BIRMINGHAM CONNECTED

MOVING OUR CITY FORWARD

BIRMINGHAM MOBILITY ACTION PLAN

TECHNICAL WORK PACKAGE 7
MONITORING STRATEGY
NOVEMBER 2014

Birmingham City Council

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BIRMINGHAM MOBILITY ACTION PLAN – TECHNICAL STUDY GROUP REPORT

Technical Work Package 7 - Monitoring Strategy

06/11/2014

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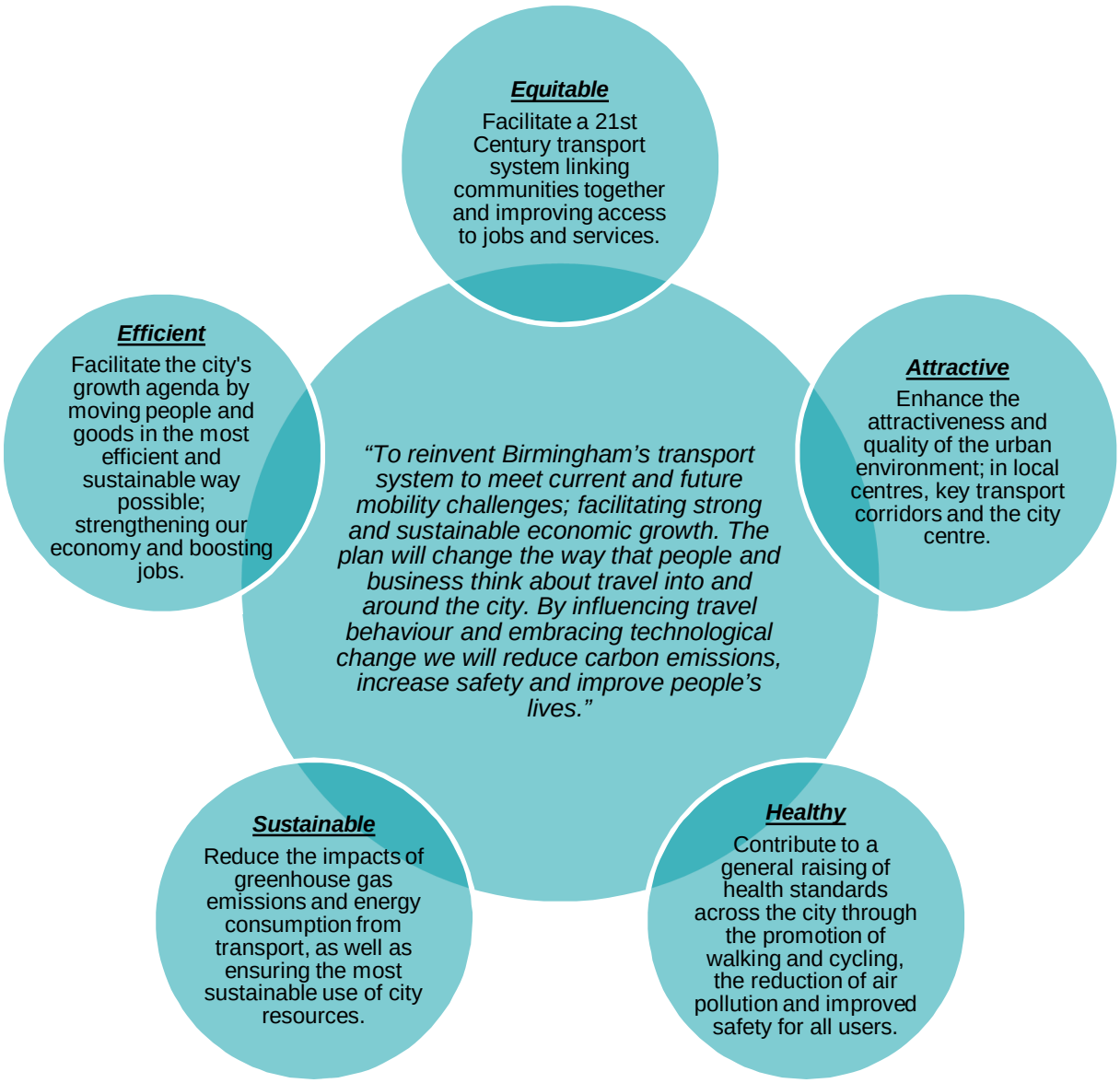
Executive Summary

Mott MacDonald has been commissioned by Birmingham City Council to develop a Monitoring Strategy to assess the effectiveness of Birmingham Connected in achieving its vision and associated objectives, as summarised below in Figure 0.1. Birmingham Connected is being developed according to European Sustainable Urban Mobility Plan (SUMP) guidelines and identifies priorities for public and private investment in transport infrastructure and services in Birmingham over a twenty year period.

Figure 0.1: The Birmingham Connected Vision and Proposed Outcomes



In order to deliver the five Birmingham Connected outcomes, a range of scheme-level outputs are being developed as follows:

1. Public realm corridor improvements, supported by road space reallocation where necessary
2. Pedestrian/cycle network improvements, supported by road space reallocation where necessary
3. Public transport improvements, supported by road space reallocation where necessary

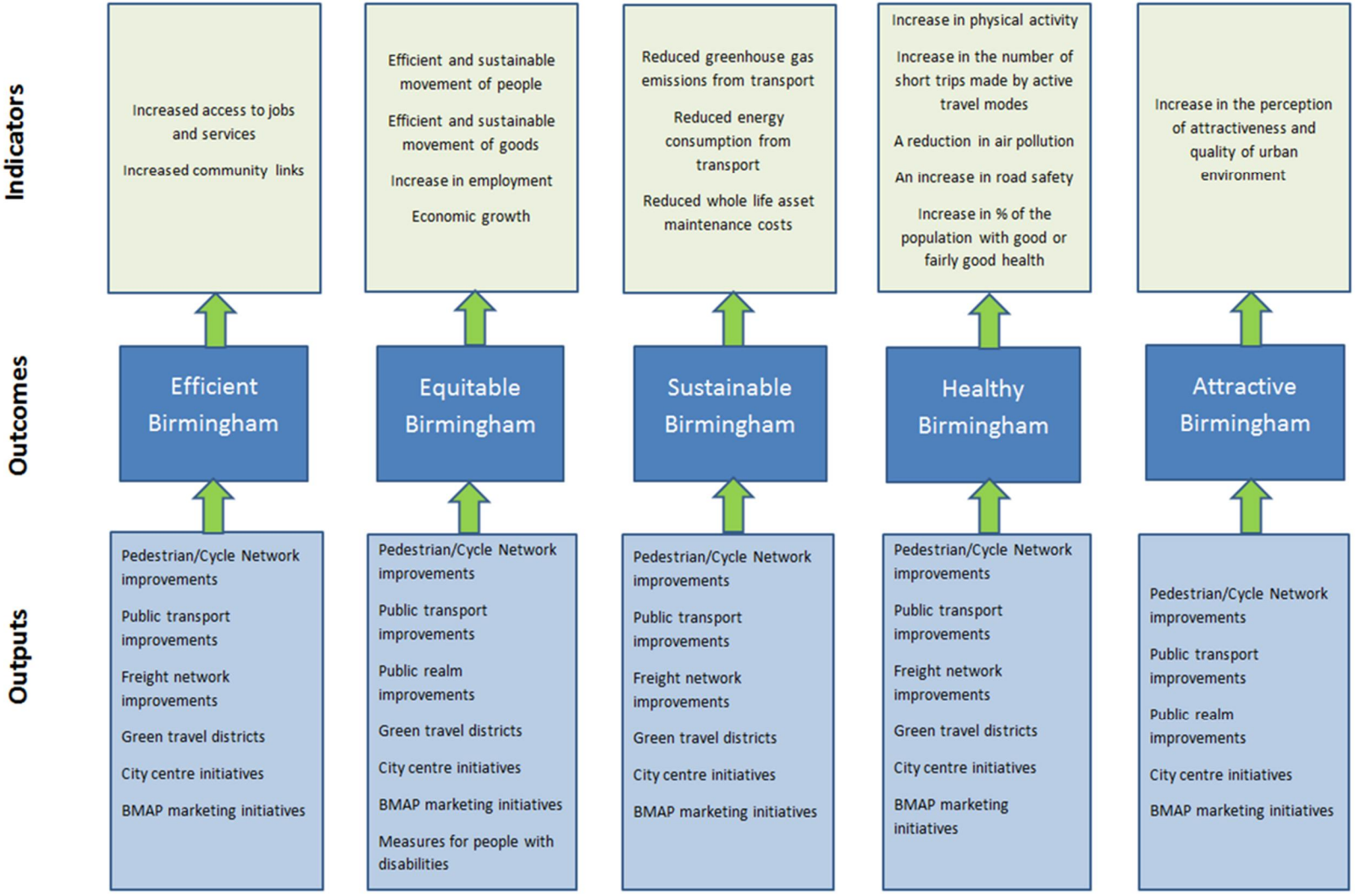
4. Freight network initiatives
5. Green Travel District initiatives
6. Network enhancements for people with disabilities
7. City centre initiatives
8. Birmingham Connected marketing initiatives

A Monitoring Strategy is therefore required to measure the effectiveness of Birmingham Connected, both at the desired outcome level and at the scheme output level.

This strategy has been developed, taking into account SUMP guidance, produced on behalf of the European Commission[1], utilising a series of indicators to measure progress. **Error! Reference source not found.** sets out the interrelation between the outputs used to deliver the desired outcomes and the outcome indicators which will be used to monitor and evaluate progress.

[1] Guidelines - Developing and Implementing a Sustainable Urban Mobility Plan, European Commission

Figure 1.2: Birmingham Connected Monitoring Strategy Logic Map



The European Commission's SUMP guidance recommends a thorough review of existing data sources to understand what data is readily available and to determine if it is applicable for monitoring the outcomes of Birmingham Connected. Extensive data is currently collected for a variety of purposes and will be utilised for Birmingham Connected, this includes journey time data, mode share data, PRISM household travel survey, accident data, public transport patronage data, traffic counts and air quality data. Where possible, we recommend making use of the existing data sets however we acknowledge the need for additional data as summarised within
Table 0.1.

Table 0.1: Additional data requirements

Data	Relevance to Birmingham Connected
Birmingham Connected People's Panel	A bespoke panel may be a more efficient method of collecting data relating to mode share, household travel diaries, physical activity levels, the perception of 'attractiveness' and awareness of Birmingham Connected
GPS public transport journey time data	To understand if Birmingham Connected has reduced public transport journey time and increased reliability
Pedestrian count data at key locations including GTDs and the city centre	To monitor the trend of pedestrian trips in specific areas
Utilisation data to understand vehicle passenger numbers and public transport patronage data	To understand levels of efficiency
Household travel diaries	To establish mode of travel by journey type and distance, origin destination data and levels of physical activity in relation to travel
Air quality data for additional locations	Additional air quality data is required at key sites including the GTDs
Traffic count and journey time data	This data should be available from the UTMC system, this data should start to become available in early 2015.
Traffic surveys for additional locations	Additional traffic data is required at key sites including the GTDs
Car parking capacity/utilisation data for additional locations	Additional car park data is required at key sites including the GTDs
Cycle counts	Additional permanent cycle counters is required at key sites including the GTDs
Electric charging point usage	To determine increase in usage
Fleet data from logistics companies	To determine efficient movement of freight
Cycle hire usage	To understand usage per bike and compile origin destination data for trips made using hire cycles
GTD travel surveys	Travel surveys for organisations based within GTDs
Freight action plans	Details of the number of freight action plans and measures implemented
On street surveys	Specific locational surveys carried out on street to measure increase in the perception of attractiveness

The proposed baseline year against which to measure progress for each outcome indicator will be 2014/15. All datasets will be aligned to enable a regular assessment of performance against the baseline. The final target year for the Birmingham Connected outcomes is 2034.

This document sets out a number of tasks that should be undertaken prior to the delivery of the monitoring strategy and these are set out in the table below. Key tasks include establishing the baseline and utilising the indicators to set bespoke targets for each outcome in order to monitor and evaluate progress.

Table 0.2: Pre-implementation tasks

Task	Detail	Timescales
Establish a baseline	A consistent baseline year is required to allow for the meta evaluation of Birmingham Connected and to measure progress against the delivery of the outcomes.	January 2015
Set targets and interim targets	A small number of targets were included within the BMAP green paper, but targets are required for each outcome and associated work package. Interim targets will ensure that progress in delivering the long term objectives of Birmingham Connected is tracked.	March 2015 following completion of the baseline exercise.
Establish an independent monitoring body	An independent monitoring body is required to ensure that the data is objective. This body should oversee the collection of the baseline data.	November 2014
Establish the BMAP residents panel	A panel is required to measure public opinion and to provide qualitative data on specific schemes.	December 2014/ January 2015
Agree the BMAP monitoring budget	In order to finalise the monitoring methodologies, confirmation of the Birmingham Connected monitoring budget is required.	October 2014

Our suggested budgets for delivering the monitoring strategy is set out in Table 0.3 below based upon three different funding scenarios:

- Scenario 1: A high level of funding for monitoring and evaluation based upon the SUMP guidance of a minimum of 5% of the overall Birmingham Connected budget of £2bn.
- Scenario 2: A medium level of funding for monitoring and evaluation based upon 2.5% of the overall Birmingham Connected budget of £2bn.
- Scenario 3: A low level of funding for monitoring and evaluation based upon 1% of the overall Birmingham Connected budget of £2bn.

Table 0.3: Proposed Birmingham Connected Funding Scenarios

Funding scenario	Approx. Budget
High level of funding	£100m
Medium level of funding	£50m
Low level of funding	£20m

1 Introduction

1.1 Background

Mott MacDonald has been commissioned by Birmingham City Council to develop a Monitoring Strategy to assess the effectiveness of Birmingham Connected in achieving its vision and associated objectives, referred to as outcomes within this document. Birmingham Connected is being developed according to European Sustainable Urban Mobility Plan (SUMP) guidelines and identifies priorities for public and private investment in transport infrastructure and services in Birmingham over a twenty year period. At the heart of Birmingham Connected is its vision:

> *"To reinvent Birmingham's transport system to meet current and future mobility challenges; facilitating strong and sustainable economic growth. The plan will change the way that people and business think about travel into and around the city. By influencing travel behaviour and embracing technological change we will reduce carbon emissions, increase safety and improve people's lives."*

In order to achieve its vision, the BMAP Green Paper sets five key outcomes:

- *Equitable Birmingham* – Birmingham Connected will facilitate a 21st Century transport system linking communities together and improving access to jobs and services.
- *Efficient Birmingham* – Birmingham Connected will help to facilitate the city's growth agenda by moving people and goods in the most efficient and sustainable way possible; strengthening our economy and boosting jobs.
- *Sustainable Birmingham* – Birmingham Connected will reduce the impacts of greenhouse gas emissions and energy consumption from transport, as well as ensuring the most sustainable use of city resources.
- *Healthy Birmingham* – Birmingham Connected will contribute to a general raising of health standards across the city through the promotion of walking and cycling, the reduction of air pollution and improved safety for all users.
- *Attractive Birmingham* – Birmingham Connected will contribute to enhancing the attractiveness and quality of the urban environment; in local centres, key transport corridors and the city centre.

In order to deliver these outcomes, a range of scheme-level outputs are being developed as follows:

- Public realm corridor improvements, supported by road space reallocation where necessary
- Pedestrian/cycle network improvements, supported by road space reallocation where necessary
- Public transport improvements, supported by road space reallocation where necessary
- Freight network initiatives
- Green Travel District initiatives
- Network enhancements for people with disabilities
- City centre initiatives
- Birmingham Connected marketing initiatives

The Monitoring Strategy is therefore required to measure the effectiveness of Birmingham Connected, both at the desired outcome level and at the scheme output level. The purpose of this report is to present the main elements of the Strategy proposed.

1.2 Report Structure

The report is structured as follows:

- Section 2 sets out the relevant guidance and best practice which have been taken into account when developing the monitoring strategy for Birmingham Connected.
- Section 3 summarises the existing data sources currently available to monitor the impact of Birmingham Connected, and sets out the need for additional data where relevant.
- Section 4 presents the proposed Strategy for monitoring progress against Birmingham Connected's desired outcomes.
- Section 5 presents the proposed Strategy for monitoring progress against Birmingham Connected's planned scheme outputs.
- We make recommendations for the Strategy resource requirements and the reporting approach in Chapter 6.
- Finally, we set out recommended next steps in Chapter 7.

2 Guidance and Current Practice

2.1 Introduction

This section sets out relevant best practice examples and guidance for undertaking SUMP monitoring and evaluation, which has informed the development of the Birmingham Connected monitoring strategy.

2.2 Guidance

Guidance for the Monitoring and Evaluation of Sustainable Urban Mobility Plans

SUMP guidance, produced on behalf of the European Commission[2], sets out the need for monitoring and evaluation to be embedded at both the planning and implementation stages to ensure the overall effectiveness of the plan. Through monitoring and evaluation, difficulties can be identified and anticipated, and, if necessary, measures can be 'repackaged' in order to achieve the targets more efficiently and within available budgets.

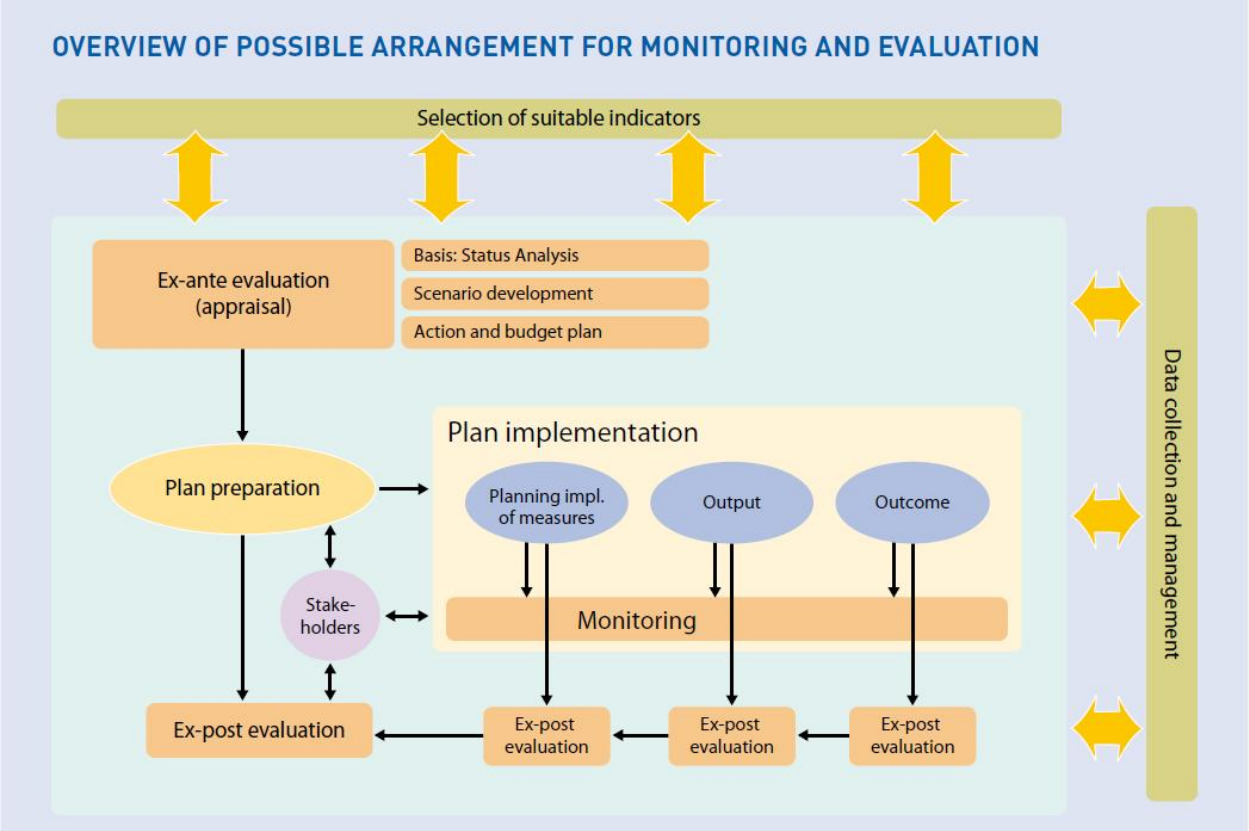
Monitoring and evaluation provides evidence of the effectiveness of the plan in achieving its objectives, thus justifying spending and informing future business cases. Reporting should be fed back into public debate, to allow all parties to consider the findings and make necessary amendments if required.
Figure 2.1 provides an overview of the recommended arrangements for monitoring and evaluation.
Figure 2.2 provides further details of what to include in each stage of the process of the monitoring and evaluation for the project.

In addition to this, the SUMP Guidance sets out a number of further activities, beyond the essential requirements set out in Figure 2.1 and Figure 2.2 below. These additional activities include the following:

- An integrated assessment of costs and benefits of the SUMP Plan development process;
- A plan for extensive stakeholder involvement in monitoring and evaluation;
- Details of the involvement of peers from other cities in the feedback process; and
- Details of coordination with relevant local and regional stakeholders on regional indicators.

[2] Guidelines - Developing and Implementing a Sustainable Urban Mobility Plan, European Commission

Figure 2.1: SUMP monitoring process diagram



Source: SUMP Guidelines

Figure 2.2: Monitoring process guidelines summary

Source: Based on SUMP Guidelines

2.3 Current Practice

A review of current monitoring strategy practice has been undertaken. Full details of the review are attached in **Error! Reference source not found.**, but examples of good practice and relevance for Birmingham Connected is captured in the following summary table.

Table 2.1: Current monitoring strategy good practice examples

Project Name	Examples of Good Practice	Application for Birmingham Connected
Toulouse, France (SUMP)	■ Establishing a partnership monitoring commission ■ Installing an urban development/mobility commission ■ Continuing the PDU observatory ■ Creating a mobility cost account ■ Developing balanced score cards	■ Utilising a partnership approach by engaging with a large number of public and private stakeholders to discuss progress made utilising the monitoring results.
Real Time Copenhagen	■ Modal split data to show the relevant changes in cycling ■ Socio-economic analysis (including health, profit and loss for society) to be compared again a given initiative ■ Measures of public satisfaction ■ Measures of traffic safety and the risk of being involved in a serious accident	■ Utilises new technologies to undertake monitoring ■ Measures public satisfaction levels to inform policy development
Birmingham City Cycle Revolution	■ Effective governance which is crucial to measure the impacts of the project ■ Use of BCC's Post Implementation Review (PIR) to measure a projects outcomes against the scheme objectives ■ Review of all cycling data in Birmingham to provide a baseline and overview of cycling in the city ■ Installation of automatic cycle counters on key routes across the city, as well as manual counts and traffic counts ■ To measure wider impacts of the scheme a range of wider measures were also available to measure ■ Access to and monitoring of a huge range of data sets including STATS19 accident data, school travel surveys, records of event attendees, etc.	■ Utilising all available data sets to establish a baseline of cycling and to monitor progress against achieving wider objectives. ■ Regular reporting to evaluate the performance of each scheme and to provide an opportunity for amendments. ■
Local Transport Plan 3	■ SMART (Specific, Measurable, Achievable, Relevant and Time-Related) and other principles have guided the target detail ■ Having a suitable number of targets to enable a closer focus on the LTP objectives ■ Using a wide range of indicators to ensure robust monitoring and evaluation of the plan	■ Highlights the need for SMART targets which measure outcomes rather than outputs. ■ Utilise a number of indicators to ensure robust monitoring is undertaken. ■
GBSLEP SEP Transport Package	■ Ensuring that the monitoring and evaluation process is established during the planning stages of the project ■ Benefit realisation management at project inception and ensuring that these benefits are realised as the project is developed and implemented	■ Ensure that consideration is given to monitoring as part of the strategy development. ■
Bike North Birmingham	■ Monitoring the following measures for baseline data in the bid for the scheme:	■ Utilise a number of data sets to monitor overall performance in

Project Name	Examples of Good Practice	Application for Birmingham Connected
	■ Travel pattern data for trips to workplaces, school and rail stations ■ Travel to workplace data from the census data ■ Travel to school data collected to review school travel plans ■ Travel to rail stations data ■ Carbon tool for carbon abatement	delivering the outcomes.

3 Data Source Audit

3.1 Introduction

This section of the report reviews the existing data sources that could be utilised in order to monitor and evaluate the impact of Birmingham Connected and identifies further data sources required.

3.2 Existing Data Sources

The European Commission's SUMP guidance recommends a thorough review of existing data sources to understand what data is readily available and to determine if it is applicable for monitoring the outcomes of Birmingham Connected. We set out the existing data sets in the table below, which could be utilised to measure progress in delivering the Birmingham Connected outputs and outcomes.

Table 3.1: Existing data sources summary table

Data	Source	Timescales	Relevance for Birmingham Connected
Census data	Office for National Statistics	The census is conducted every ten years and was last carried out in 2011	Data can be extracted at the lower super output area for: Demographics Mode share Employment JSA claimants Health indicators
Public Transport timetable data	Accession/Centro	The Accession database can be updated quarterly with timetable information	Data can be extracted by corridor and Birmingham wide to determine changes to accessibility of public transport
Land use data	Ordnance survey address base	Monthly updates	Broad usage classes for individual addresses
Future land use	BCC	Held by Joint Data Team updated annually	Location for key developments in housing, retail, employment and other land uses
Journey time data	Traffic Master (DfT)	Updated quarterly	Average journey time and delay information based on GPS data for a large number of roads within Birmingham
Mode share information	Birmingham Cordon reporting	Biennial survey data in November	Cordon around Birmingham City Centre giving historical trends of traffic flows and mode share
PRISM Household travel survey 2011	Joint Data Team/West Midlands Authorities (PRISM Transport Model refresh)	Carried out in 2011 (no planned repeat of data)	Detailed data of a selection of people's travel behaviour around the West Midlands which could be utilised for determining a baseline
Accident data	West Midlands Police (held by Mott MacDonald)	Continuously updated from data provided by the police	Detailed information on all accidents on the highway in Birmingham
Public transport patronage data	Centro/Operators	Data published annually by Centro. Operator data should be available but is dependent on commercial sensitivity issues	Information to assist with identifying new public transport requirements
Cycle count data	Birmingham City Council (held by Joint Data Team)	Continuous data collected from 42 permanent cycle counters across Birmingham	Trends in cycle usage throughout Birmingham Connected programme
Cycle parking survey	Birmingham City	Various surveys at cycle park-	Cycle parking trends within the City

Data	Source	Timescales	Relevance for Birmingham Connected
data in Birmingham City Centre	Council (held by Joint Data Team)	ing sites within Birmingham City Centre during 2013/14	Centre. Further surveys will be required for future years
Classified traffic count data	Various Sources (held by Joint Data Team)	Various Automatic Traffic Surveys across Birmingham. Appendix B shows the survey locations in 2014	Trend in traffic levels throughout the Birmingham Connected programme
Timing profile data for logistics companies	Logistics companies in Birmingham	Continuous	Can be used to identify changes in journey times for calculating efficiency changes
Air quality monitoring data	Birmingham City Council	BCC have two real time monitoring stations collecting various emission data (Tyburn Roadside and Tyburn) and three further stations collecting NOx only (Stratford Road, Selly Oak and New Hall). Further NO2 diffusion tubes are available across the city	Assistance with identifying the changes in greenhouse gas emissions from transport throughout the life of the Birmingham Connected programme, although only a limited number of sites available
Road maintenance logs	Birmingham City Council	Continuous data for baseline and future years should be available	Assist with determining whole life asset maintenance cost changes throughout the Birmingham Connected programme
DfT road traffic statistics	Department for Transport	Annual traffic counts at 150+ locations across Birmingham from 2000	Historic traffic flow data for key arterial routes in Birmingham
Number of people using concessionary passes/disabled passes	Operator/Centro data	Annual data	To understand if Birmingham Connected is increasing accessibility for vulnerable groups
Rail timetable data into City Centre for freight	National Rail	Continuous	To assist with the understanding of how much freight is currently on the rail network and any available capacity on the rail network
Travel Plan information from local businesses	Birmingham City Council	Number of Travel Plans submitted to BCC each year	Change in travel behaviour of employees in Birmingham, particularly important for GTDs
Car parking data	Birmingham City Council/NCP and other operator data	Data should be able to be captured continuously	City centre changes in car parking policy and changes in demand
Nomis Data	Office of National Statistics	Annual data provided	Economic Data for UK, region and Birmingham including employment and job data
People's Panel	Birmingham City Council	Consultation is carried out with panel members as and when required	Panel could be used to capture mode share, household travel diaries, physical activity levels, the perception of 'attractiveness' and awareness of Birmingham Connected
Percentage of Physical Active Adults	Public Health England	Annual	Indicator as to change in the physical activity of the residents of Birmingham.

3.3 Additional Data Requirements

In addition to the above data sources, the monitoring strategy set out in the subsequent chapters will require additional data sources in order to evaluate performance in delivering the Birmingham Connected outcomes. The table below summarises the additional data requirements:

Table 3.2: Additional data requirements

Data	Relevance to Birmingham Connected
Birmingham Connected People's Panel	A bespoke panel may be a more efficient method of collecting data relating to mode share, household travel diaries, physical activity levels, the perception of 'attractiveness' and awareness of Birmingham Connected
GPS public transport journey time data	To understand if Birmingham Connected has reduced public transport journey time and increased reliability
Pedestrian count data at key locations including GTDs and the city centre	To monitor the trend of pedestrian trips in specific areas
Utilisation data to understand vehicle passenger numbers and public transport patronage data	To understand levels of efficiency
Household travel diaries	To establish mode of travel by journey type and distance, origin destination data and levels of physical activity in relation to travel
Air quality data for additional locations	Additional air quality data is required at key sites including the GTDs
Traffic count and journey time data	This data should be available from the UTMC system and will start to become available in early 2015.
Traffic surveys for additional locations	Additional traffic data is required at key sites including the GTDs
Car parking capacity/utilisation data for additional locations	Additional car park data is required at key sites including the GTDs
Cycle counts	Additional permanent cycle counters is required at key sites including the GTDs
Electric charging point usage	To determine increase in usage
Fleet data from logistics companies	To determine efficient movement of freight
Cycle hire usage	To understand usage per bike and compile origin destination data for trips made using hire cycles
GTD travel surveys	Travel surveys for organisations based within GTDs
Freight action plans	Details of the number of freight action plans and measures implemented
On street surveys	Specific locational surveys carried out on street to measure increase in the perception of attractiveness

4 Monitoring Strategy – Outcome Level

4.1 Introduction

The purpose of this section is to present the proposed strategy for monitoring Birmingham Connectedagainst its desired outcomes.

4.2 Desired Outcomes

The BMAP Green Paper sets five key outcomes:

- *Equitable Birmingham* – Birmingham Connected will facilitate a 21st Century transport system linking communities together and improving access to jobs and services.
- *Efficient Birmingham* – Birmingham Connected will help to facilitate the city's growth agenda by moving people and goods in the most efficient and sustainable way possible; strengthening our economy and boosting jobs.
- *Sustainable Birmingham* – Birmingham Connected will reduce the impacts of greenhouse gas emissions and energy consumption from transport, as well as ensuring the most sustainable use of city resources.
- *Healthy Birmingham* – Birmingham Connected will contribute to a general raising of health standards across the city through the promotion of walking and cycling, the reduction of air pollution and improved safety for all users.
- *Attractive Birmingham* – Birmingham Connected will contribute to enhancing the attractiveness and quality of the urban environment; in local centres, key transport corridors and the city centre.

4.3 Monitoring Approach

In accordance with SUMP monitoring guidelines, we have minimised the number of SMART indicators which will be used to represent the desired Birmingham Connected outcomes so that progress in delivering these can be assessed. Against each of these indicators, and in consultation with the client, we have proposed:

- Draft indicator objective (these will be defined into measurable targets once the baseline data has been collected)
- Data sources required to measure the indicator
- Suggested frequency of monitoring

Appendix C provides an indication of the potential cost of undertaking each element of the monitoring outlined in Table 5.1.

The resulting outcomes indicator table is presented below. Section **Error! Reference source not found.** also describes the next steps required for developing this table into a detailed Monitoring Strategy.

4.4 Outcomes Baseline and Target Years

In agreement with Birmingham City Council, the proposed baseline year against which to measure progress for each outcome indicator is 2014/2015. This will ensure that all datasets are aligned to enable a regular as-

sessment of performance in delivering the Birmingham Connected outcomes. The final target year for the Birmingham Connected outcomes is 2034.

Section **Error! Reference source not found.** summarises the next steps required for establishing the baseline values for each indicator and projecting suitable indicator trajectories to the target value

4.5 Outcomes Indicator Table

The following table presents the indicators proposed for assessing progress against the desired Birmingham Connected outcomes.

Table 4.1: Birmingham Connected **outcome indicator table**

Outcome	Indicator	Indicator Objective (to be further defined once baseline is collected)	Data Source	Frequency of Monitoring	Approx. Cost
Equitable Birmingham	Increased access to jobs and services	1. Increase proportion of population within 45 minutes public transport travel time of anywhere in the city from baseline 2. Increase proportion of population within access of anywhere in the city within a maximum of 2 interchanges from baseline	Accession (PT timetable data and drive time information) and Land use/Employment data Journey time data/GPS Data.	3 years from baseline and then annually until end of Birmingham Connected programme.	£5k per review
	Increased community linkages			3 years from baseline and then annually until end of Birmingham Connected programme.	£5k per review
Efficient Birmingham	Efficient and sustainable movement of people	1. No increase in car trips from baseline	Passage counts over a selected number of points within Birmingham (based on a similar methodology as the West Midlands 1500 point Surveys) surveyed every 2 years. The data will be collected using automatic traffic counters or data collected at above ground detection sites.	Biennially	£25k+ per review (approx. 100 2 week ATCs)
		2. Increase in public transport reliability	Bus and Metro GPS/performance data from operators. Rail performance data from operators.	3 years from baseline and then annually until end of Birmingham Connected programme.	£5k per review
		3. Increased highway reliability from the baseline	TrafficMaster Journey time data (or equivalent GPS data).	3 years from baseline and then annually until end of Birmingham Connected programme.	£5k per review
		4. Increase in sustainable travel modes	Household Travel Diaries or People's Panel research, city centre biennial cor-	Every 3 years	£70k+ per review*+

Outcome	Indicator	Indicator Objective (to be further defined once baseline is collected)	Data Source	Frequency of Monitoring	Approx. Cost
			don data and mode share data from existing Travel Plans submitted to BCC.		
		5. Increase in cycling to 10% (15% in GTDs)	Cycle count data from existing permanent cycle counters around Birmingham. New cycle count data will be required from GTDs (discussed further in scheme monitoring).	3 years from baseline and then annually until end of Birmingham Connected programme.	£4k+ initial outlay for each new permanent counter. £5k per review
		6. Decreased demand for car parking in the City Centre from the baseline	Birmingham City Council and car park operator data. Car park capacity surveys.	3 years from baseline and then annually until end of Birmingham Connected programme.	Without surveys £5k per review. (£40 for surveys)
	Efficient and sustainable movement of goods	1. No increase in road freight from the baseline	Classified counts over a selected number of points within Birmingham (based on a similar methodology as the West Midlands 1500 point Surveys but collecting classified data) surveyed every 2 years. The data will be collected using ATCs or above ground detection sites.	Biennially	£25k+ per review (use of same points as above)
		2. Increase in sustainable freight	Electric vehicle/Rail/Water utilisation from operators. Logistics/Business survey to understand patterns of usage and current sustainable freight take up.	Every 3 years	£50k per review
	Economic growth	Increase in GVA from baseline	GVA data provided by Office for National Statistics for Birmingham.	Every 3 years	£1k per review
	Increase in employment	Increase in economically active persons in employment from baseline	NOMIS Employment data	3 years from baseline and then annually until end of Birmingham Connected programme.	£1k per review
Sustainable Birmingham	Reduced greenhouse gas emissions from transport	Reduction of carbon emissions by 60% by 2027 from 1990 levels*. Reduce the greenhouse gas emissions throughout the Birmingham Connected programme.	Air quality monitoring data from the 5 existing stations in Birmingham and the existing NO2 diffusion tubes located across the City. Additional stations may be required close to GTDs.	Annually	Additional station approx. £25k Analysis approx. £5k per review

Outcome	Indicator	Indicator Objective (to be further defined once baseline is collected)	Data Source	Frequency of Monitoring	Approx. Cost
	Reduced energy consumption from transport	Increase in usage of electric vehicles.	Monitoring of Electricity charging points in Birmingham (number and usage) and logistics fleet information from operators.	Every 3 years	£20k per review
	Reduce whole life asset maintenance costs	Reduce the number of maintenance call outs from assets from the baseline	Log of maintenance of BCC assets (Amey) and annual maintenance costs	Annually	£5k per review
Healthy Birmingham	Increase in physical activity	Increase the number of trips made by walking and cycling. Reduce the total deaths preventable through physical exercise.	Household Surveys/People Panel surveys and Public Health England data	Every 3 years for surveys with Public Health England data annually	£70k+ per review*+
	Increase in the number of short trips made by active travel modes	Addressing the mode choice for short trips is a specific target for Birmingham Connected.	Household travel diaries or People Panel surveys	Every 3 years	£50k per review*+
	A reduction in air pollution	Reduction in carbon emissions by 60%	Air quality monitoring data from the 5 existing stations in Birmingham and the existing NO2 diffusion tubes located across the City.	3 years from baseline and then annually until end of Birmingham Connected programme.	£5k per review
	An increase in road safety	Birmingham has signed up to a target to reduce the number of KSI to an average of 394 per annum between 2011 and 2015: a reduction in 17.3% on the current level. Continue to maintain a reduction in KSI throughout Birmingham Connected programme.	Stats 19 data	3 years from baseline and then annually until end of Birmingham Connected programme.	£5k per review
	Increase in the % of the population with good or fairly good health	Increase in the % of the population with good or fairly good health	Census data/household surveys or People Panel	Every 3 years	£30k per review*+
Attractive Birmingham	Increase in the perception of attractiveness & quality of urban environment	Increase in the perception of attractiveness & quality of urban environment	On street survey	Every 3 years	£10k per location

**As set out in the Birmingham City Council Green Commission*

5 Monitoring Strategy – Output Level

5.1 Introduction

The purpose of this section is to present the proposed strategy for monitoring Birmingham Connected against scheme level outputs.

5.2 Planned Outputs

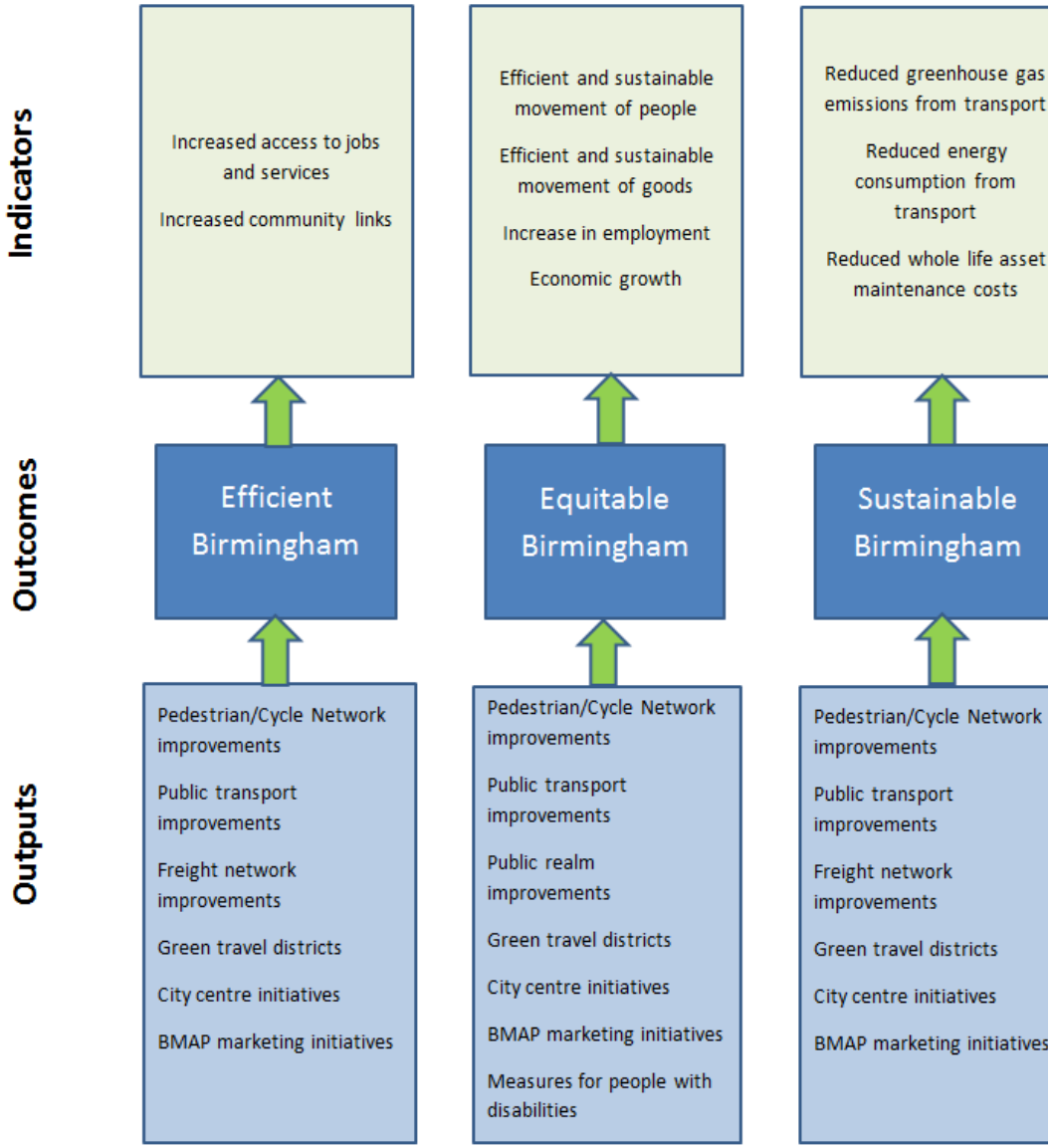
As described in Section 1.1, a range of scheme-level outputs are being developed to deliver the Birmingham Connected outcomes. The following matrix summarises the relationship between each output type and the outcomes. In addition to this, we summarise the interrelation between the scheme level outputs, the wider Birmingham Connected outcomes and the indicators used to monitor progress in the logic map presented in Figure 6.1. Individual indicators are discussed in more detail in Section 6.5.

Table 5.1: Outputs to Outcomes matrix

Outputs	Outcomes				
	Equitable Birmingham	Efficient Birmingham	Sustainable Birmingham	Healthy Birmingham	Attractive Birmingham
Public realm corridor improvements	✓				✓
Pedestrian/cycle network improvements	✓	✓	✓	✓	✓
Public transport improvements	✓	✓	✓	✓	✓
Freight network initiatives		✓	✓	✓	✓
Green Travel District initiatives	✓	✓	✓	✓	
Network enhancements for people with disabilities	✓				
City centre initiatives	✓	✓	✓	✓	✓
BMAP marketing initiatives	✓	✓	✓	✓	✓

Figure 5.1: Birmingham Connected **Outputs, Outcomes and Indicators Logic Map**

BIRMINGHAM CONNECTED MOVING OUR CITY FORWARD



5.3 Monitoring Approach

As is the case for the outcome monitoring, monitoring of outputs will be based on a few key SMART indicators that best represent the aims of each output measure. Against each of these indicators, we have then proposed:

- Draft indicator targets
- Data sources required to measure the indicator
- Alternative data sources
- Proposed monitoring frequency
- Approximate cost estimate

The resulting outcomes indicator table is presented below. Section **Error! Reference source not found.** also describes the next steps required for developing this table into a detailed Monitoring Strategy.

5.4 Outputs Baseline and Target Years

Where possible, the output baseline year will be aligned to the outcome baseline year of 2014, but we acknowledge the need to tailor this to each intervention, particularly those which are associated with new infrastructure. For example, the baseline year for a new Sprint bus route would be the year implementation starts followed by the target in year five after opening. Baseline and target years will be set as part of the monitoring strategy devised for each output measure.

5.5 Outputs Monitoring Strategy Tables

The following tables present the indicators proposed for assessing progress against scheme-level outputs.

Public Realm Corridor Initiatives

Table 5.2: Proposed public realm corridor improvement indicators

Indicator	Outcome supported					Target/Aspiration	Data	Alternate data	Frequency of monitoring	Approx. Cost
	Equitable	Efficient	Sustainable	Healthy	Attractive					
Perception of public realm					✓	Improvement to the perception of public realm at specific sites	On street survey	Peoples panel/household travel diaries	Every 3 years	£10k per site

Pedestrian/Cycle Network Improvements

Table 5.3: Proposed pedestrian/cycle corridor improvement indicators

Indicator	Outcome supported					Target/Aspiration	Data	Alternate data	Frequency of monitoring	Approx. Cost
	Equitable	Efficient	Sustainable	Healthy	Attractive					
Perception of pedestrian environment			✓	✓		Improvement to the perception of pedestrian environment at specific sites	On street survey	Peoples panel/household travel diaries	Every 3 years	£10k per site
Perception of Cycle environment			✓	✓		Improvement to the perception of cycle environment at specific sites	On street survey	Peoples panel/household travel diaries	Every 3 years	£10k per site

Public Transport Improvements

Table 5.4: Proposed public transport indicators

Indicator	Outcome supported					Target/Aspiration	Data	Alternate data	Frequency of monitoring	Approx. Cost
	Equitable	Efficient	Sustainable	Healthy	Attractive					
Public Transport Capacity	✓	✓	✓			Increase the passenger capacity of public transport in Birmingham from the baseline (2014)	Timetable and fleet data from operators		Every 3 years	£20k per review
Public Transport Occupancy	✓	✓	✓			Improve occupancy of Public Transport routes	Public transport surveys/counts along key routes		Every3 years	£30k per review
Commercial Speed of SPRINT		✓				Achieve 20kph over each SPRINT route.	Journey time/speed data from operator of SPRINT routes (scheduled v GPS actual speed)		3 years from baseline and then annually until end of Birmingham Connected programme.	£5k per review
Patronage	✓	✓	✓			Increase in public transport patronage from the baseline	Patronage data from Centro/Operators	Boarding and alighting surveys along public transport network. Smart ticket data from all public transport (metro, sprint, city link, bus and rail)	Every 3 years.	£30k per review
Smart Tickets		✓				Increase the usage of Smart tickets/multi-mode tickets from baseline (2014)	Ticket data from Centro/Operator	Smart ticket information	3 years from baseline and then annually until end of Birmingham Connected programme.	£5k per review

Freight Network Initiatives

Table 5.5: Proposed monitoring indicators for freight network initiatives

Indicator	Outcome Supported					Target/Aspiration	Data	Alternate data	Frequency of Monitoring	Approx. Cost
	Equitable	Efficient	Sustainable	Healthy	Attractive					
Strategic Freight Network		✓				Improve Journey time reliability for freight along strategic freight routes	Traffic Master data or equivalent	UTC data or data from logistics companies.	3 years from baseline and then annually until end of Birmingham Connected programme	£5k per review
Sustainable Freight		✓	✓			Reduction in HGV composition	Classified passage count data biennially at locations across Birmingham (see global indicator information)	UTC data	Biennially	£15k per review
		✓	✓			Increase in rail freight – Into City Centre	Number of freight trains into City Centre Stations from Network Rail	logistics companies data	3 years from baseline and then annually until end of Birmingham Connected programme	£2k per review
		✓	✓			Increase in water freight	Department for Transport data	Logistics companies data		£5k per review
Consolidation centres		✓	✓			Reduction of freight in the city centre	Logistics company data/consolidation data/level of uptake from logistic companies surveys	Cordon surveys of vehicle numbers into the city centre	Biennially	£15k per review
Retiming profile		✓				Reduce the numbers of freight vehicles travelling during peak hours	Logistic company data and roadside intelligence	Classified passage count data biennially at locations across Birmingham (see global indicator information) indicating a reduction in HGVs in peak times	Biennially	£15k per review
Consolidation of orders/deliveries		✓	✓			Reduction in freight movements through collaborative planning	Number of Freight Action Plans		3 years from baseline and then annually until end of Birmingham Connected programme	£2k per review
Response to the freight changes introduced as part of Birmingham Connected		✓				Positive response to freight changes introduced as part of Birmingham Connected	Consultation with logistics industry	Birmingham Chamber of Commerce data	Every 3 years	£20k per review

Green Travel Districts

Table 5.6: Proposed monitoring indicators for Green Travel Districts

Indicator	Outcome Supported					Target/Aspiration	Data	Alternate data	Frequency of Monitoring	Approx. Cost
	Equitable	Efficient	Sustainable	Healthy	Attractive					
Reduction in car use in GTD			✓		✓	Reduction in the number of people travelling by car into the GTDs	Cordon surveys around each GTD	UTC data	Biennially	£10k per GTD per review
Walking and cycling			✓	✓		Increase in Cycling (minimum of 15% increase within the GTD)	Permanent cycle counters at select locations around the GTDs	Manual cordon surveys around GTDs	3 years from baseline and then annually until end of Birmingham Connected programme	£4k+ initial outlay for each new permanent counter. £5k per review
			✓	✓		Increase in Walking	Bluetooth pedestrian counters at select locations around the GTDs	Manual cordon surveys around GTDs	3 years from baseline and then annually until end of Birmingham Connected programme	£10k per GTD per review
			✓	✓		Increase in usage of cycle hire/hubs	No. of cycles hired (link to one card and App)		3 years from baseline and then annually until end of Birmingham Connected programme	£4k per review
Change in travel behaviour of employees in the GTDs			✓	✓	✓	Increase in Sustainable modes	Travel Survey of all employees in the GTD	BCC Peoples panel or similar	3 years from baseline and then annually until end of Birmingham Connected programme	£20k per review
All business to have Travel Plans in place		✓	✓	✓	✓	Number of Travel Plans	Data collected centrally (at BCC?) as to the development of Travel Plans in each GTD.	Planning data	3 years from baseline and then annually until end of Birmingham Connected programme	£3k per review
		✓	✓	✓	✓	Performance of travel plans	Data collected by individual TPCs using staff travel surveys,	Online Travel Plan monitoring system could be developed by BCC or an	3 years from baseline and then annually until end of Birmingham	£20k per review

Indicator	Outcome Supported: Equitable	Efficient	Sustainable	Healthy	Attractive	Target/Aspiration	Data	Alternate data	Frequency of Monitoring	Approx. Cost
							residents surveys, TRICS Standard Assessment Methodology (SAM) or similar	existing system such as iTRACE or iOnTravel could be used to facilitate a strategic approach to the management of sustainable travel by collecting travel plan site and personal travel survey data	Connected programme	
Birmingham information for Travel (BiT) Mobile Application (App)/One Card smart ticketing		✓				Increase in use of sustainable modes	Data on development from partners and data from apps once in use.	Centro Data	3 years from baseline and then annually until end of Birmingham Connected programme	£5k per review
Personalised Travel Planning	✓	✓	✓	✓	✓	Increase in use of sustainable modes	Data collected on the number of individuals participating in PTP.		Every 3 years	£30k per review

Measures for People with Disabilities

Table 5.7: Proposed monitoring indicators for measures for people with disabilities

Indicator	Outcome Supported: Equitable	Efficient	Sustainable	Healthy	Attractive	Target/Aspiration	Data	Alternate data	Frequency of Monitoring	Cost
Access to Transport - The proportion of disabled people who do not experience difficulties using transport	✓					Increase the proportion of disabled people who do not experience difficulties using transport.	Survey distributed via groups that represent disabled people.	On street survey with disabled people	Every3 year	£20k per review
Use of concessionary bus/PT passes	✓					Increase the number of disabled people	Centro/Bus operator data. Smart card con-		3 years from baseline and then annually until	£2k per review

Indicator	Outcome Supported: Equitable	Efficient	Sustainable	Healthy	Attractive	Target/Aspiration	Data	Alternate data	Frequency of Monitoring	Cost
by people with disabilities						using concessionary bus passes	cessionary passes should identify those using concessionary passes with a disability		end of Birmingham Connected programme	
Ring and ride passenger trends	✓					Maintain or increase ring and ride usage from baseline (2014)	Ring and Ride operator data		3 years from baseline and then annually until end of Birmingham Connected programme	£4k per review
Accessible public transport	✓					Increase the accessibility of the public transport network from baseline (2014)	Fleet information from Centro/operators on number of low floor buses/trams. Station/Interchange information on percentage of interchanges/stations accessible to all		3 years from baseline and then annually until end of Birmingham Connected programme	£5k per review

City Centre Initiatives

Table 5.8: Proposed city centre initiatives indicators

Indicator	Outcome supported: Equitable	Efficient	Sustainable	Healthy	Attractive	Target/Aspiration	Data	Alternate data	Frequency of monitoring	Approx. Cost
Level of long stay car parking			✓			Reduction in the requirement for long stay car parking within the City Centre	Car park surveys	Private operator data	Every 3years	£30k per review
Level of short stay car parking			✓			Reduction in the requirement for short stay	Car park surveys	Private operator data	Every 3 years	£30k per review

Indicator	Outcome supported: Equitable	Efficient	Sustainable	Healthy	Attractive	Target/Aspiration	Data	Alternate data	Frequency of monitoring	Approx. Cost
						car parking within the City Centre				

Birmingham Connected **Marketing Initiatives**

Table 5.9: Proposed monitoring indicators for marketing initiatives

Indicator	Target/Aspiration	Outcome Supported: Equitable	Efficient	Sustainable	Healthy	Attractive	Data	Alternate data	Frequency of Monitoring	Cost
Level of public awareness of Birmingham Connected principles	Greater than in baseline year (2014)	✓	✓	✓	✓	✓	Household Surveys/People Panel surveys	On street survey	Every 3 years	£30k per review*
Level of public adoption of Birmingham Connected principles	Greater than in baseline year (2014)	✓	✓	✓	✓	✓	Household Surveys/People Panel surveys	On street survey	Every 3 years	£30k per review*

6 Monitoring Resource Requirements

6.1 Introduction

The monitoring and evaluation of Birmingham Connected will provide an essential management tool which will track progress and demonstrate value for money, highlighting any lessons learnt for future funding decision making. Taking this into account, we set out our approach to the implementation of the strategy, highlighting the suggested implementation approach, the governance structure for overseeing the delivery of the strategy, the reporting process and the proposed budgetary requirements.

6.2 Implementation and Governance

As recommended in the SUMP guidance, we propose that the monitoring strategy is delivered by a body or organisation which is independent of the Birmingham Connected project team. This body would be responsible for overseeing the implementation of the strategy, utilising relevant existing data where appropriate, and managing specific Birmingham Connected data collection exercises. In addition to this, the body will report on progress and set out planned activities to the Birmingham Connected project board on a quarterly basis.

6.3 Reporting

We recognise the need to regularly report on progress in order to identify problems, highlight potential successes and provide an opportunity for any re-adjustments. We suggest that an annual report is submitted to the Birmingham Connected project board which sets out a meta-evaluation of the monitoring activities undertaken, highlighting progress in achieving any interim targets and monitoring progress in delivering each of the Birmingham Connected outcomes.

It is important to note that the monitoring strategy should not be regarded as a static document; it should evolve over time to take into account any new data sources which could assist in monitoring the Birmingham Connected outcomes, changes to specific schemes or to technologies which could assist in the data collection. We recommend that the methodology for undertaking monitoring in the subsequent year is reviewed within the annual report to ensure that it still remains applicable and is agreed by the Birmingham Connected project board.

Following submission of the annual report, the Birmingham Connected project team will share the headline results with key stakeholders and the general public and we recommend that this is incorporated into the wider Birmingham Connected communications strategy.

6.4 Proposed Budget Requirements

Our suggested budgets for delivering the monitoring strategy is set out in **Table 6.1** below based upon three different funding scenarios:

- Scenario 1: A high level of funding for monitoring and evaluation based upon the SUMP guidance of a minimum of 5% of the overall Birmingham Connected budget of £2bn.

- Scenario 2: A medium level of funding for monitoring and evaluation based upon 2.5% of the overall Birmingham Connected budget of £2bn.
- Scenario 3: A low level of funding for monitoring and evaluation based upon 1% of the overall Birmingham Connected budget of £2bn.

Table 6.1: Proposed Birmingham Connected **Funding Scenarios**

Funding scenario	Approx. Budget
High level of funding	£100m
Medium level of funding	£50m
Low level of funding	£20m

7 Next Steps

This monitoring strategy sets out a number of tasks that should be undertaken prior to the delivery of the strategy and these are set out in the table below.

Table 7.1: Pre-implementation tasks

Task	Detail	Timescales
Establish a baseline	A consistent baseline year is required to allow for the meta evaluation of Birmingham Connected and to measure progress against the delivery of the outcomes.	January 2015
Set targets and interim targets	A small number of targets were included within the BMAP green paper, but targets are required for each outcome and associated work package. Interim targets will ensure that progress in delivering the long term objectives of Birmingham Connected is tracked.	March 2015 following completion of the baseline exercise.
Establish an independent monitoring body	An independent monitoring body is required to ensure that the data is objective. This body should oversee the collection of the baseline data.	November 2014
Establish the BMAP residents panel	A panel is required to measure public opinion and to provide qualitative data on specific schemes.	December 2014/ January 2015
Agree the BMAP monitoring budget	In order to finalise the monitoring methodologies, confirmation of the Birmingham Connected monitoring budget is required.	October 2014

Appendices

Appendix A Current Practice Examples

Monitoring and evaluation guidance for SUMP's, Toulouse, France

Monitoring and evaluation needs to be built into a Sustainable Urban Mobility Plan (SUMP) as essential management tools to keep track of the planning process and measure implementation. It also allows people to learn from the planning experience, understand what works well and less well, which will help for future SUMPs. With their PDU, the city of Toulouse set initiatives that should assure an accurate monitoring of the success of the PDU.

Background

Monitoring and evaluation of both the planning process and of the implementation of the measures are crucial to the effectiveness of a SUMP. Monitoring and evaluation mechanisms help to identify and anticipate difficulties in the preparation and implementation of the SUMP, and, if necessary, to "repackage" measures in order to achieve targets more efficiently and within the available budget. It will also provide proof of the effectiveness of the plan and its measures. This allows those responsible for the actions to justify where money was spent.

The reporting should ensure that the results of the evaluation feed back into the public debate, thus enabling all actors to consider and make the necessary corrections (e.g. if targets are achieved or if measures appear to be in conflict with one another). The monitoring and evaluation mechanisms should be defined early and become an integrated part of the plan.

Example

The new PDU of the agglomeration of Toulouse set up a number of initiatives that should assure an accurate monitoring of the realisation of the PDU and regular evaluation of its results. They comprise the following activities:

- Establishment of a "partnership" monitoring commission
- Installation of an "urban development/ mobility commission"
- Continuation of the PDU observatory
- Creation of a mobility cost account
- Development of balanced score cards

The revision of the PDU permitted the agglomeration to engage a large number of public and private stakeholders. In the framework of the "partnership" monitoring commission, all institutions, associations and mobility-related organisations will meet at least once a year to discuss the progress made, if possible making use of the intermediate evaluation results provide by the PDU observatory.

The objective of the PDU observatory is to follow the progress made in the realisation of the actions described in Toulouse's Urban Mobility plan. Questions asked are: "Have the actions of the PDU been started?"; "Are the principles of the PDU being maintained?" In addition, the observatory will follow the effects of the PDU actions. It will investigate whether the impacts of these actions are in accordance with the envisaged effects. It will also observe whether the general objectives are fulfilled as described in the respective PDU laws, the LOTI, LAURE and the SRU. Every year an intermediate evaluation update will take place. A full evaluation of progress and results is obligatory 5 years after the official approval of the PDU.

Some of the indicators used feed directly into or come from the legally-required strategic impact evaluation. The indicators that should provide the larger overview of the mobility and transport trends in the agglomeration of Toulouse come from:

1. the household mobility study
2. the surrounding road and ring road study
3. the public transport origin-destination study

The urban development/ mobility commission was established to assure coherence between the urban development options within the perimeter of the PDU and the organisation of the transport infrastructure. Both the AOUT (authority with transport competences responsible for the PDU) and the SMEAT (authority responsible for the SCOT, urban development coherence scheme) are participating in this commission.

The mobility cost account is a tool made obligatory by the Law SRU. More precisely this law imposes the creation of a number of tools that assist public and private decision making that has an impact on mobility practices. The mobility cost account is one of these tools. It permits the agglomeration to visualise the costs to the users and to society. A balanced score card will be set up that integrates all actions of the PDU. It will provide periodic updates on the precise content of the measure, the progress made, and the envisaged timing of realisation.

Conclusions

The outcome from the monitoring and evaluation of a SUMP should allow the agglomeration to achieve two things at a minimum. It should first of all feedback to the planners where the implementation of the measures stands in relation to time and budgetary terms. This information can then be passed on to stakeholders and the public at large for debate one the perceived success of a project. Secondly, it should help planners keep track of problems with the measures and take note of what has been successful within the planning and implementing stages and use this information for future SUMPs.

Sustrans Bicycle Account Project

- 7 UK Cities - Edinburgh, Greater Manchester, Belfast, Cardiff, Bristol, Birmingham and Newcastle.
- Inspired by the Copenhagen Bicycle Account, an assessment of cycling development in the City of Copenhagen. The Bicycle Account is published biennially, and its most recent edition in 2012 included telephone interview with 1,021 randomly selected Copenhagen residents as well as data from a survey of transport behavior.

Monitoring in Copenhagen

Real Time Copenhagen is a 3 year research project by the MIT SENSEable City Lab's in collaboration with the Municipality of Copenhagen. Within this framework, CopenCycle is a short-term project in the context of a workshop which explores the use of real time technologies to map the flow of people and resources in Copenhagen to better understand urban dynamics in real time. By revealing the pulse of the city, the project aims to show how technology can help individuals and the planning institutions to make more informed decisions about their environment with a special emphasis on the use of public spaces. In the long run, the project seeks to integrate the technologies for more detailed studies of e.g. bicycle movements, services and routes in relation to sustainable urban transportations.

Modal split data shows the relevant changes in cycling in Copenhagen. Modal share was split between bicycle, bus/train/metro, car and walking.

Socio - economic analyses gives values to the effects of a given initiative in Copenhagen, so that the total effect can be calculated and solutions can be compared as best possible. The focus is on the total societal effect including health, profit and loss for society.

Measures of public satisfaction - 'Even though Copenhagen's cyclists are generally pleased with Copenhagen as a cycling city, there are some areas were satisfaction is falling. For example, only three out of ten think that the city's bicycle parking facilities are satisfactory, and only five out of ten are satisfied with the maintenance of cycle tracks. If we are to reach the goal of having more people cycling to work and educational institutions in 2025, the comfort level must be improved across the board so that both the current and the potential cyclists find it easy and attractive to cycle in Copenhagen.

Safety -One of the requirements for choosing the bicycle is that the individual citizen has the impression that cycling is safe. One of Copenhagen's goals is by 2015, 80% of cyclists in Copenhagen feel safe in the traffic and in 2025, that number will have increased to 90%. This can be measured looking at traffic safety and risk of being involved in a serious accident.

Birmingham City Cycle Revolution

Effective governance is crucial for monitoring and reviewing, in order to measure the impacts of the project.

Birmingham City Council has a framework for monitoring and evaluating schemes; the Post Implementation Review (PIR). The purpose of the PIR is to measure a project's outcomes against the scheme objectives, and work toward continuous improvement. It covers delivery outcomes, scope, costs, timeliness, methodology compliance and lessons learnt.

The PIR process was adapted during Phase 1 of the Birmingham Cycle Revolution to suit the geographical spread and differing nature of the proposed Birmingham Cycle Revolution schemes, putting in place a robust monitoring and evaluation process that enables the various outputs and outcomes of the interventions to be analysed to shape the longer-term strategy to 2033. Using our PIR form, the Project Team will provide monthly monitoring updates to the Project Management Team, enabling the performance of the scheme to be evaluated and the lessons learned to be embedded for future. Birmingham City Council will provide the LEP with six monthly update reports on outputs and outcomes.

In 2011, Birmingham City Council commissioned Sustrans' Research and Monitoring Unit to undertake a review of all data currently held on levels of cycling in the city. Sustrans' report presents an overview of cycling in Birmingham and provides a baseline against which monitoring findings can be compared.

Birmingham City Council currently has 45 automatic cycle counters installed on key routes across the city. Whenever a section of route is build or upgraded as part of the Birmingham Cycle Revolution, we will consider the appropriateness of installing an additional counter. These are supported by regular cordon surveys at specified locations such as the City Centre, as well as cycle parking counts, school surveys and wider transport surveys which provide details on cycle usage in the network.

In addition to analysis of cycling levels, in order to evaluate the wider impacts of Birmingham's Cycle Revolution, we also use additional data sets available to measure health and wellbeing, access to employment, personal safety and crime.

The expected outcomes against which Birmingham Cycle Revolution is monitored are:

1. To increase the number of cycling trips: a) for all trip purposes; and b) as part of an integrated transport trip;
2. To increase the number of people cycling: a) to school; b) to work; c) for leisure; d) and in harder to reach communities;
3. To contribute to improved health and wellbeing;
4. To improve access to employment in the bid area attributable to the delivery of measures to support cycling;
5. To improve awareness of cycling provision in the city, and to improve overall perceptions of cycling in the city;
6. To decrease carbon emissions through reduced car kilometres that are attributable to modal shift in favour of cycling; and
7. To ensure a decrease or no overall change in the incidence of accidents involving cyclists and crimes involving cyclists or bikes.

The outcomes measured as part of this programme align closely to those of Bike North Birmingham.

The monitoring process of Bike North Birmingham and Birmingham Cycle Revolution and the interactions between the two programmes are now established and some of the initial difficulties with data collection have been overcome. Therefore we are well equipped to continue the process of robust monitoring throughout Phase 2.

- Monitoring tools used in the process of analysis and evaluation of each outcome of the Birmingham Cycle Revolution:
- Manual counts
- Automatic cycle counters
- Traffic counts (i.e. number of pedal cycles counted on roads)
- Counts of parked bikes
- Brompton Dock hire data
- Workplace travel surveys
- Counts of parked bikes at schools
- PLASC data
- School travel surveys
- Census Travel to Work data (comparison of 2011 baseline with 2021)
- Be Active hub bike use data
- Big Birmingham Bike user surveys
- Usage of Birmingham Cycle Revolution webpages
- Record of printed materials distributed
- Record of event attendees
- Record of media articles and advertisements
- STATS 19 accident data
- Police.uk datasets
- JSA Claimants rates
- Regular engagement with schools and workplaces

LSTF Monitoring and Evaluation

Baseline and Year 1 Outcomes

The following network-wide data is used for a baseline to show change:

- Unemployment Data;
- Number of WorkWise Passes Issued;
- Public Transport Patronage Data (Bus, Train and Metro);
- Bus Reliability and Punctuality Data;
- Public Transport Customer Satisfaction Data;
- Safer Travel Police Partnership Crime Monitoring Data;
- Accident Data;
- Air Quality Data;
- Traffic Counts (1500 Point Survey);
- Pedestrian and Cyclist Counts;
- Journey Time and Delay;
- Modal Share – Cordon Surveys;

In the case of monitoring and evaluation of Year 1 outcomes for LSTF, in order to align with the Smart Network, Smarter Choices programme, the network-wide baseline has been defined as the 2012/2013 financial year; this is the standard reporting period for LTP related monitoring data. However there is variation in this data by geographical location, scale and time periods in which each dataset has been collected.

Additional Smart Network, Smarter Choices baseline datasets included:

Table Error! Use the Home tab to apply ~AppendixHeading to the text that you want to appear here.**.1: Additional baseline datasets**

Dataset	Baseline Data Collection Period	Next Period of Data Collection
Resident Panel Survey	February - Mid July 2013 (Coventry South Corridor baseline collection September 2013)	Interim Survey June 2014
Station Travel Plan Monitoring	Suburban stations baseline collection November 2012 Major stations baseline collection April - May 2013	Suburban stations November 2014 Major stations April - May 2015
Personalised Travel Planning	Collected March - May 2013 and; 11th August - 8th November 2013	1st October - November 2013 and; Follow up customer satisfaction 1st October - 13th December 2013
Stakeholder Panel Survey	June - September 2013	Interim Panel Refreshment Activities September - December 2014
Workplace Establishment Annual Monitoring Surveys	Baseline to close March 2014 (data represented within the Baseline and Year 1 M&E report was collected in August 2013	April 2014 - March 2015

Local Transport Plan 3

Targets and Monitoring

The number of targets reduced from 26 in LTP2 to 14 proposed for LTP3. This enabled a closer focus on the LTP Objectives. Therefore 13 LTP2 target issues do not have targets, although they could still be monitored as indicators:

- Peak period traffic flows to urban centres
- Access to health
- Child killed and serious injured casualties
- Total slight casualties
- Powered two-wheeler casualties
- Light rail use
- Satisfaction with local bus services
- School TRAVEL Plans
- Workplace Travel Plans
- Economic viability of centres
- More efficient use of the existing transport network
- Unclassified Road Condition
- Footway Condition

SMART (**S**pecific, **M**easurable, **A**chievable, **R**elevant and **T**ime-Related) and other principles have guided the target detail, including:

- Progress against targets can be updated regularly (usually annually)
- Performance can be monitored at a more disaggregated level than Metropolitan
- Area-wide (e.g. District, area or route) to help focus delivery
- Data to support the targets is robust and is expected to continue to be available for the foreseeable future;
- Targets are predominantly indicators of 'outcome' (e.g. a change in travel behaviour) rather than an 'output' (e.g. provision of infrastructure)
- Measures are proposed in the LTP Implementation Plan that would contribute to improved performance.

Birmingham and Solihull LEP SEP Transport Package

Monitoring and Evaluation

Benefit Realisation Management - This ensures all projects and programmes maximise benefits at project inception and that these benefits are realised as the project is developed and implemented. Benefit realisation tables have been generated to quantify the benefits, the actors and stakeholders that stand to benefit, the agency responsible, timescales and key indicators to identify whether the benefit has been realised. The scale of Benefit Realisation Management will be proportional to the scale of the project in question.

Logic maps - These plot the inputs, outputs and outcomes of a project, to ensure all actions have, and fulfil their intended consequences. Logic mapping effectively examines the outputs from the intervention (for example what has been delivered (such as an extended bus lane)), with the outcomes (for example short and medium term results (such as enhanced public transport accessibility and improved journey times)) and the long term results (for example increased public transport use). The causal effect of an intervention can therefore be defined. There is also a strong visual link between the outcomes and impacts of the projects with a comparison against the original aims.

It is important that the monitoring and evaluation process is established during the planning stages of the project. This will ensure the scheme is evaluated against the original, intended scope of the project, and all intended benefits are reviewed. In addition, it will highlight any benefits that may have been unintentionally realised.

Bike North Birmingham

The following measures have been used for baseline data in the bid for Bike North Birmingham:

- Travel pattern data for trips to workplaces, school and rail stations:
- Travel to workplace data from the 2001 Census
- Travel to school data collected to review school travel plans in 2010
- Travel to rail stations data
- Carbon tool for carbon abatement

Birmingham Core Strategy

Monitoring

The main mechanism for reporting on Core Strategy performance will be the Annual Monitoring Report (AMR). The Planning and Compulsory Purchase Act 2004 requires local planning authorities to produce an AMR every year, providing an assessment of the implementation of the Local Development Scheme, and the extent to which policies and proposals in local development documents are being successfully implemented.

The AMR will also identify actions that need to be taken to rectify any issues raised through the monitoring process. This could include actions needed, either by the Local Authority or its partners, to improve delivery. Alternatively, it might identify a need for a partial or full review of one of the Development Plan Documents.

The following is a list of the key indicators currently monitored in relation to the city-wide policies:

Climate Change and Sustainability

- SP7 - Number of new homes meeting Code for Sustainable Homes Level 6 and commercial developments meeting BREEAM Standard Excellent.
- SP8 - Number of new homes connected to a Combined Heat and Power Scheme.

Employment and Centres

- SP12 – Loss of Core Employment Areas to non-employment Uses
- SP13 – Development on Regional Investment Sites
- SP14 – Development on sites within the Central Technology Belt
- SP15 – New employment development and the supply of employment land as compared to minimum reservoir targets
- SP18 – Total Amount of floorspace for town centres uses
- SP18 – Town Centre Uses over 1,000 square metres within a centre

Housing

- SP23 – Net additional dwellings
- SP24 – A five and ten year supply of housing
- SP27 – Gross Affordable Housing Completions
- SP29 – Net Additional Pitches (Gypsies and travellers)

Connectivity

- SP33 - Percentage of trips by public transport into the city centre
- SP36 - Percentage of new residential development with access to a range of services including 15 minute walk from the nearest GP and local shops, 10 minute walk from a primary school and 20 minute walk from a secondary school.

Waste

- SP42 – Reduction in the amount of waste sent to landfill
- SP43 – Development of new waste management facilities

Quality of life

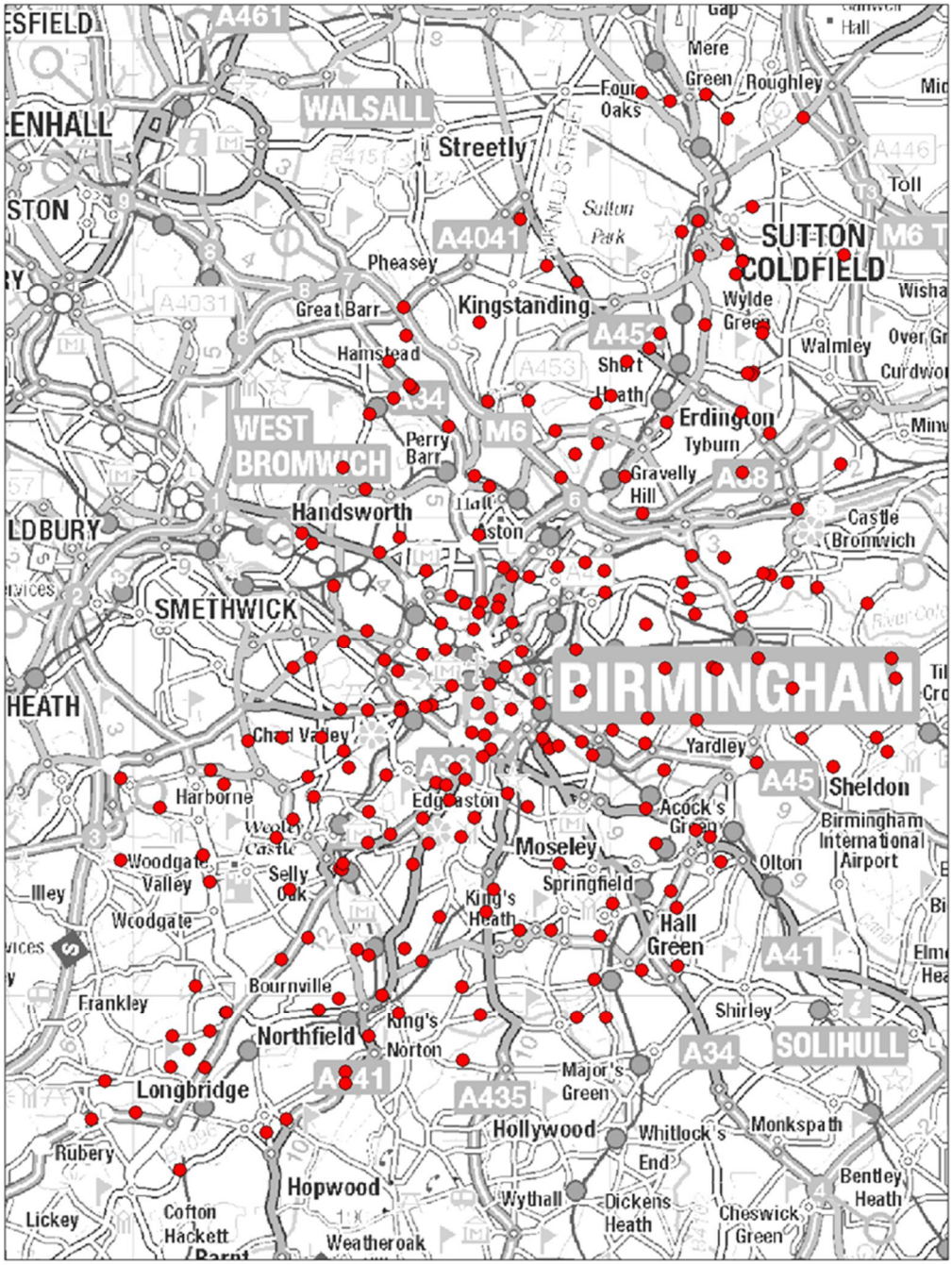
- SP45 – Net loss/gain in the amount of public open space and public and private playing fields
- SP45 – Percentage of new dwelling completions within reasonable walking distance of public open space
- SP49 – Change in areas and populations of biodiversity importance, including change in priority habitats and species (by type) and change in areas designated for their intrinsic environmental value including sites of international, national, regional or sub-regional significance.

Birmingham Low Carbon Transport Strategy

The Birmingham Low Carbon Transport Strategy is in partnership with the Birmingham Environment Partnership (BEP) and Centro. This strategy will be monitored through the BEP's Annual Carbon Savings reporting.

Appendix B Available Automatic Traffic Counts 2014

Automatic Surveys in Birmingham 2014



Mott MacDonald

Appendix C Potential Cost of Monitoring Programme

Outcome	Indicator	Indicator objective (to be further defined once baseline is collected)	Potential Cost
Equitable Birmingham	Increased access to jobs and services	1. Increase proportion of population within 45 minutes public transport travel time of anywhere in the city from baseline 2. Increase proportion of population within access of anywhere in the city within a maximum of 2 interchanges from baseline	£5k per review
	Increased community linkages		£5k per review
Efficient Birmingham	Efficient and sustainable movement of people	1. No increase in car trips from baseline	£25k+ per review (approx. 100 2 week ATCs)
		2. Increase in public transport reliability	£5k per review
		3. Increased highway reliability from the baseline	£5k per review
		4. Increase in sustainable travel modes	£70k+ per review*+
		5. Increase in cycling to 10% (15% in GTDs)	£4k+ initial outlay for each new permanent counter. £5k per review
		6. Decreased demand for car parking in the City Centre from the baseline	Without surveys £5k per review. (£40k for surveys)
	Efficient and sustainable movement of goods	1. No increase in road freight from the baseline	£25k+ per review (use of same points as above)
		2. Increase in sustainable freight	£50k per review
	Economic growth	Increase in GVA from baseline	£1k per review
	Increase in employment	Increase in economically active persons in employment from baseline	£1k per review
Sustainable Birmingham	Reduced greenhouse gas emissions from transport	Reduction of carbon emissions by 60% by 2027 from 1990 levels*. Reduce the greenhouse gas emissions throughout the Birmingham Connected programme.	Additional station approx. £25k Analysis approx. £5k per review
	Reduced energy consumption from transport	Increase in usage of electric vehicles.	£20k per review
	Reduce whole life asset maintenance costs	Reduce the number of maintenance call outs from assets from the baseline	£5k per review
Healthy Birmingham	Increase in physical activity	Increase the number of trips made by walking and cycling. Reduce the total deaths preventable through physical exercise.	£70k+ per review*+
	Increase in the number of short trips made by active travel modes	Addressing the mode choice for short trips is a specific target for Birmingham Connected.	£50k per review*+
	A reduction in air pollution	Reduction in carbon emissions by 60%	£5k per review
	An increase in road safety	Birmingham has signed up to a target to reduce the number of KSI to an average of 394 per annum between 2011 and 2015: a reduction in 17.3% on the current level. Continue to maintain a reduction in KSI throughout Birmingham Connected programme.	£5k per review
	Increase in the % of the population with good or fairly good	Increase in the % of the population with good or fairly good health	£30k per review*+

Outcome	Indicator	Indicator objective (to be further defined once baseline is collected)	Potential Cost
	health		
Attractive Birmingham	Increase in the perception of attractiveness & quality of urban environment	Increase in the perception of attractiveness & quality of urban environment	£10k per location

This Report Has Been Prepared by the Birmingham Connected Technical Study Group

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