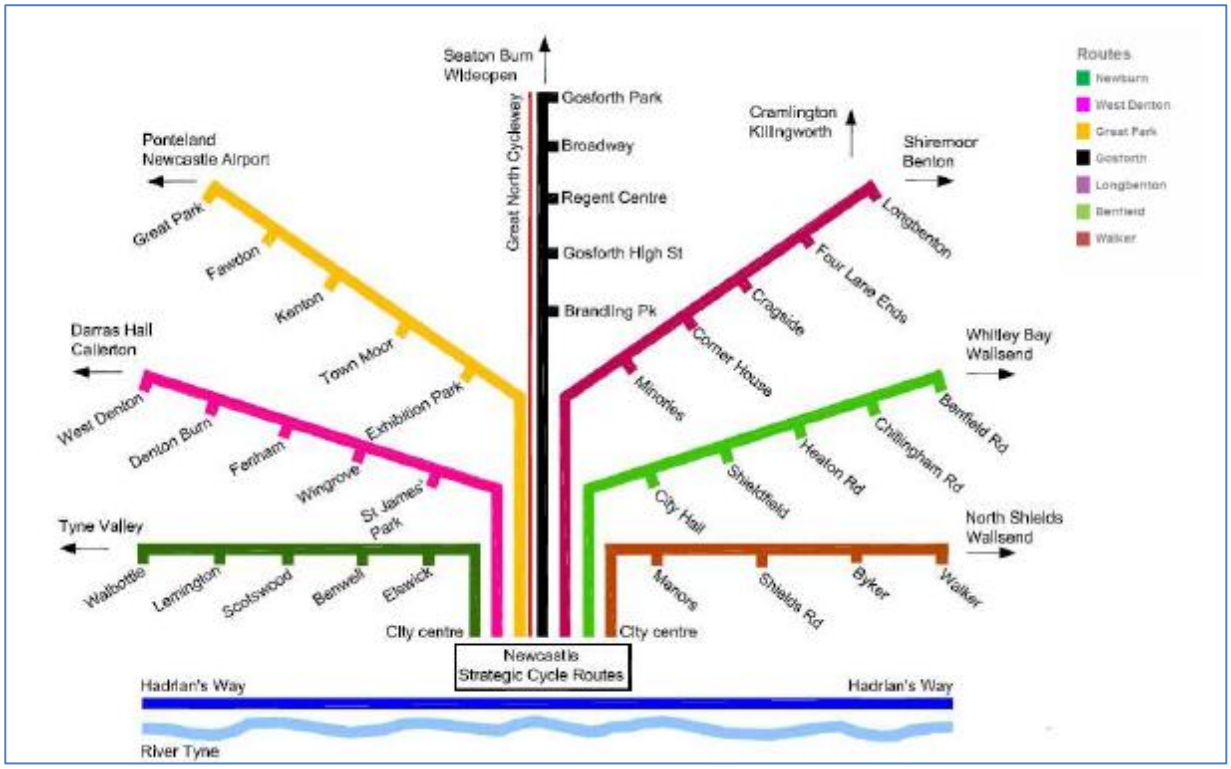
- increase cycling trips by 73% (1,232,177 additional cycling trips)
- deliver Value for Money (VfM) by achieving a BCR of 8:1
- grow the city's economy
- improve the local environment
- achieve health benefits for the city's residents

The scheme plans to improve the accessibility of key employment areas and ties in with the economic expansion of the city. Social inclusion is also a focus, and improving access for the whole community to employment, training and services.

There are measures to encourage new cyclists and reintroduce people to cycling, meaning increased levels of physical activity with significant health benefits. The scheme targets under-represented groups, particularly those from deprived areas and from areas of high unemployment, and aims to encourage more women and people from BME and disability communities to cycle.

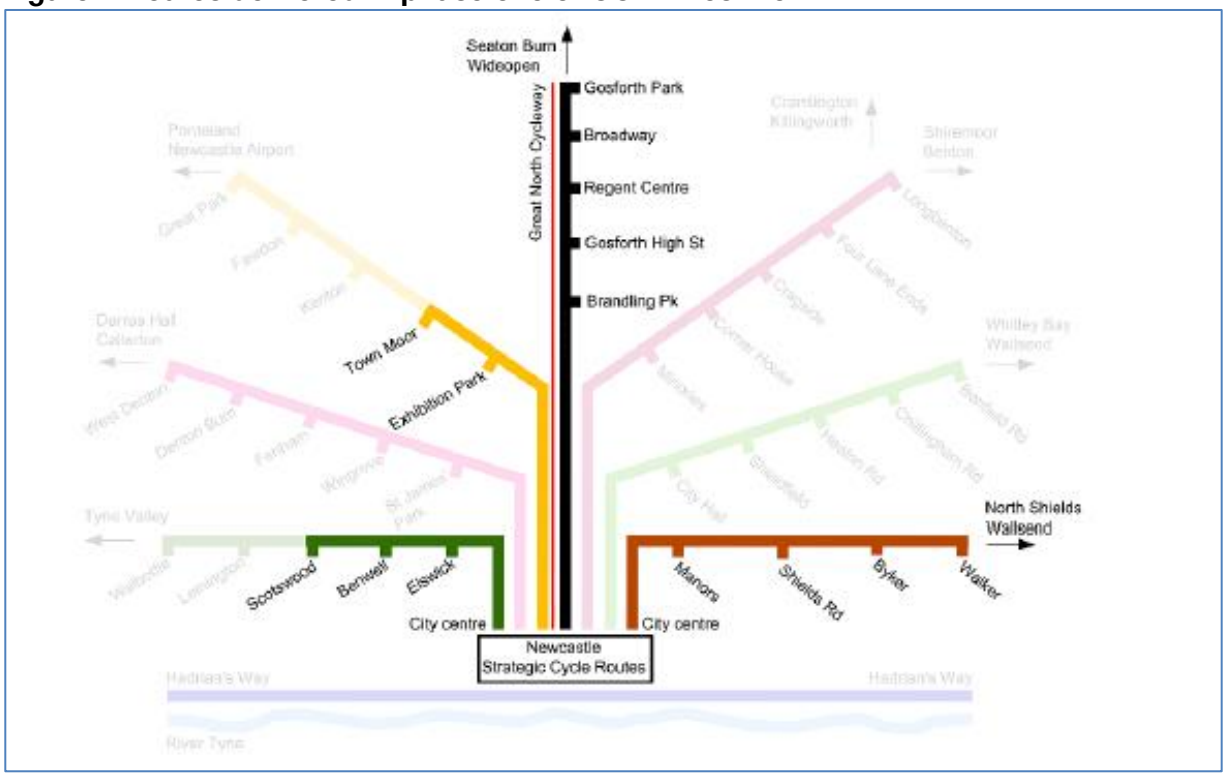
Improving air quality, reducing CO_2 emissions and reducing noise are also anticipated impacts.

Figure 1 Newcastle 'Fit for Cycling' city wide strategic network



Source: Newcastle Fit for Cycling

Figure 2 Routes delivered in phase one of CCA investment



Source: Newcastle Fit for Cycling

2 Key research questions

2.1 Themes and research questions

The aims and objectives from the original city bid documents were reviewed and ten common themes were identified within the predicted outcomes. These themes were used as the basis for formulating the following research questions, and are common to all cities:

1) What impact has the CCA investment had upon levels of cycling?
2) What are the related benefits of mode shift from car or van to bicycle in terms of user's health, congestion levels and carbon emissions?
3) To what extent has the CCA investment affected the number of people taking integrated cycling and public transport journeys
4) To what extent has the CCA investment altered perceptions of the safety of cycling?
5) To what extent has the CCA investment affected the demographic balance of cyclists?
6) What is the Benefit to Cost Ratio (BCR) of the investment?
7) What opportunities are there for further evaluation, and how will this enhance current data collection?

2.2 Recommended and additional metrics

A series of consultation meetings between Sustrans and each of the cities' monitoring leads took place to establish current and planned monitoring provision for CCA. Sustrans worked with cities to understand the existing data that was available to them. This existing data was shared with Sustrans with a view to formulating the programme baseline.

Within each theme, metrics were determined against which programme impacts could be monitored throughout the project lifespan. Furthermore, potential data sources were defined against each metric, specifying how these metrics would be reported on. The results of this exercise are detailed in Table 2-1.

The data and monitoring information provided by cities were mapped to the research questions, and an assessment was made as to whether they were sufficient to measure the impacts of the CCA investment at intervention level, and more broadly in the city.

Table 2-1 differentiates between recommend and additional metrics. Recommended metrics are those which cities must address in order to report on the theme. Recommended metrics are monitored by data from counts, user surveys and the Active People Survey (APS)[18]. For consistency across the programme, it should be noted that all the cities have exactly the same metrics.

The exception is for the theme 'Integration with levels of public transport', for which parked bicycle counts are required: these are only required when cities aim to impact upon this area. Newcastle will report on this theme in phase one of investment.

The additional metrics draw upon a wider range of data sources and would help to deliver stronger insight into answering the research questions. As some of these can be quite context specific (e.g. of limited applicability to some cities' schemes) and resource intensive, these are not a monitoring requirement of cities. However, a number of cities are planning, where appropriate, to undertake additional monitoring. This will help to strengthen the evidence base regarding the impacts of the CCA investment in a number of ways (see Section 3 for more details).

[18] Sport England Active People Survey www.gov.uk/government/organisations/department-for-transport/series/walking-and-cycling-statistics

Thus, the recommended measures are the minimum monitoring that all cities will undertake and the additional metrics are ones that would allow stronger statements about impact to be made more robust and their uptake will vary across the cities.

2.3 Monitoring and evaluation

Sustrans recommend that cities should collect data periodically throughout the ten year programme at the location of intervention(s). This data will provide important evidence as part of the wider evaluation of the scheme's impacts in response to the research questions outlined above.

Furthermore, to effectively evaluate the outcomes Sustrans also recommends that city wide data is collected. The changes at the intervention can therefore be compared with the city wide picture to make a stronger statement about attribution and impact.

Subsequently, within Table 2-1 columns note whether a data source provides information at an intervention or a city wide level. By intervention it is meant that the user surveys or counts are undertaken on the CCA intervention or at a point where cyclists using the improved route must pass (e.g. further along a canal towpath where there are no entrances or exits past the intervention). City wide data refers to cycle and transport monitoring within the city that is not specific to users of CCA infrastructure; for example, the wider ACC network or a travel behaviour survey exploring the habits of the city or regional population. In the case of the Active People Survey (APS), this is a national dataset available to all cities to draw upon. At city or regional level there could also be complementary data sources that would enable a more robust picture to be built up.

Table 2-1 Themes, metrics and data sources for monitoring the impacts of CCA investment

Theme	Metric	Proposed Data Source	Intervention	City Wide
Change in levels of cycling	**Recommended**			
	Percentage change in cycling trips made utilising the intervention	Automatic cycle counter data from the intervention/manual count data from the intervention	✓	
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	Automatic cycle counter/manual count data from the intervention and from the whole city area	✓	✓
		Automatic cycle counter/manual count data from the intervention and the Active People survey	✓	✓
Change in level of integration with public transport links	**Recommended**			
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	Cycle parking counts	✓	✓
	Additional			
	Percentage change in people taking integrated cycling and public transport trips	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	Perception survey of people parking at public transport hubs	✓	✓
The effect on users health	**Recommended**			
	Percentage of users that have increased their frequency of cycling	User survey at the intervention linked to the count changes to calculate number	✓	

Theme	Metric	Proposed Data Source	Intervention	City Wide
		Active People Survey (city as a whole) linked to the count changes		✓
	Percentage of users that report a feeling of improved health and/or wellbeing	User survey at the intervention linked to the count changes	✓	
	Additional			
	Percentage of users that have increased their frequency of cycling	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
		Household travel survey		✓
		Household survey with boosted sample at intervention location	✓	✓
Change in levels of accidents	**Recommended**			
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	STATS19	✓	✓
	Additional			
	Percentage of interactions that are 'unsafe interactions'	Video analysis	✓	
The effect on CO_2 emissions	**Recommended**			
	Amount of CO_2 saved due to modal shift toward cycling	User survey at the intervention linked to the count changes to calculate amount	✓	
	Additional			
	Amount of CO_2 saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
	Amount of local pollutants saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
Employment and economic effects	**Recommended**			
	No recommended metric			
	Additional			
	Percentage change in levels of absence in the workplace	Absence records	✓	✓
		Workplace travel surveys	✓	✓
The effect of	**Recommended**			

Theme	Metric	Proposed Data Source	Intervention	City Wide
congestion levels	Number of trips made by bicycle which were previously made by car/van during peak periods	User surveys linked to the count changes to calculate number	✓	
	Additional			
	Number of trips made by bicycle which were previously made by car/van during peak periods	Workplace travel surveys Personal travel diaries	✓	✓ ✓
Levels of awareness and perceptions of safety	**Recommended**			
	Percentage of users that have a positive perception of safety at the intervention	User survey at the intervention	✓	
	Additional			
	Percentage change in users perceptions of safety at the intervention Percentage of users that have a positive perception of safety	Household survey Personal travel diary	✓ ✓	✓
Changes in levels of cycling by demographic	**Recommended**			
	Ratio of female and male cyclists	User surveys Active People survey	✓	 ✓
	Additional			
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	Household survey Workplace surveys Personal travel diary	 ✓	✓ ✓ ✓
Value for money	**Recommended**			
	BCR	Users surveys combined with intervention specific counts	✓	
	Additional			
	Percentage of people that have a positive perception of value for money of the CCA investment Percentage of people that have a positive perception of value for money of investment in highways projects that aim to benefit users of motorised transport	Perceptions surveys linked to the count changes Perception surveys linked to the count changes Perception surveys linked to the count changes	✓ ✓ ✓	

3 Recommendations for monitoring the ten-year programme

This section sets out recommendations for data collection when monitoring the recommended metrics set out in the previous section. The following focuses upon collection of primary data and therefore secondary sources of data such as the Active People Survey and STATS19 national

datasets are not included. The “How to” guides provide details on how to process and analyse the data

Recommendations for data collection are as follows:

3.1 Counts

There should be a comprehensive network of counts within the city to establish the numbers cycling, and this must include intervention specific sites. Cities will decide which typology of count is most appropriate for their cycle network and CCA programme; whether these are screenline, cordon, routes to particular destinations or multiple counts on selected keys routes will be a matter for the cities to decide. Within each group, manual or automatic counts can be selected accordingly.

3.1.1 Manual counts

To establish usage at a particular point or points on a network using a manual count, Sustrans recommends the following:

- counts should be a minimum of twelve hours 07:00 until 19:00
- manual counts can be taken as part of a user survey
- counts should be conducted at a consistent location
- counts should be conducted at the same time of year
- where feasible, pre intervention counts should be conducted

Counts taken as part of the baseline should be repeated periodically throughout the ten year programme. These should be at the same location and manual counts should also be conducted at the same time of year.

Best practice: Four day counts annually, one per season or clustered. Gender and age category (child under 16 / adult / 65+) recorded.

Minimum: Annually. Gender and age category (child under 16 / adult / 65+) recorded.

3.1.2 Automatic cycle counters

ACCs should be installed with new infrastructure where viable. Appropriate intervals will again be determined by the nature and scale of the intervention, and the number should be proportionate. For example, a minimum of one ACC should be installed on a new linear route, though practical considerations, such as whether paths are traffic free will also be factors. Data taken from ACCs need to be checked regularly, and should be calibrated.

Minimum: one ACC installed on a new linear route.

3.2 User surveys

User surveys with cyclists at the intervention should be conducted throughout the programme. User surveys at six locations was deemed appropriate for Newcastle at phase one. Surveys should include specific and consistent questions (please see the user survey “How to” guide for example questions) to establish:

- journey purpose and length
- any change in mode of transport away from car or van use
- whether the user could have used a car/van for the journey
- whether the scheme has impacted on the user’s behaviour
- reported improvement in health/wellbeing

- perceptions of safety of the route
- demographic information (age, gender, employment status, ethnicity, income)

Best practice: annual surveys at the same location.

Minimum: every three years at the same location.

Delivery of the surveys will be determined by cities; however it is essential that sites are selected to interview cyclists either on CCA routes or where this is not practical, at a location that will capture flows from the intervention.

The number of user surveys should increase to provide adequate coverage as the network grows with future investment.

3.2.1 Cycle parking counts

To report on integration with public transport links, Sustrans recommend cycle parking counts at key public transport hubs. This should be measured consistently throughout the programme and include the number of bicycles at the relevant transport hubs.

Best practice: Four day counts annually, one per season or clustered.

Minimum: Annually.

4 Newcastle's monitoring data

This section sets out the data that Sustrans have collected from Newcastle when compiling this report.

4.1 ACC and manual count data

ACC and manual count data have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention. (Increase in levels of cycling)
- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Increase in levels of cycling)

All of these data have been provided in the 'Collated Counter' spreadsheet.

It should be noted that the percentage changes in usage that have been calculated for baseline are based on a significant number of ACCs. The percentage change of 4% on CCA interventions between 2012 and 2013 is based upon the change across ten ACCs, and the percentage change of 7% across the city between 2012 and 2013 is based upon the change across 33 ACCs. Between 2013 and 2014 Newcastle installed nine more ACCs and have committed to installing additional ones on new pieces of CCA investment. This number of counters provides robust data to report upon the related metrics.

It is also worth noting since recording more information; the counters on the CCA interventions are showing a higher level of increase than the rest of the city wide counters.

Table 4-1 Percentage change in counter data 2012-2014

	2012 to 2013	2013 to 2014
Intervention	4%	13%
City level	3%	12%

The sustained positive percentage increase in both years suggests an increase in cycling levels generally. The change in cycling levels will be monitored throughout the programme. However, it should be noted that counts at the intervention level alone will not provide information regarding modal shift or barriers and drivers of using the route.

4.2 Active People Survey

The Active People Survey (APS) results have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Increase in levels of cycling)
- Percentage of users that have increased their frequency of cycling. (Increase in users' health)

The APS was chosen as a recommended data source due to the accessibility of the data to all cities; however, as outlined in section 3.2 of the main report, there are considerable limitations. Of the sample at the city level (approximately 500), few are cyclists, and so modest change can result in large proportionate increases or decreases, as seen below.

Table 4-2 Proportion of residents in Newcastle who cycle at a given frequency

	2011/2012 (sample size = 472)	**2012/2013 (sample size = 501)**
Cycle at least five times per week	4%	2%
Cycle at least three times per week	6%	3%
Cycle at least once per week	10%	7%
Cycle at least once per month	16%	13%

In Newcastle, the APS has shown a 42% decrease in the frequency of cycling from 2011/2012 to 2012/2013. Applying the proportions in Table 4-2 to Newcastle's population suggests an estimated 2,720,585 trips were undertaken annually in 2012/13. This is 42% decrease in the number of trips calculated in 2011/12. However, as discussed previously, the reliability of these estimates is questionable due to the relatively low number of cyclists represented in the APS sample at the city level. Furthermore, percentage changes derived from a small base result in high corresponding increases or decreases. Employing 'additional' data collection tools, such as the household survey, would enable increased levels of rigour in reporting.

The 2012/13 and 2013/2014 APS figures should be used to calculate the percentage change for the next APS report.

4.3 Populating the scorecard

The percentage changes obtained from the data sources discussed above can be used to report against a number of metrics.

An example of the related section of the scorecard (see Section 5) is illustrated below in Figure 2. There is a box for results from each data source (denoted by an asterix and letter in the top right hand corner – the key is below the table).

Figure 3 Example section of the scorecard

	2013		2014	
Metric	Intervention	City wide	Intervention	City wide
Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	*C 4%	*C+ 3%	*C 13%	*C+ 12%
	*C 4%	*AP -42%	*C 13%	*AP

*C Automatic cycle counter data or manual count data from the intervention
*C+ Automatic cycle counter data from the wider city area
*AP Active People Survey

5 Scorecard

This section provides the scorecard in which percentage changes will be reported against the related metrics.

In the top right hand corner of each box, a letter represents the data source from which the figure was obtained. The key is above Figure 3 below.

Sustrans have provided "How to" guidance documents on how to extract, process and compare data from the recommended sources for the scorecards. The user surveys which cities have committed too will provide data for a considerable number of the metrics, which are largely incomplete at baseline.

Cities should provide DfT with an updated scorecard every year, showing the percentage change from the previous year for all of the recommended metrics, and the additional where possible.

Figure 3: Newcastle Scorecard

Data Sources Key:	
*C Automatic cycle counter data or manual count data from the intervention	
*C+ Automatic cycle counter data or manual count data from the wider city area	
*AP Active People Survey	*CP Cycle parking counts
*PD Personal travel diaries	*WS Workplace travel surveys
*PS Perception survey	*H Household travel survey
*H+ Household travel survey with boosted sample around intervention	
*S19 STATS 19	*VA. Video analysis
*AR Employer absence records	

Theme	Metric	2013		2014		2015		.....	2024	
	Intervention change (I) or City Wide change (CW)	I	CW	I	CW	I	CW		I	CW
Change in levels of cycling	**Recommended metrics**									
	Percentage change in cycling trips made utilising the intervention	4% *C		13% *C		*C			*C	
	Percentage change in cycling trips made utilising the intervention, and percentage	4% *C	2% *C+	13% *C	12% *C+	*C	*C+		*C	*C+
		4% *C	-42% *AP	13% *C	*AP	*C	*AP		*C	*AP
Change in level of integration with public transport links	**Recommended metrics**									
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	*CP		*CP		*CP			*CP	
	Additional metrics									
	Percentage change in people taking integrated cycling and public transport trips	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	*SS		*SS		*SS			*SS	
The effect on users' health	**Recommended metrics**									
	Percentage of users that have increased their frequency of cycling	*US	-42% *AP	*US	*AP	*US	*AP		*US	*AP
	Percentage of users that report a feeling of improved health and/or wellbeing	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have increased their frequency of cycling	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
			*H		*H		*H			*H
		*H+	*H+	*H+	*H+	*H+	*H+		*H+	*H+
Change in levels of accidents	**Recommended metrics**									
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	*S19	*S19	*S19	*S19	*S19	*S19		*S19	*S19
	Additional metrics									
	Percentage of interactions that are 'unsafe interactions'	*VA		*VA		*VA			*VA	
The effect on CO2 emissions	**Recommended metrics**									
	Amount of CO2 saved due to modal shift toward cycling	*US		*US		*US			*US	
	Additional metrics									
	Amount of CO2 saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
	Amount of local pollutants saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Employment and economic effects	**Recommended metrics**									
	No requisite									
	Additional metrics									
	Percentage change in levels of absence in the workplace	*AR		*AR		*AR			*AR	
		*WS		*WS		*WS			*WS	

The effect on congestion levels	**Recommended metrics**								
	Number of trips made by bicycle which were previously made by car/van during peak periods	*US		*US		*US			*US	
	Additional metrics								
	Number of trips made by bicycle which were previously made by car/van during peak periods	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Levels of awareness and perceptions of safety	**Recommended metrics**								
	Percentage of users that have a positive perception of safety at the intervention	*US		*US		*US			*US	
	Additional metrics								
	Percentage of users that have a positive perception of safety	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Changes in levels of cycling by demographic	**Recommended metrics**								
	Ratio of female and male cyclists	*C	*AP	*C	*AP	*C	*AP		*C	*AP
	Additional metrics								
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Value for money	**Additional metrics**								
	Percentage of people that have a positive perception of value for money of the CCA investment	*US		*US		*US			*US	
	Percentage of people that have a positive perception of value for money of investment in carbon based transport projects	*US		*US		*US			*US	

6 Summary of communications and commitments

The gaps analysis exercise highlighted a need for user surveys at six locations on CCA intervention sites at the 2015 baseline, and the DfT grant towards monitoring and evaluation provided £11,321 towards the cost of these surveys.

A brief summary of the points clarified and committed to is as follows:

User surveys
Recommendation: User surveys to be conducted at six appropriate locations on the CCA network. These should be repeated at appropriate intervals throughout the programme, best practice being every year, the minimum frequency being every three years.

Clarification was provided on the following:

The number of user surveys was reached by applying the scale of the investment to the available grant, then considering the elements of infrastructure change in phase one investment.

Newcastle City Council will determine the locations and timescale of the user surveys. Sustrans clarified that these must be on phase one Cycle City Ambition interventions to report on the recommended metrics.

The grant will provide funding towards the cost of the first iteration of user surveys, though it is not anticipated that the grant will cover the cost of all six surveys.

To what extent the cost is covered will depend upon how Newcastle chooses to deliver the surveys; there is no obligation to use the Sustrans Route User Intercept Survey.

There is an expectation that cities will source funding for the surveys not covered by the grant, and for future iterations.

The user surveys must collect data on themes specified in the recommendations section of this report (section 0) to enable reporting on the metrics in the scorecard (section 5), however, questions within surveys do not have to be identical between cities..

Commitments and additional monitoring

Newcastle City Council has plans and budget to conduct user surveys as part of CCA monitoring, and they have committed to the six recommended surveys, every three years throughout the programme.

Counts of users

Recommendation

Counts of users, ACC or manual, to be conducted at CCA intervention sites, periodically throughout programme.

Clarification was provided on:

Newcastle City Council is planning to install additional ACCs at nine sites in the city, and some of these will be on CCA intervention.

Commitments and additional monitoring:

Newcastle City Council will install new ACCs on new pieces of CCA infrastructure.

Additional levels of monitoring and evaluation

Newcastle is conducting household surveys as part of the 'Bike Life' project which will provide additional levels of data collection in 2015 and 2017.

Newcastle also delivers workplace travel surveys as part of the Go Smarter programme.

Newcastle is undertaking bicycle parking surveys as part of 'Bike Life' which will include Newcastle Central Station.

Future phases of Cycle City Ambition

Sustrans explained to Newcastle City Council that the number of user surveys would be expected to grow as the network increased to provide adequate coverage of the investment.

7 Next Steps and timelines

Newcastle City Council will determine the locations and timeframe of the recommended user surveys, but baseline data should be collected at the earliest appropriate opportunity for each location.

Alongside this report are guides detailing step by step how to use results from recommended data sources to populate the scorecard.

Throughout the programme cities should provide an annual update of their evaluation findings to DfT.

As outlined in section 0 'recommendations for monitoring the ten year programme', counts and user surveys should be increased accordingly so that the programme of monitoring provides adequate coverage of the interventions.

7.1 Timeline

August 2013 DfT £77m Cycle City Ambition funding announced - £5.7m for Newcastle, match funding of £6m

2013 Newcastle starts to implement phase one of CCA works

November 2014 A further £10.6m announced for Newcastle's CCA scheme

March 2015 Sustrans gaps analysis document issued to Newcastle, with recommendation for user surveys at six locations

March 2015 DfT awards Newcastle £11,321 towards the recommended user surveys

Summer/Autumn 2015 Newcastle City Council to select sites and conduct user surveys at six locations

2015/16 Baseline data to be collected for phase two of investment

2018, 2021 and 2024 Repeat user surveys including any additional locations added for further rounds of funding, in the same locations and at the same time of year.

2016-2023 Monitoring and evaluation data sent to DfT annually and scorecard populated

Appendix 7

Norwich

1 Introduction

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measuring measure the impact of the CCA investment.

This report outlines the following:

- the project scope in understanding and enhancing monitoring and evaluation of the CCA programme
- an overview of the scheme in Norwich and the expected outcomes
- recommendations for monitoring and evaluating the CCA investment
- Norfolk County Council's data collection commitments
- next steps, including guidance documents on how to populate the scorecard

1.1 Summary

Project scope in terms of monitoring and evaluation of CCA schemes

- Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.
- Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.
- Sustrans worked with the CCA cities to identify gaps in data collection, and made recommendations to ensure that comparable programme wide data is collected

Norwich's Push the Pedalways

- Norwich received £3.7m in CCA funding in 2013 and £8.4m in 2015 for phases one and two of the Cycle Revolution programme.
- Norwich's Pedalway network was developed in spring 2012 after a series of consultation rides with local cyclists and the ambition is to upgrade one Pedalway every two years.
- Phase one of the Push the Pedalways CCA scheme focuses on the 'Pink Pedalway'. The result will be an eight mile cross-city route that directly connects homes to important destinations and can be safely ridden by less experienced riders.
- The aims of the programme are to raise the proportion of adults who cycle at least once per week from 20% to 44%, and, to raise the proportion of adults who travel to work by bicycle from 6% to 15% by 2023.

Recommendations

- Recommendations for monitoring include:
    - counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme
    - User surveys to be conducted at two appropriate locations on the CCA

network, and to be repeated a minimum of every three years

- Counts of parked bicycles at key public transport hubs (if cities choose to report on integration with public transport)

Future plans for monitoring

- Norfolk County Council has given a commitment that it will install new ACCs with new pieces of infrastructure
- Norfolk will add questions to their planned Origin and Destination surveys to in order to report upon the specified metrics. These surveys will be conducted at eight locations, biennially throughout the programme.
- Norfolk will lengthen the manual count periods (taken as part of the Origin and Destination surveys) to meet Sustrans recommended 12 hour period for manual counts.

Next steps

Throughout the programme cities should provide an annual update of their monitoring evaluation findings to DfT.

1.2 Project scope

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

Cities provided their monitoring and evaluation plans for their programmes, and also shared available baseline data.

Ten common themes were identified from the aims and objectives within all cities' bid documents. Based on these themes, Sustrans developed a series of metrics that cities could use to monitor the impacts of the CCA investment through a number of different

Another component of this exercise was the allocation of a £100,000 grant, provided by DfT to support the monitoring and evaluation activities of the CCA cities. Sustrans identified that supporting the cities in the undertaking of user surveys alongside manual cycle counts would be the most effective use of the grant. A recommended number of user surveys was determined for each city, firstly based upon the scale of investment and then adjusted to parallel the number of elements of infrastructure in phase one.

In conclusion, Sustrans provided recommendations for the future monitoring and evaluation of the CCA programme, and produced a scorecard for cities to populate with data against the metrics.

1.3 Cycle City Ambition Grant

In 2013, Norwich was awarded £3.7m of the Cycle City Ambition grant. Match funding of £1.8m took the total to £5.5m for investment in their 'Push the Pedalways' scheme.

In November 2014, further funding of £114m was announced for the CCA cities, and Norwich received £8.4m of this to further their programme.

1.4 Push the Pedalways

The Pedalway network in Norwich was developed in spring 2012 after a series of consultation rides with local cyclists. The network consists of five radial and two orbital Pedalways (inner and outer) amounting to 58.7 miles. The Pedalways extend throughout the urban area and the radials intersect in the city centre at St. Andrews Plain. Each Pedalway has a colour identity that helps with route planning and navigation.

The ‘Push the Pedalways’ CCA bid covers the continuous built up area of Norwich, an area of 22.6 square miles with a population of 210,743 in 2011.

The Pedalways are useful for short journeys but their focus is to provide for longer journeys connecting hubs such as public transport interchanges, employment centres, the universities, major growth locations and the city centre. Many sections of the network are not to the required standard to make cycling a mainstream activity.

The scheme chosen for CCA funding is the Pink Pedalway- an eight mile cross city route that runs from the Norwich Research Park, Norfolk and Norwich Hospital and University of East Anglia on the west edge of the city, through the city centre to neighbourhoods in the east of the city. The route can be safely ridden by less experienced riders because the entire length is either separate from traffic or shares road space with traffic that travels at or below 20mph.

This will provide an eight mile cross-city route that directly connects homes to important destinations and can be safely ridden by less experienced riders because the entire length is either separate from traffic or shares road space with traffic that travels at or below 20mph. This would set a standard for the enhancement, with the aim to upgrade one Pedalway every two years.

1.5 Impacts

Norwich aims to become ‘a progressive and prosperous European cycling city by doubling the level of cycling over the next ten years’. This means raising the proportion of people cycling to work from 6% to 15% by 2023, and the proportion of adults who cycle once a week from 20% to 44%.

A Benefit to Cost Ratio (BCR) for this project was estimated to be 2.37, anticipating significant positive economic impacts in respect of Accidents, Journey Quality and Physical Activity. There will also be benefits to consumers in the form of time savings generated by the provision of new cycle links offering more direct routes, and to businesses through reduced absenteeism from work amongst new cyclists using the route.

2 Key research questions

The aims and objectives from the original city bid documents were reviewed and ten common themes were identified within the predicted outcomes. These themes were used as the basis for formulating the following research questions, and are common to all cities):

1) What impact has the CCA investment had upon levels of cycling?
2) What are the related benefits of mode shift from car or van to bicycle in terms of user’s health, congestion levels and carbon emissions?
3) To what extent has the CCA investment affected the number of people taking integrated cycling and public transport journeys?
4) To what extent has the CCA investment altered perceptions of the safety of cycling?
5) To what extent has the CCA investment affected the demographic balance of cyclists?
6) What is the Benefit to Cost Ratio (BCR) of the investment?
7) What opportunities are there for further evaluation, and how will this enhance current data collection?

2.1 Recommended and additional metrics

A series of consultation meetings between Sustrans and each of the cities’ monitoring leads took place to establish current and planned monitoring provision for CCA. Sustrans worked with cities to understand the existing data that was available to them. This existing data was shared with Sustrans with a view to formulating the programme baseline.

Within each theme, metrics were determined against which programme impacts could be monitored throughout the project lifespan. Furthermore, potential data sources were defined against each metric, specifying how these metrics would be reported on. The results of this exercise are detailed in Table 2-1.

The data and monitoring information provided by cities were mapped to the research questions, and an assessment was made as to whether they were sufficient to measure the impacts of the CCA investment at intervention level, and more broadly in the city.

Table 2-1 differentiates between recommended and additional metrics. Recommended metrics are those which cities must address in order to report on the theme. Recommended metrics are monitored by data from counts, user surveys and the Active People Survey (APS)[19]. For consistency across the programme, it should be noted that all the cities have exactly the same metrics.

The exception is for the theme 'Integration with levels of public transport', for which parked bicycle counts are required: these are only required when cities aim to impact upon this area. In phase one of investment Norwich will not report on this theme.

The additional metrics draw upon a wider range of data sources and would help to deliver stronger insight into answering the research questions. As some of these can be quite context specific (e.g. of limited applicability to some cities' schemes) and resource intensive, these are not a recommended monitoring requirement of cities. However, a number of cities are planning, where appropriate, to undertake additional monitoring. This will help to strengthen the evidence base regarding the impacts of the CCA investment in a number of ways (see Section 3 in the main report for more details).

Thus, the recommended measures are the minimum monitoring that all cities will undertake and the additional metrics are ones that would allow stronger statements about impact to be made more robust and their uptake will vary across the cities.

2.2 Monitoring and evaluation

Sustrans recommend that cities should collect data periodically throughout the ten year programme at the location of intervention(s). This data will provide important evidence as part of the wider evaluation of the scheme's impacts in response to the research questions outlined above.

Furthermore, to effectively evaluate the outcomes Sustrans also recommends that city wide data is collected. The changes at the intervention can therefore be compared with the city wide picture to make a stronger statement about attribution and impact.

Within Table 2-1 there are therefore columns note whether a data source provides information at 'intervention' or a 'city wide' level. By 'intervention' it is meant that the user surveys or counts are undertaken on the CCA intervention or at a point where cyclists using the improved route must pass (e.g. further along a canal towpath where there are no entrances or exits past the intervention). 'City wide' data refers to cycle and transport monitoring within the city that is not specific to users of CCA infrastructure; for example, the wider ACC network or a travel behaviour survey exploring the habits of the city or regional population. In the case of the Active People Survey (APS), this is a national dataset available to all cities to draw upon. At city or regional level there could also be complementary data sources that would enable a more robust picture to be built up.

Table 2-1 Themes, metrics and data sources for monitoring the impacts of CCA investment

Theme	Metric	Proposed Data Source	Intervention	City Wide
Change in levels of	**Recommended**			

[19] Sport England Active People Survey www.gov.uk/government/organisations/department-for-transport/series/walking-and-cycling-statistics

Theme	Metric	Proposed Data Source	Intervention	City Wide
cycling	Percentage change in cycling trips made utilising the intervention	Automatic cycle counter data from the intervention/manual count data from the intervention	✓	
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	Automatic cycle counter/manual count data from the intervention and from the whole city area	✓	✓
		Automatic cycle counter/manual count data from the intervention and the Active People survey	✓	✓
Change in level of integration with public transport links	**Recommended***			
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs *Not a recommended metric for Norwich at phase one	Cycle parking counts	✓	✓
	Additional			
	Percentage change in people taking integrated cycling and public transport trips	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	Perception survey of people parking at public transport hubs	✓	✓
The effect on users health	**Recommended**			
	Percentage of users that have increased their frequency of cycling	User survey at the intervention linked to the count changes to calculate number	✓	
		Active People Survey (city as a whole) linked to the count changes		✓
	Percentage of users that report a feeling of improved health and/or wellbeing	User survey at the intervention linked to the count changes	✓	
	Additional			
	Percentage of users that have increased their frequency of cycling	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
		Household travel survey		✓
		Household survey with boosted sample at intervention location	✓	✓
Change in levels of accidents	**Recommended**			
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	STATS19	✓	✓
	Additional			
	Percentage of interactions that are 'unsafe interactions'	Video analysis	✓	
The effect on CO_2 emissions	**Recommended**			
	Amount of CO_2 saved due to	User survey at the intervention	✓	

Theme	Metric	Proposed Data Source	Intervention	City Wide
	modal shift toward cycling	linked to the count changes to calculate amount		
	Additional			
	Amount of CO_2 saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
	Amount of local pollutants saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
Employment and economic effects	**Recommended**			
	No recommended			
	Additional			
	Percentage change in levels of absence in the workplace	Absence records	✓	✓
		Workplace travel surveys	✓	✓
The effect of congestion levels	**Recommended**			
	Number of trips made by bicycle which were previously made by car/van during peak periods	User surveys linked to the count changes to calculate number	✓	
	Additional			
	Number of trips made by bicycle which were previously made by car/van during peak periods	Workplace travel surveys	✓	✓
		Personal travel diaries		✓
Levels of awareness and perceptions of safety	**Recommended**			
	Percentage of users that have a positive perception of safety at the intervention	User survey at the intervention	✓	
	Additional			
	Percentage change in users perceptions of safety at the intervention Percentage of users that have a positive perception of safety	Household survey Personal travel diary	✓ ✓	✓
Changes in levels of cycling by demographic	**Recommended**			
	Ratio of female and male cyclists	User surveys	✓	
		Active People survey		✓
	Additional			
	Ratio of the gap between	Household survey		✓

Theme	Metric	Proposed Data Source	Intervention	City Wide
	established cycling groups and groups that have a lower propensity to cycle	Workplace surveys Personal travel diary	✓	✓ ✓
Value for money	**Recommended**			
	BCR	Users surveys combined with intervention specific counts	✓	
	Additional			
	Percentage of people that have a positive perception of value for money of the CCA investment Percentage of people that have a positive perception of value for money of investment in highways projects that aim to benefit users of motorised transport	Perceptions surveys linked to the count changes Perception surveys linked to the count changes Perception surveys linked to the count changes	✓ ✓ ✓	

3 Norwich's monitoring data

This section sets out the data that Sustrans have collected from Norwich when compiling this report.

3.1 ACC and manual count data

It is important to note that this report does not quote actual count figures, but rather percentage changes from a previous point in time (one to three years before). This is to ensure that the counts compared are alike, and to minimise the risks associated with the number of counts varying both within and between cities from year to year.

ACC and manual count data have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Change in levels of cycling)

All of these data have been provided in the 'Collated Counter' spreadsheet.

It should be noted that the percentage changes in usage that have been calculated are based on very few counters. The percentage change of -6% between 2012 and 2013 is based upon the change in just three ACCs. There was an increase of 6% in two ACCs between 2013 and 2014. These changes are not based upon enough counts to be deemed robust enough to report against the metrics.

To increase the amount of data available Norwich has started completing multiple manual counts and will install new ACCs on new pieces of CCA investment. In 2014, 40 city wide counts were undertaken, and if repeated this would provide exemplar levels of counts.

Furthermore, manual counts taken during their Origin and Destination surveys will be extended to twelve hours at all eight locations, providing robust count data at this intervention in future years.

It should also be noted that data from the counter 'A1042 Ring Rd, Norwich' was not included in the calculations. This is because it was showing counts in excess of 2 million a year and was regarded as at fault.

3.2 Active People Survey

The Active People Survey (APS) have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area. (Change in levels of cycling)
- Percentage of users that have increased their frequency of cycling. (Effect on users' health)

The APS was chosen as a recommended data source due to the accessibility of the data to all cities; however, as outlined in section 3.2 there are considerable limitations. Of the sample at the city level (approximately 500), few are cyclists, and so modest change can result in large proportionate increases or decreases, as seen below.

Table 3-1 Proportion of residents in Norwich who cycle at a given frequency

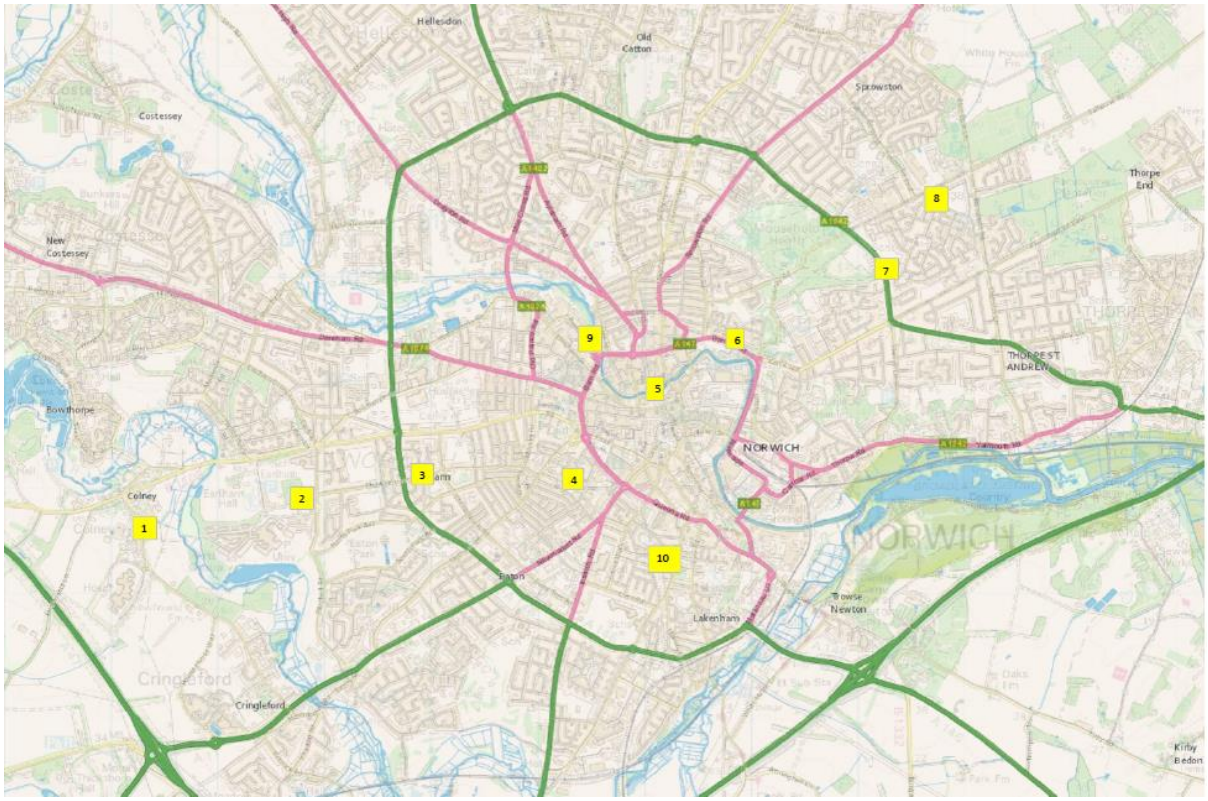
	2011/2012 (sample size = 511)	**2012/2013 (sample size = 501)**
Cycles at least five times per week	4%	8%
Cycles at least three times per week	9%	11%
Cycles at least once per week	20%	17%
Cycles at least once per month	27%	24%

In Norwich, the APS has shown an 18% increase in the frequency of cycling from 2011/2012 to 2012/2013. Applying the proportions in Table 3-1 to Norwich's population suggests an estimated 3,975,734 trips were undertaken annually in 2012/13. This was an 18% increase in the number of trips in 2011/2012

As discussed earlier, it should be noted that the reliability of these estimates is questionable due to the relatively low number of cyclists represented in the APS sample at the city level. Furthermore, percentage changes derived from a small base result in high corresponding increases or decreases. Employing 'additional' data collection tools would enable increased levels of rigour in reporting.

The 2013/2014 figures should be used to calculate the percentage change for the next APS report.

Figure 1: Map showing the origin and destination survey locations in Norwich



3.3 Populating the scorecard

The percentage changes obtained from the data sources discussed above can be used to report against a number of metrics.

An example of the related section of the scorecard (see Section 5) is illustrated below in Figure 2. There is a box for results from each data source (denoted by an asterix and letter in the top right hand corner – the key is below the table).

Figure 2 Example section of the scorecard

	Year 1		Year 2	
Metric	Intervention	City	Intervention	City Wide
Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	*C	*C+		*C+
	*C	*AP 18%		*AP

*C Automatic cycle counter data or manual count data from the intervention
*C+ Automatic cycle counter data from the wider city area
*AP Active People Survey

4 Recommendations for monitoring the ten–year programme

This section sets out recommendations for data collection when monitoring the recommended metrics set out in the previous section. The following focuses upon collection of primary data and therefore secondary sources of data such as the Active People Survey and STATS19 national

datasets are not included. The “How to” guides provide details on how to process and analyse the data.

Recommendations for data collection are as follows:

4.1 Counts

There should be a comprehensive network of counts within the city to establish the numbers cycling, and this must include intervention specific sites. Cities will decide which typology of count is most appropriate for their cycle network and CCA programme; whether these are screenline, cordon, routes to particular destinations or multiple counts on selected keys routes will be a matter for the cities to decide. Within each group, manual or automatic counts can be selected accordingly.

4.1.1 Manual counts

To establish usage at a particular point or points on a network using a manual count, Sustrans recommends the following:

- counts should be a minimum of twelve hours 07:00 until 19:00
- manual counts can be taken as part of a user survey
- counts should be conducted at a consistent location
- counts should be conducted at the same time of year
- where feasible, pre intervention counts should be conducted

Counts taken as part of the baseline should be repeated periodically throughout the ten year programme. These should be at the same location and manual counts should also be conducted at the same time of year.

Best practice: Four day counts annually, one per season or clustered. Gender and age category (child under 16 / adult / 65+) recorded.

Minimum: Annually. Gender and age category (child under 16 / adult / 65+) recorded.

4.1.2 Automatic cycle counters

ACCs should be installed with new infrastructure where viable. Appropriate intervals will again be determined by the nature and scale of the intervention, and the number should be proportionate. For example, a minimum of one ACC should be installed on a new linear route, though practical considerations, such as whether paths are traffic free will also be factors. Data taken from ACCs need to be checked regularly, and should be calibrated.

Minimum: one ACC installed on a new linear route.

4.2 User surveys

User surveys with cyclists at the intervention should be conducted throughout the programme. User surveys at two locations was deemed appropriate for Norwich at phase one. Surveys should include specific and consistent questions (please see the user survey “How to” guide for example questions) to establish:

- journey purpose and length
- any change in mode of transport away from car or van use
- whether the user could have used a car/van for the journey
- whether the scheme has impacted on the user’s behaviour
- reported improvement in health/wellbeing
- perceptions of safety of the route

- demographic information (age, gender, employment status, ethnicity, income)

Best practice: annual surveys at the same location.

Minimum: every three years at the same location.

Delivery of the surveys will be determined by cities; however it is essential that sites are selected to interview cyclists either on CCA routes or where this is not practical, at a location that will capture flows from the intervention.

The number of user surveys should increase to provide adequate coverage as the network grows with future investment.

4.2.1 Cycle parking counts

To report on integration with public transport links, Sustrans recommend cycle parking counts at key public transport hubs. This should be measured consistently throughout the programme and include the number of bicycles at the relevant transport hubs.

Best practice: Four day counts annually, one per season or clustered.

Minimum: Annually.

5 Scorecard

This section provides the scorecard in which percentage changes will be reported against the related metrics.

In the top right hand corner of each box, a letter represents the data source from which the figure was obtained. The key is above Figure 3 below.

Sustrans have provided “How to” guidance documents on how to extract, process and compare data from the recommended sources for the scorecards. The user surveys which cities have committed too will provide data for a considerable number of the metrics, which are largely incomplete at baseline.

Cities should provide DfT with an updated scorecard every year, showing the percentage change from the previous year for all of the recommended metrics, and the additional where possible.

Figure 3 Norwich Scorecard

Data Sources Key:			
C	Automatic cycle counter data or manual count data from the intervention		
C+	Automatic cycle counter data or manual count data from the wider city area		
AP	Active People Survey	CP.	Cycle parking counts
PD.	Personal travel diaries	WS.	Workplace travel surveys
PS.	Perception survey	H.	Household travel survey
H+	Household travel survey with boosted sample around intervention		
S19	STATS 19	VA.	Video analysis
AR.	Employer absence records		

Theme	Metric	2013		2014		2015		.....	2024	
	Intervention change (I) or City Wide change (CW)	I	CW	I	CW	I	CW		I	CW
Change in levels of cycling	**Recommended metrics**									
	Percentage change in cycling trips made utilising the intervention	*C		*C		*C			*C	
	Percentage change in cycling trips made utilising the intervention, and percentage	*C	*C+	*C	*C+	*C	*C+		*C	*C+
		*C	18% *AP	*C	*AP	*C	*AP		*C	*AP
Change in level of integration with public transport links	**Recommended metrics**									
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	*CP		*CP		*CP			*CP	
	Additional metrics									
	Percentage change in people taking integrated cycling and public transport trips	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	*SS		*SS		*SS			*SS	
The effect on users' health	**Recommended metrics**									
	Percentage of users that have increased their frequency of cycling	*US	18% *AP	*US	*AP	*US	*AP		*US	*AP
	Percentage of users that report a feeling of improved health and/or wellbeing	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have increased their frequency of cycling	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
			*H		*H		*H			*H
		*H+	*H+	*H+	*H+	*H+	*H+		*H+	*H+
Change in levels of accidents	**Recommended metrics**									
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	*S19	*S19	*S19	*S19	*S19	*S19		*S19	*S19
	Additional metrics									
	Percentage of interactions that are 'unsafe interactions'	*VA		*VA		*VA			*VA	
The effect on CO2 emissions	**Recommended metrics**									
	Amount of CO2 saved due to modal shift toward cycling	*US		*US		*US			*US	
	Additional metrics									
	Amount of CO2 saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
	Amount of local pollutants saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Employment and economic effects	**Recommended metrics**									
	No requisite									
	Additional metrics									
	Percentage change in levels of absence in the workplace	*AR		*AR		*AR			*AR	
		*WS		*WS		*WS			*WS	

The effect on congestion levels	**Requisite metrics required by the DfT**									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*US		*US		*US			*US	
	Additional metrics									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Levels of awareness and perceptions of safety	**Requisite metrics required by the DfT**									
	Percentage of users that have a positive perception of safety at the intervention	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have a positive perception of safety	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Changes in levels of cycling by demographic	**Requisite metrics required by the DfT**									
	Ratio of female and male cyclists	*C	*AP	*C	*AP	*C	*AP		*C	*AP
	Additional metrics									
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Value for money	**Additional metrics**									
	Percentage of people that have a positive perception of value for money of the CCA investment	*US		*US		*US			*US	
	Percentage of people that have a positive perception of value for money of investment in carbon based transport projects	*US		*US		*US			*US	

6 Summary of communications and commitments

The gaps analysis exercise highlighted a need for user surveys at two locations on CCA intervention sites at the 2015 baseline, and the DfT grant towards monitoring and evaluation provided £3,774 towards the cost of these surveys.

A brief summary of the points clarified and committed to is as follows:

User surveys
Recommendation: User surveys to be conducted at two appropriate locations on the CCA network. These should be repeated at appropriate intervals throughout the programme, best practice being every year, the minimum frequency being every three years.

Clarification was provided on the following:

Norfolk County Council has conducted origin and destination surveys with cyclists in September 2014, and these are due to be repeated in September 2015, and then every two years throughout the programme. These took place at eight locations on the Pink Pedalway CCA interventions.

The surveys do not currently include the necessary questions to report on the metrics where a 'user survey' is required, however there is potential to expand the survey to accommodate. The surveys must collect data on themes specified in the recommendations section of this report (section 3) to enable reporting on the metrics in the scorecard (section 4).

The grant will support the expansion of the current programme of origin and destination surveys to include further questions as outlined above.

Commitments and additional monitoring

Norfolk County Council will add questions to the planned surveys in order to report upon the specified metrics.

Counts of users

Recommendation

Counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme.

Clarification was provided on:

There are two ACCs currently on CCA intervention that have been operational since 2013. Two more will be operational this month (April 2015) and will provide data from this point.

As part of the origin and destination surveys, manual counts were taken at eight CCA sites, and at two control sites. During these counts gender, and whether the cyclist was aged under 16, 16-65 or 65 plus, was noted.

The majority of these counts were taken between 07:00 and 13:00, rather than the minimum 12 hour counts Sustrans recommend to establish usage at that point.

Commitments and additional monitoring:

Norfolk County Council has committed that it will install new ACCs on new stretches of infrastructure.

In addition, Norfolk County Council is exploring advanced telemetrics to provide count data, with the aim of finding a tool that can also robustly measure on highway cycle usage. Norfolk County Council is committed to pursuing this.

Norfolk County Council has committed to conducting twelve hour counts at all eight locations when conducting the origin and destination surveys

Additional levels of monitoring and evaluation

The addition of questions to enable data collection on the themes specified in the recommendations section of this report (section 4) will mean Norwich considerably surpasses the recommended number of user surveys for phase one investment, by delivering four times the recommended.

They also go beyond the minimum in terms of iterations, with plans to conduct surveys in 2015, then every two years following.

7 Next steps and timelines

Norfolk County Council will repeat the Origin and Destination surveys in September 2015, and these will include questions that will enable the surveys to provide data for the metrics where a 'user survey' is recommended. After 2015, these surveys will be repeated biennially.

Alongside this report are guides detailing, step by step, how to use results from recommended data sources to populate the scorecard.

As outlined in section 4 'recommendations for monitoring the ten-year programme', counts and user surveys should be increased accordingly so that the programme of monitoring provides adequate coverage of the interventions. In the case of Norwich, counts and user surveys would also be necessary on the Pedalways benefitting from future investment.

Throughout the programme cities should provide an annual update of their evaluation findings to DfT.

7.1 Timeline

August 2013 DfT £77m Cycle City Ambition funding announced - £3.7m for Norwich, match funding of £1.8 m

2013 Norwich starts to implement phase one of the 'Push the Pedalways'

November 2014 A further £8.4m announced for Norwich's CCA scheme

March 2015 Sustrans gaps analysis document issued to Norwich, with recommendation for 2 user surveys

March 2015 DfT awards Norwich £3,774 towards the recommended user surveys

September 2015 Norfolk County Council to add recommended 'user survey' questions to the Origin and Destination surveys, and lengthen count periods to twelve hours

2015/16 Baseline data to be collected for phase two of investment

2016-2013 Monitoring and evaluation data sent to DfT annually and scorecard populated

September 2017, 2019, 2021 and **2023** Repeat user surveys annually, including any additional locations added for further rounds of funding, in the same locations and at the same time of year

Appendix 8

Oxford

1 Introduction

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

This report outlines the following:

- the project scope in understanding and enhancing monitoring and evaluation of the CCA programme
- an overview of the scheme in Oxford and the expected outcomes
- recommendations for monitoring and evaluating the CCA investment
- Oxfordshire County Council's data collection commitments
- next steps, including guidance documents on how to populate the scorecard

1.1 Summary

Project scope in terms of monitoring and evaluation of CCA schemes

- Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.
- Ten common themes were identified in the aims and objectives of each city's schemes. Specified common metrics were then identified within those themes that would enable impacts of the CCA investment to be measured.
- Sustrans worked with the CCA cities to identify gaps in data collection, and made recommendations to ensure that comparable programme wide data is collected.

The Plain Roundabout

- Oxford received £835,000 in CCA funding in 2013 and £3.3m in 2015 for phases one and two of the Cycle Revolution programme.
- The CCA programme for Oxford is a single intervention at the Plain roundabout which links Iffley Road, Cowley Road and Headington to the city centre via Magdalene Bridge.
- The improvements to The Plain are expected to increase cycling by around 20%.

Recommendations

- Recommendations for monitoring include:
    - counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme
    - one user survey to be conducted on the CCA network, and to be repeated a minimum of every three years
    - counts of parked bicycles at key public transport hubs (if cities choose to report on integration with public transport)

Commitments

- Oxfordshire County Council has given a commitment that it will install new ACCs

with new pieces of infrastructure

- Oxford have committed to conducting a user survey at the Plain roundabout every three years
- For phase one of CCA investment, Oxford will not report on integration with public transport links as it is not relevant to their scheme

Next steps

- Baseline data should be collected at the earliest appropriate opportunity for each location. Oxfordshire County council will determine the exact location and timeframe to suit the programme
- Throughout the programme cities should provide an annual update of their evaluation findings to DfT.

1.2 Project scope

Sustrans/WSP were commissioned by DfT to work with the Cycle City Ambition (CCA) cities to identify any potential gaps in data collection, and to provide support in identifying the best means to adequately measure the impact of the CCA investment.

Cities provided Sustrans with their monitoring and evaluation plans for their programmes, and also shared available baseline data.

Sustrans identified ten common themes from the aims and objectives within all cities' bid documents and explored means by which they could collect adequate data to report, on each theme, changes which are attributable to the CCA investment.

Another component of this exercise was the allocation of a £100,000 grant, provided by DfT to support the monitoring and evaluation activities of the CCA cities. Sustrans identified that supporting the cities in the undertaking of user surveys alongside manual cycle counts would be the most effective use of the grant. A recommended number of user surveys was determined for each city, firstly based upon the scale of investment and then adjusted to parallel the number of elements of infrastructure in phase one.

In conclusion, recommendations were made for the future monitoring and evaluation of the CCA programme, and a scorecard was produced for cities to populate with data against the metrics.

1.3 Cycle City Ambition Grant

In 2013, Oxford received £835,000 of DfT CCA funding and with additional local funding, a total of £1.4 million is available for the implementation of this scheme.

In November 2014, a further £114m was announced for the cities and Oxford was awarded £3.3m for the second phase of their scheme.

1.4 The Plain roundabout

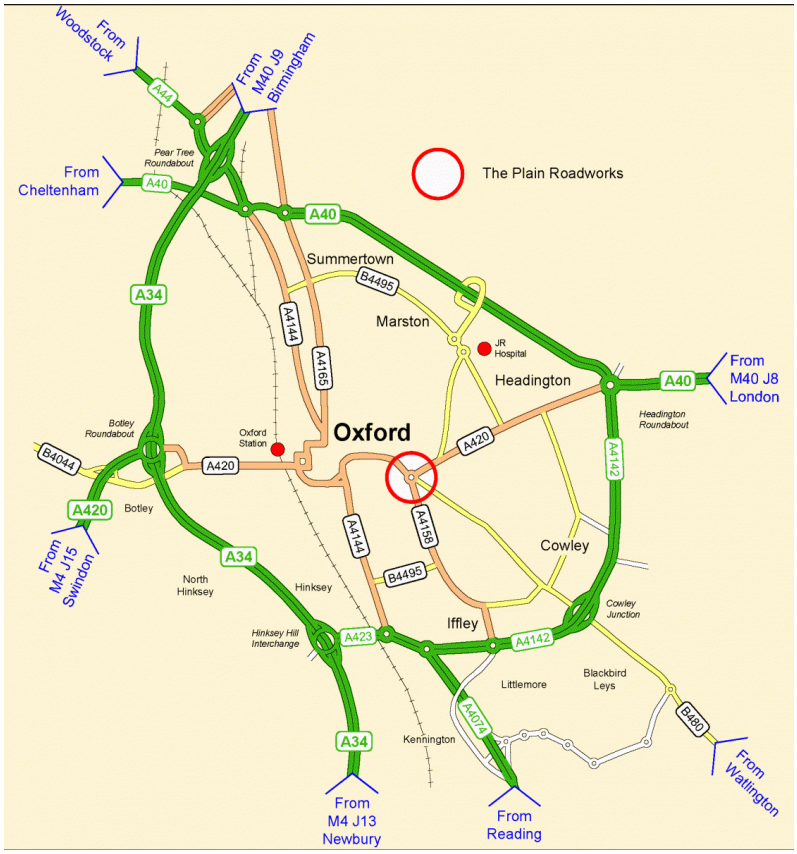
The CCA programme for Oxford is limited to intervention at a single junction, The Plain roundabout which links Iffley Road, Cowley Road and Headington to the city centre via Magdalene Bridge.

The Plain roundabout cycling improvement scheme will remove one of the main barriers to cycling in and out of Oxford city centre, by making the Plain roundabout safer and more attractive for both cyclists and pedestrians. The roundabout is currently a busy five-arm roundabout with a high level of bus traffic and a history of cyclist casualties; there have been 35 accidents involving cyclists at or in the vicinity of the Plain in the last five years. This discourages some less confident cyclists from cycling on this route.

The roundabout is a major bottleneck and junction and combines three routes into the city centre. The CCA scheme will reduce the width of the circulatory carriageway and improve the roundabout's design to unlock access to the city for cyclists of all levels of experience. This scheme will supplement a wider package of measures both planned and existing to help the city's cyclists.

Figure 1 shows a map of The Plain roundabout.

Figure 1- Location map of the Plain roundabout



Source: Oxfordshire County Council

It is anticipated that the improvements on the Plain will be the catalyst for further improvements across the city. Oxfordshire County Council proposes to implement Stage 2 of The Plain and Approaches scheme. This would extend improvements to include Magdalen Bridge/High Street as far as Longwall Street, St Clements as far as Marston Road, and Cowley Road as far as Union Street.

1.5 Impacts

The Plain already carries a large number of cyclists but it is hoped that the interventions will increase this number further. It is the major gateway to the city centre and the rail station from the east (around 70% of the city's population live to the east of The Plain). The roundabout is well known to be a deterrent to many people who might otherwise make the relatively short journey into and beyond the city centre or the railway station.

The improvements to The Plain are expected to increase cycling by around 20% (from around 4700 cyclists in an average twelve hour weekday period to around 5,700). Evidence gathered for an LSTF project found that 20% of the population living in the Oxford 'Sustainable Travel Zone', an area covering the key residential and employment origins and destinations of existing and potential users of The Plain, have the highest propensity to travel by cycling and other sustainable modes.

Related benefits include:

- travel benefits for pedestrians, cyclists and bus users (by freeing up capacity on the public transport network)
- accident benefits
- air quality benefits
- health benefits

2 Key research questions

2.1 Themes and research questions

The aims and objectives from the original city bid documents were reviewed and ten common themes were identified within the predicted outcomes. These themes were used as the basis for formulating the following research questions, and are common to all cities:

1) What impact has the CCA investment had upon levels of cycling?
2) What are the related benefits of mode shift from car or van to bicycle in terms of user's health, congestion levels and carbon emissions?
3) To what extent has the CCA investment affected the number of people taking integrated cycling and public transport journeys?
4) To what extent has the CCA investment altered perceptions of the safety of cycling?
5) To what extent has the CCA investment affected the demographic balance of cyclists?
6) What is the Benefit to Cost Ratio (BCR) of the investment?
7) What opportunities are there for further evaluation, and how will this enhance current data collection?

2.2 Recommended and additional metrics

A series of consultation meetings between Sustrans and each of the cities' monitoring leads took place to establish current and planned monitoring provision for CCA. Sustrans worked with cities to understand the existing data that was available to them. This existing data was shared with Sustrans with a view to formulating the programme baseline.

Within each theme, metrics were determined against which programme impacts could be monitored throughout the project lifespan. Furthermore, potential data sources were defined against each metric, specifying how these metrics would be reported on. The results of this exercise are detailed in Table 2-1.

The data and monitoring information provided by cities were mapped to the research questions, and an assessment was made as to whether they were sufficient to measure the impacts of the CCA investment at intervention level, and more broadly in the city.

Table 2-1 differentiates between 'recommended' and 'additional' metrics. Recommended metrics are those which cities must address in order to report on the theme. Recommended metrics are monitored by data from counts, user surveys and the Active People Survey (APS)[20]. For consistency across the programme, it should be noted that all the cities have exactly the same metrics.

The exception is for the theme 'Integration with levels of public transport', for which parked bicycle counts are required: these are only required when cities aim to impact upon this area. In phase one of investment Oxford will not report on this theme.

[20] Sport England Active People Survey www.gov.uk/government/organisations/department-for-transport/series/walking-and-cycling-statistics

The 'additional' metrics draw upon a wider range of data sources and would help to deliver stronger insight into answering the research questions. As some of these can be quite context specific (e.g. of limited applicability to some cities' schemes) and resource intensive, these are not a recommended monitoring requirement of cities. However, a number of cities are planning, where appropriate, to undertake additional monitoring. This will help to strengthen the evidence base regarding the impacts of the CCA investment in a number of ways (see Section 3 for more details).

Thus, the recommended measures are the minimum monitoring that all cities will undertake and the additional metrics are ones that would allow stronger statements about impact to be made more robust and their uptake will vary across the cities.

2.3 Monitoring and evaluation

Sustrans recommend that cities should collect data periodically throughout the ten year programme at the location of intervention(s). This data will provide important evidence as part of the wider evaluation of the scheme's impacts in response to the research questions outlined above.

Furthermore, to effectively evaluate the outcomes Sustrans also recommends that city wide data is collected. The changes at the intervention can therefore be compared with the city wide picture to make a stronger statement about attribution and impact.

Within Table 2-1 there are therefore columns that note whether a data source provides information at 'intervention' or a 'city wide' level. By 'intervention' it is meant that the user surveys or counts are undertaken on the CCA intervention or at a point where cyclists using the improved route must pass (e.g. further along a canal towpath where there are no entrances or exits past the intervention). 'City wide' data refers to cycle and transport monitoring within the city that is not specific to users of CCA infrastructure; for example, the wider ACC network or a travel behaviour survey exploring the habits of the city or regional population. In the case of the Active People Survey (APS), this is a national dataset available to all cities to draw upon. At city or regional level there could also be complementary data sources that would enable a more robust picture to be built up.

Table 2-1 Themes, metrics and data sources for monitoring the impacts of CCA investment

Theme	Metric	Proposed Data Source	Intervention	City Wide
Change in levels of cycling	**Recommended**			
	Percentage change in cycling trips made utilising the intervention	Automatic cycle counter data from the intervention/manual count data from the intervention	✓	
	Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	Automatic cycle counter/manual count data from the intervention and from the whole city area	✓	✓
		Automatic cycle counter/manual count data from the intervention and the Active People survey	✓	✓
Change in level of integration with public transport links	**Recommended***			
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs *for phase one of investment Norwich will not report on this	Cycle parking counts	✓	✓

Theme	Metric	Proposed Data Source	Intervention	City Wide
	metric			
	Additional			
	Percentage change in people taking integrated cycling and public transport trips	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	Perception survey of people parking at public transport hubs	✓	✓
The effect on users health	**Recommended**			
	Percentage of users that have increased their frequency of cycling	User survey at the intervention linked to the count changes to calculate number	✓	
		Active People Survey (city as a whole) linked to the count changes		✓
	Percentage of users that report a feeling of improved health and/or wellbeing	User survey at the intervention linked to the count changes	✓	
	Additional			
	Percentage of users that have increased their frequency of cycling	Personal travel diaries	✓	✓
		Workplace travel surveys	✓	✓
		Household travel survey		✓
		Household survey with boosted sample at intervention location	✓	✓
Change in levels of accidents	**Recommended**			
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	STATS19	✓	✓
	Additional			
	Percentage of interactions that are 'unsafe interactions'	Video analysis	✓	
The effect on CO_2 emissions	**Recommended**			
	Amount of CO_2 saved due to modal shift toward cycling	User survey at the intervention linked to the count changes to calculate amount	✓	
	Additional			
	Amount of CO_2 saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to calculate amount	✓	✓
		Personal travel diaries	✓	✓
	Amount of local pollutants saved due to modal shift toward cycling	Household travel behaviour survey linked to the count changes to calculate amount		✓
		Workplace travel surveys linked to the count changes to	✓	✓

Theme	Metric	Proposed Data Source	Intervention	City Wide
		calculate amount Personal travel diaries	 ✓	 ✓
Employment and economic effects	**Recommended**			
	No recommended metric			
	Additional			
	Percentage change in levels of absence in the workplace	Absence records Workplace travel surveys	✓ ✓	✓ ✓
The effect of congestion levels	**Recommended**			
	Number of trips made by bicycle which were previously made by car/van during peak periods	User surveys linked to the count changes to calculate number	✓	
	Additional			
	Number of trips made by bicycle which were previously made by car/van during peak periods	Workplace travel surveys Personal travel diaries	✓	✓ ✓
Levels of awareness and perceptions of safety	**Recommended**			
	Percentage of users that have a positive perception of safety at the intervention	User survey at the intervention	✓	
	Additional			
	Percentage change in users perceptions of safety at the intervention Percentage of users that have a positive perception of safety	Household survey Personal travel diary	✓ ✓	✓
Changes in levels of cycling by demographic	**Recommended**			
	Ratio of female and male cyclists	User surveys Active People survey	✓	 ✓
	Additional			
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	Household survey Workplace surveys Personal travel diary	 ✓	✓ ✓ ✓
Value for money	**Recommended**			
	BCR	Users surveys combined with intervention specific counts	✓	
	Additional			
	Percentage of people that have a positive perception of value for money of the CCA investment Perception of relative importance on money spent on cycling rather than motorised transport Percentage of people that have a positive perception of value for money of investment in highways projects that aim to	Perceptions surveys linked to the count changes Perception surveys linked to the count changes Perception surveys linked to the count changes	✓ ✓ ✓	

Theme	Metric	Proposed Data Source	Intervention	City Wide
	benefit users of motorised transport			

3 Recommendations for monitoring the ten-year programme

This section sets out recommendations for data collection when monitoring the 'recommended metrics' set out in the previous section. The following focuses upon collection of primary data and therefore secondary sources of data such as the Active People Survey and STATS19 national datasets are not included. The "How to" guides provide details on how to process and analyse the

Recommendations for data collection are as follows:

3.1 Counts

There should be a comprehensive network of counts within the city to establish the numbers cycling, and this must include intervention specific sites. Cities will decide which typology of count is most appropriate for their cycle network and CCA programme; whether these are screenline, cordon, routes to particular destinations or multiple counts on selected keys routes will be a matter for the cities to decide. Within each group, manual or automatic counts can be selected accordingly.

3.1.1 Manual counts

To establish usage at a particular point or points on a network using a manual count, Sustrans recommends the following:

- counts should be a minimum of twelve hours 07:00 until 19:00
- manual counts can be taken as part of a user survey
- counts should be conducted at a consistent location
- counts should be conducted at the same time of year
- where feasible, pre intervention counts should be conducted

Counts taken as part of the baseline should be repeated periodically throughout the ten year programme. These should be at the same location and should also be conducted at the same time of year.

Best practice: Four day counts annually, one per season or clustered. Gender and age category (child under 16 / adult / 65+) recorded.

Minimum: Annually. Gender and age category (child under 16 / adult / 65+) recorded.

3.1.2 Automatic cycle counters

ACCs should be installed with new infrastructure where viable. Appropriate intervals will again be determined by the nature and scale of the intervention, and the number should be proportionate. For example, a minimum of one ACC should be installed on a new linear route, though practical considerations, such as whether paths are traffic free will also be factors. Data taken from ACCs need to be checked regularly, and should be calibrated.

Minimum: one ACC installed on a new linear route.

3.2 User surveys

User surveys with cyclists at the intervention should be conducted throughout the programme. One survey was deemed appropriate for Oxford at phase one. Surveys should include specific and consistent questions (please see the user survey "How to" guide for example questions) to establish:

- journey purpose and length
- any change in mode of transport away from car or van use
- whether the user could have used a car/van for the journey
- whether the scheme has impacted on the user's behaviour
- reported improvement in health/wellbeing
- perceptions of safety of the route
- demographic information (age, gender, employment status, ethnicity, income)

Best practice: annual surveys at the same location.

Minimum: every three years at the same location.

Delivery of the surveys will be determined by cities; however it is essential that sites are selected to interview cyclists either on CCA routes or where this is not practical, at a location that will capture flows from the intervention.

The number of user surveys should increase to provide adequate coverage as the network grows with future investment.

3.2.1 Cycle parking counts

To report on integration with public transport links, cycle parking counts at key public transport hubs are recommended. This should be measured consistently throughout the programme and include the number of bicycles at the relevant transport hubs.

Best practice: Four day counts annually, one per season or clustered.

Minimum: Annually.

4 Oxford's monitoring data

This section sets out the data that Sustrans have collected from Oxford when compiling this report.

4.1 ACCs and manual counts

It is important to note that this report does not quote actual count figures, but rather percentage changes from a previous point in time (one to three years before). This is to ensure that the counts compared are alike, and to minimise the risks associated with the number of counts varying both within and between cities from year to year.

ACC and manual count data have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area.

All of these data have been provided in the '**Collated Counter'** spreadsheet.

It should be noted that the percentage changes in usage that have been calculated for baseline are based on very few counters. The percentage change of 0% between 2012 and 2013 is based upon the change in just three city wide ACCs, as is the increase of 10% between 2013 and 2014. To increase the amount of data available Oxford has started completing new manual counts and will install new ACCs on new pieces of CCA investment.

These results will not be used to report against the metrics due to the low number of counts they are derived from.

Manual counts have been undertaken a manual counts at both city wide and intervention level; however there were some minor issues that were not clarified in time to be included in the analysis. Oxford will be able to include these data in a future submission to DfT.

Furthermore, turning counts were carried out using video footage on the intervention. Future iterations of this count will provide percentage changes to report on the related metrics.

4.2 Active People Survey

The Active People Survey (APS) have been used to calculate the following metrics:

- Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area.
- Percentage of users that have increased their frequency of cycling.

The APS was chosen as a recommended data source due to the accessibility of the data to all cities; however, as outlined in section 3.2 of the main report there are considerable limitations. Of the sample at the city level (approximately 500), few are cyclists, and so modest change can result in large proportionate increases or decreases, as seen below.

Table 4-1 Proportion of residents who cycle at a given frequency in Oxford

	2011/2012 (sample size = 515)	**2012/2013 (sample size = 497)**
Cycle at least five times per week	14%	17%
Cycle at least three times per week	19%	26%
Cycle at least once per week	28%	34%
Cycle at least once per month	34%	43%

The APS has shown a 27% increase in the frequency of cycling from 2011/2012 to 2012/2013. Applying the proportions in Table 4-1 to Oxford's population suggests an estimated 9,778,884 trips were undertaken annually in 2012/13. This was a 27% increase in the number of trips in 2011/12.

This is a considerably larger increase than that of the counters. As discussed previously, the reliability of these estimates is questionable due to the relatively low number of cyclists represented in the APS sample at the city level. Furthermore, percentage changes derived from a small base result in high corresponding increases or decreases. Employing 'additional' data collection tools would enable increased levels of rigour in reporting.

4.3 Populating the scorecard

The percentage changes obtained from the data sources discussed above can be used to report against a number of metrics.

An example of the related section of the scorecard (see section 5) is illustrated below in Figure 2. There is a box for results from each data source (denoted by an asterisk and letter in the top right hand corner – the key is below the table).

Figure 1 Example section of the scorecard

	2013		2014	
Metric	Intervention	City	Intervention	City Wide
Percentage change in cycling trips made utilising the intervention, and percentage change in cycling trips made across the whole city area	*C	*C+	*C	*C+
	*C	*AP 27%	*C	*AP

*C Automatic cycle counter data or manual count data from the intervention
*C+ Automatic cycle counter data from the wider city area
*AP Active People Survey

5 Scorecard

This section provides the scorecard in which percentage changes will be reported against the related metrics.

In the top right hand corner of each box, a letter represents the data source from which the figure was obtained. The key is above Figure 3 below.

Sustrans have provided "How to" guidance documents on how to extract, process and compare data from the recommended sources for the scorecards. The user surveys which cities have committed too will provide data for a considerable number of the metrics, which are largely incomplete at baseline.

Cities should provide DfT with an updated scorecard every year, showing the percentage change from the previous year for all of the recommended metrics, and the additional where possible.

Figure 2: Oxford scorecard

Data Sources Key:	
*C Automatic cycle counter data or manual count data from the intervention	
*C+ Automatic cycle counter data or manual count data from the wider city area	
*AP Active People Survey	*CP Cycle parking counts
*PD Personal travel diaries	*WS Workplace travel surveys
*PS Perception survey	*H Household travel survey
*H+ Household travel survey with boosted sample around intervention	
*S19 STATS 19	*VA Video analysis
*AR Employer absence records	

Theme	Metric	2013		2014		2015		.....	2024	
	Intervention change (I) or City Wide change (CW)	I	CW	I	CW	I	CW		I	CW
Change in levels of cycling	**Recommended metrics**									
	Percentage change in cycling trips made utilising the intervention	*C		*C		*C			*C	
	Percentage change in cycling trips made utilising the intervention, and percentage	*C	*C+	*C	*C+	*C	*C+		*C	*C+
		*C	27% *AP	*C	*AP	*C	*AP		*C	*AP
Change in level of integration with public transport links	**Recommended metrics**									
	Percentage change in number of bicycles counted at cycle parking counts at key public transport hubs	*CP		*CP		*CP			*CP	
	Additional metrics									
	Percentage change in people taking integrated cycling and public transport trips	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
	Percentage of people that think that the quality of cycle parking at key public transport hubs is good or above	*SS		*SS		*SS			*SS	
The effect on users' health	**Recommended metrics**									
	Percentage of users that have increased their frequency of cycling	*US	27% *AP	*US	*AP	*US	*AP		*US	*AP
	Percentage of users that report a feeling of improved health and/or wellbeing	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have increased their frequency of cycling	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
			*H		*H		*H			*H
		*H+	*H+	*H+	*H+	*H+	*H+		*H+	*H+
Change in levels of accidents	**Recommended metrics**									
	Percentage change in total number of cycling accidents recorded as KSI (killed or seriously injured)	*S19	*S19	*S19	*S19	*S19	*S19		*S19	*S19
	Additional metrics									
	Percentage of interactions that are 'unsafe interactions'	*VA		*VA		*VA			*VA	

The effect on CO2 emissions	**Recommended metrics**									
	Amount of CO2 saved due to modal shift toward cycling	*US		*US		*US			*US	
	Additional metrics									
	Amount of CO2 saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
	Amount of local pollutants saved due to modal shift toward cycling	*H+	*H	*H+	*H	*H+	*H		*H+	*H
		*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Employment and economic effects	**Recommended metrics**									
	No requisite									
	Additional metrics									
	Percentage change in levels of absence in the workplace	*AR		*AR		*AR			*AR	
		*WS		*WS		*WS			*WS	
The effect on congestion levels	**Recommended metrics**									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*US		*US		*US			*US	
	Additional metrics									
	Number of trips made by bicycle which were previously made by car/van during peak periods	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS		*WS		*WS			*WS	
Levels of awareness and perceptions of safety	**Recommended metrics**									
	Percentage of users that have a positive perception of safety at the intervention	*US		*US		*US			*US	
	Additional metrics									
	Percentage of users that have a positive perception of safety	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Changes in levels of cycling by demographic	**Recommended metrics**									
	Ratio of female and male cyclists	*C	*AP	*C	*AP	*C	*AP		*C	*AP
	Additional metrics									
	Ratio of the gap between established cycling groups and groups that have a lower propensity to cycle	*PD	*PD	*PD	*PD	*PD	*PD		*PD	*PD
		*WS	*WS	*WS	*WS	*WS	*WS		*WS	*WS
		*H+	*H	*H+	*H	*H+	*H		*H+	*H
Value for money	**Additional metrics**									
	Percentage of people that have a positive perception of value for money of the CCA investment	*US		*US		*US			*US	
	Percentage of people that have a positive perception of value for money of investment in carbon based transport projects	*US		*US		*US			*US	

6 Summary of communications and commitments

The gaps analysis exercise highlighted a need for one user survey on the CCA intervention site at the 2015 baseline. The DfT grant towards monitoring and evaluation provided £1,887 towards the cost of this survey.

A brief summary of the points clarified and future plans for monitoring is as follows:

User surveys
Recommendation: One user survey to be conducted at an appropriate location on the CCA network. This should be repeated at appropriate intervals throughout the programme, best practice being every year, the minimum frequency being every three years.
Clarification provided on: The grant will provide funding towards the cost of the first iteration of user survey, though it is not anticipated that the grant will cover the whole cost. To what extent the cost is covered will depend upon how Oxford chooses to deliver the surveys; there is no obligation to use the Sustrans Route User Intercept Survey. The user survey must collect data on themes specified in the recommendations section of this report (section 3) to enable reporting on the metrics in the scorecard (section 5).
Commitments and additional monitoring Oxfordshire County Council will conduct one user survey on the phase one intervention every three years during the programme.
Counts of users
Recommendation Counts of users, Automatic Cycle Counter (ACC) or manual, to be conducted at CCA intervention sites, periodically throughout programme.
Clarification was provided on the following: A turning count was conducted on The Plain using video footage, which is planned again post intervention. Oxfordshire County Council will repeat this survey every three years during the CCA programme. There are 28 ACCs in Oxfordshire, including five in Oxford; none of these are at the intervention.
Commitments and additional monitoring: Oxfordshire County Council will install new ACCs on new stretches of infrastructure.

Cycle parking counts
Recommendation To report on integration with public transport links, it is necessary to conduct cycle parking counts at key public transport hubs.
Clarification was provided on the following: Not all CCA programmes will aim to impact upon integration with public transport links, and therefore not all cities will report on this metric. To report on this metric the counts have to be taken at public transport hubs directly benefitting from CCA interventions.
Commitments and additional monitoring For phase one of CCA investment in Oxford, integration with public transport links will not be reported on.
Additional data collection measures
There are currently no firm plans to undertake any of the additional data collection measures. There could be the opportunity to conduct workplace travel surveys through the Travel Choices programme and potentially through the strong links Oxfordshire County Council has with Oxford University, though this is not in the current scheme of monitoring. Conducting interaction analysis of the video footage recorded for The Plain turning counts is also viable; however there is no current plan to undertake this.

7 Next Steps and timeline

7.1 Next steps

Oxfordshire County council will determine the locations and timeframe of the recommended user surveys. Baseline data should be collected at the earliest appropriate opportunity for each location.

Alongside this report are guides detailing, step by step, how to use results from recommended data sources to populate the scorecard.

Throughout the programme cities should provide an annual update of their evaluation findings to DfT.

As outlined in section 3 ‘Recommendations for monitoring and evaluation of the ten-year programme’, counts and user surveys should be increased accordingly so that the programme of monitoring provides adequate coverage of the interventions.

7.2 Timeline

August 2013 DfT £77m Cycle City Ambition funding announced - £835,000 for Oxford, match funding of £565,000

2013 Oxford starts to implement phase one of the 'Cycle Revolution'

November 2014 A further £3.3m announced for Oxford's CCA programme

March 2015 Sustrans gaps analysis document issued to Oxford, with a recommendation for one user survey to be conducted at The Plain

March 2015 DfT awards Oxford £1,887 towards the recommended user surveys

Summer/Autumn 2015 Oxfordshire County Council to choose an appropriate time to deliver the user survey at The Plain roundabout

2015/16 Baseline data to be collected for phase two of investment

2016 – 2023 Monitoring and evaluation data sent to DfT annually and scorecard populated

Summer/Autumn 2018, 2021 and 2024 Repeat user surveys, including any additional locations added for further rounds of funding, in the same locations and at the same time of year.