



Traffic Management and Control

Report to the City Council

04 April 2006

Traffic Management and Control



Further information on this report can be obtained from:

Lead Review Officer: **Domenic de Bechi**
☎: **0121 464 6871**
E-mail: domenic.de.bechi@birmingham.gov.uk

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Preface

By Councillor Alistair Dow

Chair, Transportation and Street Services
Overview and Scrutiny Committee



Congestion is one of the greatest challenges facing Birmingham today and tackling it is a priority for our residents. Anyone who travels regularly on Birmingham's roads will probably have experienced the frustration of being caught in a traffic jam. Car ownership and use are both increasing at a rate greater than the capacity of the road network.

Since the Traffic Management Act of 2004 the City Council has a duty to keep traffic flowing and reduce the causes of congestion. However, building awareness of this responsibility across the whole of the City Council (and not just those directly involved in traffic management) is the next critical step.

Many of the systems for managing traffic are both highly technical and costly. Whilst they can be effective, there are other things we can do that don't cost as much, yet are nonetheless beneficial. This starts with greater communication and co-operation between agencies, but could extend to existing infrastructure, such as CCTV cameras, being used more effectively. This kind of working gets more value for the public purse.

We now have a Traffic Manager to build the relationships, not only within the City Council but also with other agencies. Such relationships include those with the Planning Service as well as significant partners such as the Police. The creation of this post is welcome, but long overdue. Now that it does exist we can not simply sit back but must maximise the benefits it brings, by building a wider understanding across the City Council of the implications of our actions on traffic.

Traffic management is rapidly evolving at both a national and a local level. It is a big agenda and a big issue nationally. Birmingham is at the heart of it, geographically and practically. We hope that the outcomes from this review, and the continued development of the role of Traffic Manager, will better equip us to deal with the demanding challenges ahead.



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Summary

Congestion within our transport networks and particularly our roads is one of the most significant issues that Birmingham faces. Tackling it is high on the list of public priorities, because it affects almost everyone in some way. It is a fact that levels of road traffic are increasing and are forecast to do so in the future. Given the time taken to introduce changes to the infrastructure of the transport network, it is clear that we must be far-sighted in our future planning.

'Tackling Congestion' is a corporate priority for the City Council. This review is part of the continuing theme to the work of the Transportation and Street Services Overview and Scrutiny Committee in support of this. We were keen to examine what improvements could be made to the management of traffic in the City to reduce the potential for relatively minor incidents to result in gridlock.

The ever-changing context in which the transport network operates adds to the complexity of the task that the City Council faces as a Traffic Authority. In a large city with a vibrant economy there are constant developments and changing transportation needs. Meeting these needs on an ongoing basis is the key challenge.

The reality is that there are very few low-cost solutions to the infrastructure that the Council needs to control traffic. Information systems and CCTV are expensive capital expenditure items with ongoing costs. They also take considerable time to develop and introduce.

There are limitations over the extent to which the Council can control traffic. Traffic flows are made up of many individuals, each with different journeys, taking decisions based on their own circumstances. Influencing the decisions that individuals take is a complicated proposition, requiring not only the infrastructure to inform people but accurate and timely interventions.

Relationships with other agencies managing traffic are critical to success. Timely and effective communication with both the Police and the Highways Agency can reduce the chances of traffic disruption. One of our key areas for recommendations is to strengthen relationships and improve their effectiveness, particularly with the Police.

Accepting, organisationally, our responsibility as a Traffic Authority is also important. These responsibilities are incumbent upon everyone in the Council. We wish to see greater understanding of what our responsibilities are and a more co-ordinated approach to meeting them.

Given the timescales involved in transport planning, preparing for the future is vital. New requirements continue to emerge from the Traffic Management Act. The Government is seeking to pilot innovative measures for demand management. As a Council we need to ensure that we prioritise our infrastructure development, not only according to the current needs but the emerging agenda.



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Summary of Recommendations

	Recommendation	Responsibility	Completion Date
R1	<p>A protocol should be developed setting out:</p> <ul style="list-style-type: none"> • How the traffic effects of proposed new schemes and developments will be evaluated. This should take account of effects on the immediate vicinity and the wider area; • When the advice of the Traffic Manager will be sought on the consequences for traffic of proposed significant new developments; • The process for developing any mitigating action that may be necessary. 	Cabinet Member for Transportation and Street Services and Director of Planning and Regeneration	31 December 2006
R2	The Director of Planning and Regeneration should (as part of the training undertaken with Planning Committee Members) ensure that training is provided regarding the responsibilities of the Council under the Traffic Management Act.	Director of Planning and Regeneration	31 October 2006
R3	<p>The Cabinet Member should approach the Chief Constable with a view to achieving an agreed protocol for how the Police will work together with the City Council on managing traffic in the future (similar in principle to the DLOA with the Highways Agency). This should be at both a political and operational level.</p> <p>This should:</p> <ul style="list-style-type: none"> • Identify clear means of communication between both organisations on incidents; • Acknowledge and create better awareness of the priorities of each organisation; • Facilitate clear management of incidents that create consequences for congestion; • Make best use of the expertise and resources in each organisation; • Be subject to regular review in the light of experience. 	Cabinet Member for Transportation and Street Services	31 December 2006



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	Recommendation	Responsibility	Completion Date
R4	<p>As part of the Traffic Management Plan, a clear list of priority points on the city's road network for traffic management should be agreed.</p> <p>The Plan should:</p> <ul style="list-style-type: none"> • Have wide ownership; • Encompass the expanding UTC and new technologies; • Prioritise the areas where the City Council expects to be informed of incidents that may affect traffic as a matter of urgency; • Be linked to parking enforcement priorities. <p>The Committee should be given an opportunity to comment on the draft Plan.</p>	Cabinet Member for Transportation and Street Services	31 March 2007
R5	<p>A list of priorities for traffic CCTV across the city should be produced. This should identify where current traffic CCTV coverage is inadequate in the priority areas identified in R4 and be used as the basis of directing future investment.</p>	Cabinet Member for Transportation and Street Services	31 January 2007
R6	<p>Opportunities to extend CCTV available for traffic management through joint bids / funding should be explored with others, including:</p> <ul style="list-style-type: none"> • Other areas of the City Council; • The Community Safety Partnership; and • West Midlands Police. <p>All proposed Traffic Control CCTV development should be notified to and co-ordinated with the CCTV Co-ordinator appointed by the Community Safety Partnership (as a result of the Scrutiny Review of CCTV).</p>	Cabinet Member for Transportation and Street Services and the Cabinet Member for Local Services and Community Safety	31 January 2007
R7	<p>Consideration should be given to how the UTC can be linked to other systems and can view images from other CCTV cameras. This should include the sharing of infrastructure, such as poles and communication cables.</p> <p>It should also identify:</p> <ul style="list-style-type: none"> • The steps that need to be taken to make this possible with other organisations (e.g. the Police and Centro); • Any costs or efficiency savings likely to be associated with this; and • The potential for sharing costs or benefits with partners. <p>The outcome of this consideration should be reported to the Transportation and Street Services Overview and Scrutiny Committee.</p>	Cabinet Member for Transportation and Street Services	30 November 2006



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	Recommendation	Responsibility	Completion Date
R8	<p>Opportunities for extending the CCTV available to UTC should be explored through new-build infrastructure paid for as part of Section 106 Planning monies. This should result in:</p> <ul style="list-style-type: none"> • Additional CCTV being available for use by UTC; • Subject to the availability of new developments in those areas, be in line with the priorities for traffic CCTV in recommendation R5; and • The Capital and / or Revenue costs of the additional CCTV being paid for through s106 obligations. 	Director of Planning and Regeneration	31 January 2007
R9	<p>Proposals for a combined permit scheme for streetworks and other works / obstructions on the highway should be developed. This should:</p> <ul style="list-style-type: none"> • Meet the requirements of the TMA and the revised powers that will be available; • Ensure that streetworks are carried out to the required standard; • Operate efficiently, with a single source of information on all highway permits; • Provide for adequate enforcement arrangements; • Cover the Council's costs in administering the scheme through permits. <p>The scheme should be ready to implement in time for when the new powers are available.</p>	Cabinet Member for Transportation and Street Services	Within 12 months of the regulations being produced by the Government.
R10	The Transportation and Street Services Overview and Scrutiny Committee should be briefed on the outcome of Phase 1 of the Transport Innovation Fund feasibility study examining demand management in the region.	Cabinet Member for Transportation and Street Services	31 October 2006
R11	<p>A policy should be developed for Intelligent Transport Systems.</p> <p>This should cover:</p> <ul style="list-style-type: none"> • A strategic framework for what systems are needed for the future; • Priority areas for their development and introduction; • Requirements for compatibility, to ensure that different elements contribute to the overall strategy. 	Cabinet Member for Transportation and Street Services	30 June 2007
R12	The Committee is to be kept informed of progress on the UTC Annexe E Major Scheme. Reports to be brought to the Committee as deemed appropriate over the next two years.	Cabinet Member for Transportation and Street Services	31 March 2008
R13	<p>Progress towards achievement of these recommendations should be reported to the Transportation and Street Services Overview and Scrutiny Committee in December 2006.</p> <p>Subsequent progress reports will be scheduled by the Committee thereafter, until all recommendations are implemented.</p>	Cabinet Member for Transportation and Street Services	31 December 2006



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1 Background

1.1 Why Examine Traffic Management?

- 1.1.1 Congestion is one of the greatest challenges facing Birmingham and many British cities. In essence, it boils down to simple mathematics. More people than ever own cars, have access to cars and aspire to owning a car. Recent forecasts suggest that traffic in the West Midlands could rise by 15% between 2001 and 2031 and journey times increase by 25%-35% in peak times.¹ Yet the capacity of the road network cannot increase to keep pace with this.
- 1.1.2 Traffic management isn't just about cars, but cars do comprise the largest single element of traffic. Traffic management must balance competing priorities between all means of travelling – walking, cycling, public transport, cars and commercial vehicles – with the aim of ensuring the optimum flow. This is no small challenge given the variation in traffic that can occur even on a daily basis.
- 1.1.3 It's also a changing picture over time. People want and need to travel to different places in the city. They choose to get there by different means. As people grow older their needs change. New developments happen in the city, bringing with them changes in employment opportunities and some changes in the road network. The Council has to not only keep abreast of these changes but plan ahead to try to get the optimum flow of traffic.
- 1.1.4 It is a good time to examine this changing picture, from a number of perspectives. Nationally, the Government is looking to explore more innovative solutions to traffic and congestion problems. The Traffic Management Act was passed in 2004, giving Traffic Authorities (including the Council) new responsibilities. Indeed, the City Council has also not only responded through introducing the role of the Traffic Manager but also launched initiatives such as the Congestion Task Force.
- 1.1.5 This review was initiated by members of the Transportation and Street Services Overview and Scrutiny Committee because 'tackling congestion' is a cause of concern amongst residents² and a priority within the Council Plan 2005+. Contributing to this, over the last two years the Committee has established tackling congestion as an overall theme to its work, undertaking numerous items of work in this vein.

¹ Local Transport Plan 2006.

² A local survey in July 2005 showed that drivers rate congestion as the second most important issue after crime.



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- 1.1.6 Traffic management and control systems include a complex range of inter-related mechanisms through which those with responsibilities for tackling congestion can influence and control traffic flow. This includes not only Birmingham City Council, but also neighbouring local authorities, the Highways Agency and the Police.
- 1.1.7 In conducting this review, we have sought to evaluate the current effectiveness of the systems by which traffic is planned, monitored and controlled. This is with a view to making recommendations that impact positively upon how the highway is managed, now and in the future.

1.2 How We Did the Review

- 1.2.1 The review group was led by Councillor Alistair Dow and comprised Councillors Dennis Birbeck, Don Brown and Kath Hartley. During the review we considered:
- Discussion with officers within Development Directorate of the City Council, with responsibilities including highways and traffic management, transportation strategy and planning;
 - Seeing how the City Council's Urban Traffic Control (UTC) Centre at Lancaster Circus operates;
 - Visiting the National and Regional Traffic Control Centres operated by the Highways Agency, including discussion of the relationships between the organisations managing the local road network;
 - Analysing case studies of incidents that have caused major congestion or difficulties on the road network in Birmingham, including inter-agency discussion between officers from the City Council, Highways Agency and West Midlands Police;
 - Examining background information on traffic management systems in operation in other local authorities and discussing their experience with them;
 - Input from officers from the Chief Executives Planning Officers Group (CEPOG) Core Support Team, regarding information systems across the West Midlands region;
 - Looking at the emerging picture with regard to initiatives from the Department for Transport (DfT).



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1.3 Acknowledgements

1.3.1 We would like to thank the following people for their contributions to this review:

- Staff from the Development Directorate, including: John Culligan (Head of Service Development - Planning), Steve Grant, (Technical Officer), Chris Haynes, (Policy Manager), Alan Lloyd (Traffic Manager), Mike Nixon (Resources Manager, Urban Traffic Control), Paul O'Day (Network Manager).
- Steve George, CEPOG Core Support Team, MATTISSE Project Leader.
- Eileen Gibson, Highways Agency Regional Liaison Officer (National Traffic Control Centre).
- John Jones, Highways Agency Operations Manager (Regional Control Centre).
- Inspector Gary Bullock, Force Traffic Unit, West Midlands Police.
- Bob Willis, Wolverhampton City Council.



2 About Traffic Management

Key points in this section

- ⊙ How we measure congestion
- ⊙ Who is responsible for managing traffic

2.1 Introduction

- 2.1.1 This review has primarily focused upon the management of traffic on the highway network. Whilst the Traffic Management Act 2004 broadened the concept of responsibilities for traffic management to include all traffic (i.e. including pedestrian flows), the most significant problematic component is the traffic on the road network.
- 2.1.2 One thing that we discovered in the course of the review is that traffic management is furnished with its own (at times baffling) collection of acronyms, abbreviations and terminology. To give a brief explanation to readers of what some of these are we have included a 'Jargon Buster' as Appendix 1.

2.2 Measuring Congestion

- 2.2.1 There is a saying that "What can be measured can be managed", which underpins the ethos of performance management. Various performance indicators have been outlined in the Local Transport Plan (LTP) as a way of measuring congestion. This will provide a platform for calculating any improvement over the life of the Plan.
- 2.2.2 The targets within the LTP are as follows:
- Mandatory Indicator Target LTP6: No increase in morning peak traffic flows into the nine LTP centres between 2005/6 and 2010/1;
 - Mandatory Indicator Target LTP6 (additional target at authorities' discretion): Increase the morning peak proportion of trips by public transport into the nine LTP centres as a whole to 33.8% by 2009/10 from the 2005/6 baseline of 32.73%;
 - Mandatory Indicator Target LTP7 (provisional): On target routes in the AM peak (0700 – 1000) accommodate an expected increase in travel of 4% with a 5% increase in journey times between 2005 and 2011.



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- 2.2.3 To create a baseline, journey times are measured on selected routes in free-flowing conditions and then at other times. The following measures are calculated, particularly 7am to 10am:
- Average delay per vehicle;
 - Average delay per person/ vehicle per km;
 - Number of people passing along the route/ time period.
- 2.2.4 One of the difficulties in defining congestion (a problem that the DfT also has) is that it is relative to the individual's circumstances and expectations. Personal perspective is at the heart of the problem. There is little debate about congestion existing where traffic is not moving. The argument concerns the shades of grey: when does 'slow-moving' become 'congested'?



Slow moving traffic at peak times can affect main arterial routes. The affects can be seen clearly here on the A34 Walsall Road

2.3 Responsibilities for Managing Traffic

- 2.3.1 Managing traffic on the road network is the responsibility of the Traffic Authority. In Birmingham's case, this is the City Council. This is a duty specifically derived from the Traffic Management Act 2004 (TMA).
- 2.3.2 The Highways Agency manages the 'Trunk Road Network' of motorways and trunk roads – approximately 4% of the total road network in the country. Local Traffic Authorities manage all other adopted roads.



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2.3.3 The TMA aims to tackle congestion and reduce disruption in England and Wales. It brings together a number of other Acts of Parliament (including the Traffic Regulation Act 1984 and The Transport Act 2000). The Act affects the City Council in a number of ways, due to the role it has as:

- Highway Authority: Looking after the infrastructure and the network;
- Traffic Authority: Managing the flow of traffic and functioning of the Highway and on-street and off-street parking;
- Street Works Authority: Co-ordinating utilities and other street works.

2.3.4 The Act is being implemented in stages, with the first part activated in January 2005. It is split into seven sections:

- Highways Agency Traffic Officers (HATOs);
- Network Management Duty;
- Permit Schemes;
- Street Works;
- London and Highway Matters;
- Civil Enforcement of Contraventions;
- Parking Surpluses and Blue Badges.

A summary of the key areas of the Act is contained in Appendix 2.

2.3.5 The following chapters explore traffic management in greater detail. They cover:

- Planning and predicting traffic flows;
- The information and control systems that enable traffic to be managed reactively;
- The relationships necessary to bring all this together;
- Emerging future opportunities; and
- Our conclusions and recommendations.



3 Planning to Manage Traffic

Key points in this section:

- ⊙ Description of the city's highway network
- ⊙ How traffic is controlled
- ⊙ How we can assess the effects of changes
- ⊙ The effect of developments in the city

3.1 The City's Highway Network

3.1.1 There are 11 key routes in the city (all but the Ring Road are radial) as follows:

- A34 (Walsall Road);
- A34 (South – Stratford Road);
- A38 Bristol Road;
- A38 (Tyburn Road/ Aston Expressway);
- A41 Warwick Road;
- A45 (Coventry Road);
- A47 (Heartlands Parkway);
- A435 (Alcester Road);
- A456 (Hagley Road);
- A457 (Dudley Road);
- A4540 Ring Road.

3.1.2 There are a number of other roads which are important in managing congestion – a number of which remain principal roads (e.g. A441 Pershore Road, A453 Aldridge Road/ College Road, A5127 Lichfield Road/ Birmingham Road) and non-principal distributor roads.

3.1.3 There are also a number of other, non-radial, routes that are important to traffic flow in the city. These include:

- A452 Chester Road;
- A4040 between A38 and A34 to the east;
- A4041 Queslett Road.



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The key routes are shown in the map in Fig. 1 below and form part of the Primary Route Network.

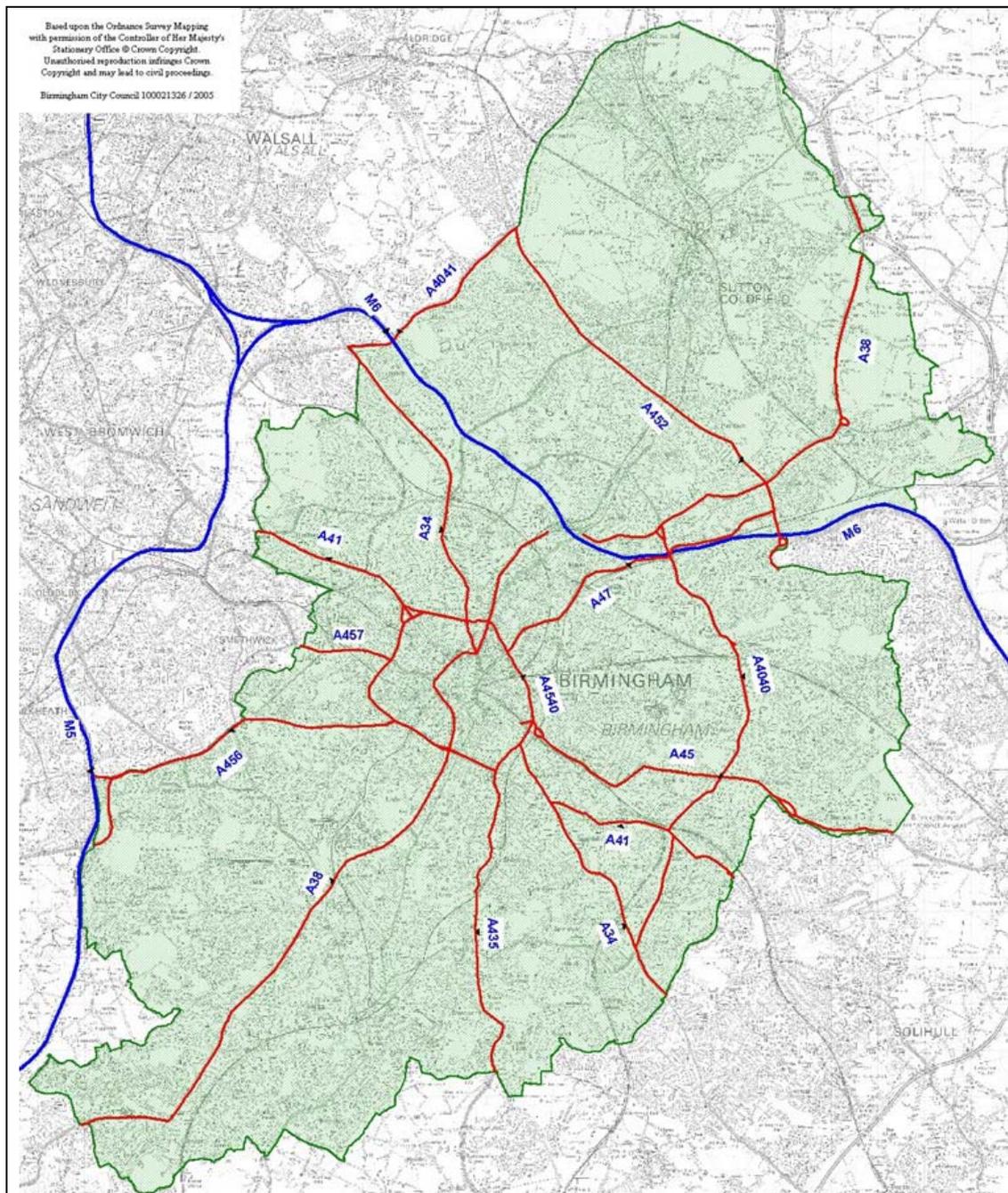


Fig. 1 Key Routes in and around Birmingham

Source: Transportation Strategy



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- 3.1.4 The City is also at the heart of the national motorway network, surrounded by the 'Midlands Box' of motorways. This is formed by the M6 / M6 Toll, M5 and M42 motorways. Although these motorways are managed by the Highways Agency, rather than the City Council, there are still important interfaces with the A-road network, in particular the Aston Expressway linking the motorway with the City Centre. Any congestion on these motorways has a knock-on effect on the City's roads and vice versa.
- 3.1.5 There are particular characteristics about the highway network that the City has that make it susceptible to congestion:
- The City is at the heart of the West Midlands region, being both a focus for travel in the region and *en route* for those passing through;
 - Large areas of the road network are Victorian/ Edwardian highways. Significant portions of the City were planned and designed either before the car or when car ownership and use was significantly less. This can restrict options for design-based solutions such as lane widening and so large areas rely on on-street parking;
 - Pedestrianisation of key roads within the City Centre has decreased potential routes for drivers and the removal of subways and expansion of surface crossings has also reduced road capacity;
 - New developments such as the Bull-Ring have further reduced the road space available in the City Centre and the options for dispersing traffic if an incident occurs.

3.2 Planning and Development

- 3.2.1 Birmingham has undergone major changes to its urban landscape in recent years. The effects of planning and development upon the urban environment are part of the changing circumstances in which the transport network exists. New or changed developments can also effect:
- The demands for travel to locations in the city;
 - The capacity of roads and for parking;
 - How accessible the developments are to public transport.
- 3.2.2 As the Local Planning Authority, the City Council is required to determine planning applications in line with the Planning Act 1990, all other relevant Planning Legislation, Planning Policy Statements and Planning Guidance, with regard to:
- The provisions of the Unitary Development Plan (UDP), and
 - Other 'material considerations' (see below).

A summary of the provisions that relate to traffic management is contained in Appendix 3.



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3.3 Highway Design

- 3.3.1 Highway engineers use a range of measures in designing roads to optimise the flow of traffic. These are mostly used at junctions, where reducing a build-up of traffic is critical if congestion is to be avoided. The measures include:
- Traffic signals and crossings;
 - Traffic islands;
 - 'Grade separation' by use of flyovers or underpasses;
 - Road width and number of carriageways, including the lanes on approach to junctions or signals;
 - Speed limits;
 - Dedicated lanes for priority vehicles (buses, cycles, HGVs);
 - Parking bays and bays for bus stops, so that stopping vehicles don't cause congestion;
 - Controlling the options available to road users, such as 'No Right Turn' and 'Give Way';
 - Limiting numbers of accesses on main routes.
- 3.3.2 There are many variations on these design elements, often tailored specifically to the junction or road layout in a specific area. For example, traffic islands can be effective off-peak but as traffic builds up and speeds increase, adding signals can help to increase flow. Other factors can come into play too. The shape of traffic islands can be important, and are affected by where the flows are concentrated and the number of approaches.

3.4 Traffic Modelling

- 3.4.1 Information on traffic flows is critical in determining the design measures that are appropriate for a specific set of circumstances. Traffic models bring that information together with the physical capacities of the road layout and provide a means of finding the optimum flow.
- 3.4.2 Understanding the behaviour of drivers is fundamental to being able to attempt to predict behaviour in the future. Behaviour obviously varies considerably on an individual basis, but the City Council uses highly-sophisticated traffic models to simulate these behaviours. These models can be used to predict the impact of changes to variables such as the route options available to drivers, the availability of parking or the impact of new developments.
- 3.4.3 The strategic system for this is PRISM (Policy Responsive Integrated Strategy Model). This is a West Midlands-wide model that includes the Highways Agency and Centro. It is one of the most sophisticated modelling systems available in the country and has been continually developed since it was created in 2003.



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- 3.4.4 The model is built using a range of data, including census information, surveys and household interviews. It is designed to support a range of potential policy areas, including land use planning, the development of Bus Showcase routes and parking policies. Nevertheless, this model is strategic and more local analysis is necessary e.g. micro simulation, for specific impact.
- 3.4.5 The City Council also uses the SATURN modelling system. The SATURN Highways Network Model is used for reviewing area-wide effects particularly in the City Centre. When larger schemes are assessed, one or more systems are used as the network as a whole needs to be looked at to take in other influential factors such as parking and trips generated from developments.
- 3.4.6 Modelling is not an exact science. There is a misconception that traffic modelling can be used to indicate precisely the impact of a single incident on a single day upon traffic. This is not necessarily the case. Traffic volumes can vary on any given day by as much as +/-10%, depending upon the time of year and even the weather.
- 3.4.7 The present traffic modelling systems do have identified shortcomings:
- The data used in the strategic model is from 2001. This pre-dates the development of the Bull Ring shopping centre, which has had a significant impact on routes around and across the City Centre;
 - Housing within and closer to the City Centre has had an impact upon the number of cars using the network and the nature of the journeys being made.
- 3.4.8 Cabinet has received a report on 13 February 2006 seeking agreement to a replacement set of models for Birmingham using the VISUM/VISSIM software. VISSIM allows interaction between more sustainable modes of transport, such as pedestrians and cyclists.
- 3.4.9 New elements of traffic models are currently planned, usually to support specific transport infrastructure schemes, such as the Selly Oak New Road. However, this process is costly as the data must be validated to produce reliable results.

3.5 Intelligent Transport Systems

- 3.5.1 The 2004 *Future of Transport* White Paper set out the Government's strategy for better management of road networks. This includes exploiting the potential of new technology to manage the network and to inform travellers. This technology is categorised as Intelligent Transport Systems (ITS). *ITS – The Policy Framework for the Roads Sector*³ further develops this strategy and shows how ITS can deliver significant benefits and improvements in terms of traffic management.

³ Published by the DfT in November 2005.



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- 3.5.2 ITS uses modern computing, communications technologies and real-time data from a range of sources to:
- Collect information about the current state of the transport network;
 - Process that information; and
 - Either directly manage the network (such as through traffic signals), or enable people to decide how best to use the network (such as through travel news).
- 3.5.3 The value of ITS is that it can make travel more efficient, in terms of its safety, pollution effects, costs and information provision. This is through:
- Greater information gathering and improved decision making **best use of the highway network** possible;
 - **Increasing public transport use** by making services more reliable and providing accurate real-time information;
 - **Reducing pollution** by keeping vehicles moving;
 - **Reducing accidents**, by providing drivers with more information on road conditions;
 - Helping drivers find the **best route** to their destination and adapt their route in response to conditions thereby reducing congestion;
 - **Improving security** on public transport, by providing extra communications, CCTV and better information.
- 3.5.4 ITS is already being used to help manage the road network more effectively:
- The National Traffic Control Centre and the Regional Control Centres use a variety of systems to gather real time information on road network conditions and disseminate it;
 - MATTISSE is a further example of how ITS can be utilised to capture and disseminate information to stakeholders and the public;
 - The Urban Traffic Management and Control (UTMC) initiative builds on the use of SCOOT, local Traffic Control Centres and signal phasing measures by improving and updating these systems and adding others like VMS and car parking systems.
- 3.5.5 Different systems have been developed by different companies for varying purposes. The utility of any system therefore relies on bringing different systems together as a network. For ITS to be as effective as possible, the systems used must be compatible. In general, this has not been the case as deployment has tended to be led either by individual policy objectives, individual stakeholder needs or particular technological developments.
- 3.5.6 At present the City Council does not have a formal policy for the introduction of ITS or for the management of existing systems. However, UTC development is being progressed. We need such a policy if we are to bring ITS together as an effective network.



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3.5.7 ITS is also being used to provide opportunities for people to make informed choices about when and how to travel. They include pre-trip and in-trip systems. Pre-trip systems include:

- **Radio and Television:** Traffic information has traditionally been provided in this way. Trafficlink, for example, gets updates every 10 minutes and produces 85% of traffic reports for local radio stations;
- **Internet:** There are now many web-based journey planning and information services, some of which offer real-time information. Examples include: www.transportdirect.info;
- **Phone:** The Highways Agency operates an interactive telephone service (08700 660 115) and travel information can be accessed via some mobile phone operators.

3.5.8 In-trip real-time information can be:

- **In-Vehicle:** Visual and / or audible in-vehicle route guidance to drivers;
- **Roadside:** Variable Message Signs providing messages, including parking availability;
- **Portable:** Traffic information via mobile phone is available through both the Highways Agency and mobile phone companies.



VMS Car Parking Systems such as those in the City Centre show motorists how many spaces are available, reducing congestion because cars spend less time looking for spaces.



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- 3.5.9 A wealth of information is therefore available. The difficulty lies in getting people to use it. To date there has been little publicity with operators relying on travellers finding the information for themselves rather than directing them to it. MATTISSE (see 3.6) does however seek to co-ordinate such information in the West Midlands.
- 3.5.10 Ideally, those planning on making a journey will have access to pre-trip information so that they can make an informed choice about their route, time and method of travel. In fact, a key factor that influences method of travel for those who have access to a car is whether a parking space is likely to be available.
- 3.5.11 There is also a difference between the solutions that are likely to be appropriate for longer journeys made on motorways and those made for shorter journeys. For longer journeys it is more likely that pre-trip information will be used if it is available. For shorter journeys, in-trip updates become more important.
- 3.5.12 Information about the current situation on travel networks is not simply a public utility. To some it is a business opportunity, where information genuinely is a commodity to be traded. The infrastructure to gather information across a travel network needs to be comprehensive and extensive in order to be of use. 'Comprehensive' and 'extensive' are both adjectives that add to the cost of infrastructure.
- 3.5.13 This leaves the Government and local authorities with questions to answer regarding the information that they provide:
- Should they make information readily available to all, and by doing so, risk that others will profit from their investment without contributing to it?
 - Where individuals and businesses are prepared to pay for information, why should the tax-payer subsidise free provision?
 - But why should individuals be able to profit from information when the cost of not sharing the information is borne by all?

3.6 MATTISSE

- 3.6.1 MATTISSE is a regional traffic monitoring and traveller information system that started life as a European project in 1996. It is an example of how ITS can be used to better manage the road network and provide travellers with real-time information. The system shares information between:
- The seven West Midlands Local Authorities;
 - Leicester City Council;
 - West Midlands Police
 - Central Motorway Police Group;
 - Public Transport Operators;
 - The Highways Agency; and
 - Information providers.



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- 3.6.2 Three years ago, the local authorities formed a ten-year partnership with Mott MacDonald and Telent (formerly Marconi) to deliver MATTISSE more effectively.
- 3.6.3 MATTISSE draws data from existing urban traffic and public transport systems, supplemented by data on traffic incidents inputted by local operators. CCTV images are also utilised to provide an accurate picture of traffic on the roads. This information is then processed into real-time traffic and traveller information available to both the partners and the public. This information can be accessed via:
- The internet: www.help2travel.co.uk;
 - Kiosks in the Bull Ring;
 - Mobile phones;
 - Public Space Large Screen Displays;
 - Radio.
- 3.6.4 Further refinement and development is however needed:
- MATTISSE is only as good as the information that is put on it. Whereas there are sensors on the motorways to measure traffic flow, there is no such system on local roads. Whilst MATTISSE captures 80% to 90% of information, what it misses could be vital. This lowers the value of the data.
 - The website does not always provide up-to-date information. For example, it contains details of planned road works but not real-time information relating to current delays due to those road works;
 - The website has not been fully publicised;
 - CCTV images are only available to system operators and not the public;
 - Few incidents of congestion are currently captured and analysed to make improvements, it is hoped that MATTISSE will be able to be used for this in the future;
 - MATTISSE is looking to work with satellite navigation systems providers to give drivers up-to-date, in-trip information;
 - Rail information is readily available but only limited bus and coach/airport information.
- 3.6.5 These shortfalls have been acknowledged and there is now a defined five year strategy for MATTISSE which outlines how they will be overcome. The Strategy itself is linked to delivery of the Local Transport Plan and the network management duties of the Traffic Management Act.



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3.7 Controlling Traffic

- 3.7.1 Traffic modelling, although highly technical and detailed, remains a relatively inexact science. It attempts to model patterns of behaviour based on an understanding of where people want to travel to and from, and the capacity of the routes to get them there.
- 3.7.2 The infrastructure, information systems and traffic control equipment on the highway network is highly complex, with a vast number of variables and interactions. The key to effective use of this equipment lies in the ability to co-ordinate its control and using it for disseminating the information on which people make choices during their journeys.
- 3.7.3 In the course of looking at the infrastructure and information systems that are used by other authorities, we found a number of interesting case studies. These provide examples of different technology and systems in practice and are shown in Appendix 4.
- 3.7.4 It is important to understand that the extent to which traffic can be managed or controlled has limitations. Some aspects of controlling and managing traffic are relatively straightforward. The ability to change the timings of traffic signals or to operate messaging signs and remotely-controlled equipment is one aspect that can be directly influenced.
- 3.7.5 The most complex aspect comes from the fact that traffic flow is composed of a number of vehicles and drivers, each of whom is travelling to a different destination. The drivers are making individual decisions at different times in response to conditions as they perceive them along their route.
- 3.7.6 These decisions can be influenced before or during the journey. To do so means giving information to drivers to base their decisions on. However, irrespective of this, some drivers may make decisions based on no information other than how they perceive conditions to be from where they are sitting.
- 3.7.7 In looking to manage and control traffic, it is easy to envisage comparison to an air traffic control room or a railway signalling centre. The difference with the highway network is that:
- There are considerably more routes available to drivers;
 - Drivers mostly have greater freedom to choose from these routes and ('rules of the road' aside) don't necessarily have to follow specific instructions given to them in the way a pilot or train driver must or at a specific time;
 - There are more drivers and vehicles. As a consequence, there are more variables to influence.
- 3.7.8 Approaches to controlling traffic need to take account of this complexity and not necessarily being able to exert direct control. The focus is therefore upon using information systems to enable drivers to make informed choices.



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3.7.9 In looking to exercise some control over traffic, it is important to remember that there are also events that cannot be controlled:

- Emergency streetworks to repair utilities such as gas and water mains;
- Where the Police need to preserve or isolate a scene of crime;
- Closures and events on road networks controlled by another controlling agency, e.g. the Highways Agency.



4 Relationships: Systems in Operation

Key points in this section

- ⊙ Relationships and responsibilities between different agencies
- ⊙ What these agencies do and how they work together
- ⊙ Examples of significant traffic incidents

4.1 Agencies and Organisations Involved

- 4.1.1 Looking beyond the physical infrastructure of the road network, managing and controlling traffic relies upon a number of organisations working together. Whilst the design and planning of the infrastructure can help optimise flow, how agencies work together becomes important, particularly where interventions and communication are needed.
- 4.1.2 Operationally, management of traffic on the road network is carried out through three levels of control centre:
- National Traffic Control Centre (NTCC), operated on behalf of the Highways Agency by Traffic Information Services (TIS). The NTCC has a primary role in providing information on the core network.
 - Regional Control Centres (RCCs), operated by the Highways Agency, working with the Police. There will be seven RCCs across the country, the first of which was opened at Quinton in April 2005.
 - Local Authority Control Centres, such as the City Council's Urban Traffic Control (UTC) centre at Lancaster Circus.
- 4.1.3 Additionally, there are roles for:
- The Police; and
 - Service providers (such as maintenance and repair contractors) working on behalf of the Highways Agency and others.
- 4.1.4 The responsibilities of these respective partners for the core network are set out in the Highways Agency *National Guidance Framework for Operational Activities*. This is shown in Fig.2 on the following page.



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Function	Highways Agency			LHA	Police
	NTCC	RCCs	Service Providers		
Management Responsibility	Primary source of Traffic Information on core network. Strategic VMS setting.	Management of the Traffic Officer Service. Regional focus for operational traffic management.	Maintenance of infrastructure on core network. Incident support.	Managing and maintenance of LHA network. Network Management Duty.	Protection of life. Prevention and detection of criminality. Preservation of the scenes of crime.
Planned Events	Supporting event planning.	Supporting event planning.	Event planning.	Event planning.	Event planning.
Traffic Information	Monitoring of the core network for wide area strategic traffic management.	Regional monitoring of Motorways and Key trunk Roads to reduce congestion.	Monitoring of the core network for traffic management.	Monitoring of the LHA network for traffic management.	Monitoring of all networks for incident management.
Incident Management Responsibilities	Supporting Police and RCCs in incident management for the core network and supporting LHA on defined network.	Reducing the impact of incidents by working with Police and Service Providers. Providing incident information to NTCC for dissemination to LHAs and other interested parties.	Supporting Police and RCCs in incident management for the core network. Providing relevant incident information to NTCC / RCCs.	Supporting Police in incident management for the LHA network and providing NTCC with information where it has an impact on the core network.	Providing relevant incident information to LHAs for their networks and to NTCC where it has an impact on the core network.
VMS and Other Traffic Diversion Activities	Controlling VMS for wide area strategic traffic management purposes.	In conjunction with the Police, controlling VMS and signals for tactical and local incident management and safety purposes.	Providing equipment and personnel for implementing emergency local diversions for incident management purposes.	Co-ordinating LHA VMS signs and signals with NTCC.	Liaison with RCCs to control VMS and signals for incident management and safety purposes.
Strategic and Tactical Diversions	Setting wide-area diversions within core network for strategic traffic management purposes.	Implementation of tactical and local diversions for incident management purposes.	Providing operational support to facilitate emergency local diversions for incident management purposes.	Managing emergency local diversions on agreed routes within the LHA framework.	Continuing to implement emergency local diversions for incident management purposes.
Information Flows	Primary route for the flow of all traffic data. Incoming and outgoing – interfacing with the media, RCCs, Service Providers, LHAs, etc.	Two-way flow, receiving information from NTCC and updating NTCC on current status of events in their field of operations.	Updating NTCC / RCC on current status of events, scheduled roadworks, etc.	Providing traffic information to media, etc., advising on local road conditions and alternative routes.	Continuing to provide to the media, etc. non-traffic information on all roads and traffic information on the LHA network.

Fig. 2 Summary of Operational Roles and Responsibilities

Source: Highways Agency⁴

⁴ National Guidance Framework for Operational Activities between Local Highway Authorities and the Highways Agency, Local Highway Authorities National Guidance Framework 2005.



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4.2 The National Traffic Control Centre (NTCC)

- 4.2.1 Located in Quinton, and operated on behalf of the Highways Agency by Traffic Information Services Ltd, the NTCC is at the heart of the government's plan to manage traffic on the nation's trunk roads and motorways more effectively. This £160m project uses one of the most advanced systems in the world to collect data on road conditions and disseminate it.
- 4.2.2 Loop sensors have been placed on 8,000 sections of road and they measure changes in the volume of traffic. There are also Automatic Number Plate Recognition Cameras which measure journey times of particular vehicles over specific sections of road and so can detect where delays are occurring. This data is combined with information on road conditions, planned events and road works from the Police, Traffic Officers, Highways Agency, Traffic Authorities and Regional Control Centres. The data is analysed and used to provide real-time information to drivers, the public, emergency services and the media.
- 4.2.3 This information is provided via:
- The website (www.traffic-england.com);
 - An interactive telephone service (08700 660 115);
 - Strategic Variable Message Signs (VMS);
 - Motorway Service Stations;
 - Birmingham Airport Terminal One Arrivals Hall;
 - Television and radio broadcasters; and
 - Commercial enterprises e.g. in-car systems.
- 4.2.4 The emphasis is on accurate, timely information that builds drivers' trust in the system, so making it more effective. This is especially important when it comes to VMS as if a driver does not trust the information, they will ignore it.
- 4.2.5 There has been little publicity of these services to date, although kiosks are now being set up in motorway service stations to provide access to this information.
- 4.2.6 The interface between the City Council and the NTCC is set out in the Detailed Local Operating Agreement (DLOA). This is a set of partnership working arrangements that details the protocols, procedures and communication methods between the Council and NTCC.
- 4.2.7 The DLOA sets out:
- Routes on the 'Core Network' (NTCC's road network) where planned and unplanned events may have an effect upon the City Council's road network;
 - Similar details on routes in the City Council's road network that may affect the Core Network;
 - Contact details for various types of incident;



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- Operating procedures on how information is shared and the notice for this;
- How reciprocal use of resources such as VMS will work;
- Known special events that may cause traffic (e.g. sporting and cultural events).

4.3 The Regional Control Centre (RCC)

- 4.3.1 The Highways Agency is implementing a network of seven regional control centres across England, to be jointly staffed by the Police and the Highways Agency. The centres will be rolled out over a period of time to cover motorways and some key trunk roads within each region of the country.
- 4.3.2 The West Midlands RCC was the first in the country to be established. It moved from its previous headquarters at Perry Barr in April 2005 and is now located in the same complex as the NTCC. It covers 11% of the Highways Agency network, but carries 16% of the traffic.
- 4.3.3 The emphasis in the RCC is different to the NTCC. Where the NTCC focuses upon dissemination of information, the RCC has a much more operational role and directly interfaces with the Police.
- 4.3.4 The functions in the control centre include:
- Traffic management - signals;
 - Radio dispatches – sending Highways Agency Traffic Officers (HATOs) to incidents and recording it;
 - CCTV monitoring;
 - Setting local VMS (NTCC sets the strategic VMS). The RCC has key performance indicators on the accuracy, timeliness and relevancy of VMS;
 - Answering SOS telephone calls from the hard-shoulder of the motorway.
- 4.3.5 The Police sit on one side of the control room, with the Highways Agency on the other. Supervisors from each team sit next to each other to aid communication. There are links to the City Council's UTC through MATTISSE and the NTCC but there is no direct link. In future, there could be a desk for a West Midlands Officer representing the local authorities in the RCC. It is also intended to have an operational back office which could accommodate officers from the individual authorities if this was deemed appropriate.

4.4 The Police

- 4.4.1 With the introduction of uniformed HATOs, the Police have a diminished role in traffic management on motorways compared to what it used to be. However, as is acknowledged by the need to co-ordinate their actions with the Highways Agency, it is still an important relationship.



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- 4.4.2 As we have seen with legislation such as that relating to Decriminalised Parking Enforcement, there is a progressive trend away from having the Police as the sole agency for enforcing civil offences. This is with the intent of allowing the Police to focus upon their principal role: maintaining law and order.
- 4.4.3 The Police do still have a residual role in traffic control in dealing with criminality on the highway. They also have a key role on local roads, including those under the control of the City Council. However, as we will look at later in this section, it is often the impact that carrying out their duties has on traffic that is important.

4.5 Urban Traffic Control Centre

- 4.5.1 The City Council's Urban Traffic Control (UTC) Centre is situated in Lancaster Circus. There are a number of different ways that the UTC can manage traffic, namely:
- Controlling signalised installations;
 - CCTV cameras;
 - Variable Message Signs (VMS);
 - Car parking systems.
- 4.5.2 The UTC is nearly fourteen years old and in need of modernisation. The equipment in the UTC was installed in 1992 and is now relatively old in comparison with systems available. Considerable changes in technology have occurred in this time. Capital investment is currently underway to refurbish and upgrade the control centre at a cost of £200k. Further investment is planned to follow.



The City Council's UTC Room at Lancaster Circus



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Signalised Installations

- 4.5.3 There are around 1,000 signal junctions and controlled pedestrian crossings in Birmingham. Of these, around half can be controlled by the UTC. The amount of signals it controls has increased by around 20% over the last four years.
- 4.5.4 The key element in signal control is a system of loop array sensors which indicate to the control system when vehicles pass across them. The loops that detect the traffic are normally placed 150 to 200 metres ahead of the signals. The equipment is controlled by the following systems:
- **SCOOT** (Split Cycle Optimisation Offset Technique - 451 signal sites): These signals work in small cells where timings adapt automatically to suit local changes in traffic volume and direction. It is controlled by a central computer;
 - **MOVA** (Microprocessor Optimised Vehicle Actuation - 22 sites): This is an interactive system which operates signals at isolated junctions. It measures traffic flow by approach lane and adjusts timings accordingly;
 - **RMS** (Remote Monitoring System - 24 sites). If there is an urgent fault with the signal it will automatically call-in using a dial-up telephone line;
 - **Isolated sites** (590): These are not linked to the UTC or RMS and operate on a vehicle activated basis.
- 4.5.5 SCOOT and MOVA controlled signals are inspected every three months and a full evaluation is carried out every five years to ascertain if there have been any changes to the traffic volume or flow. SCOOT systems report anything that is wrong and the operator interprets the information and initiates appropriate action. Signal faults are responded to within the hour.
- 4.5.6 Linking signals through the UTC system is important because it allows for (i) control of signals from a central point and (ii) faster warnings that reactive maintenance is necessary.

CCTV

- 4.5.7 The UTC also operates and maintains 17 permanent traffic CCTV cameras, located at key points around the City's highway network (see Appendix 5). These cameras play a vital role in enabling staff in the UTC to see if an accident has occurred or if traffic is starting to build up.
- 4.5.8 Although these cameras are useful, the UTC needs cameras at key junctions on each of the 11 major radial routes to give them a clear picture of what is happening. For a city the size of Birmingham, the CCTV provision for traffic management purposes is inadequate.



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- 4.5.9 However, there are many cameras around the city that are used for other purposes (such as to detect public order and vehicle offences). Around 400 of these cameras are accessed from the rooms adjoining the UTC. The initial intention had been for these images to be shared with the UTC but this has not happened.
- 4.5.10 There is an issue with privacy. People and vehicles can be identified using the police cameras but Codes of Practice regarding CCTV use are in place and could easily be adapted to encompass the sharing of CCTV images. Sharing images and infrastructure would not only provide a more complete view of the city but could also reduce revenue costs.

Variable Messaging Signs (VMS)

- 4.5.11 The UTC also manages two VMS on the Aston Expressway and the A38 Bristol Road. These enable drivers to be warned of any problems in the central area (and therefore to choose an alternative route if possible). There are also several other VMS on radial routes of types that are no longer manufactured. Priorities here need to be for (i) replacing such signs with newer, compatible ones and (ii) installing additional signs.

Car Park Systems

- 4.5.12 Car park systems are another form of VMS. Two systems currently operate at six car parks, including at the Bull Ring, the Mailbox and Brindley Drive. The UTC is intending to expand this system to include other car parks as part of the capital programme.

4.6 The Relationship Between Traffic and Planning and Development

- 4.6.1 There are some conflicts between Planning legislation and the ability of councils to manage traffic. Planning Policy Guidance Note 13 – Transport (PPG13) states that there needs to be a reduction in the amount of parking in new development (and in the expansion and change of use in existing development) to promote sustainable travel choices. To enforce this, maximum parking standards have been set, depending on the usage and gross floor space of the building. This has caused problems because:
- In some areas public transport is not extensive enough;
 - Households often have more than one car. However, when people move to an area with less parking provision than the number of cars they own, they do not sell the additional car(s). They are therefore forced to park on the street and so contribute to congestion.
- 4.6.2 Another difficulty is that under the Traffic Management Act, it is envisaged that the Traffic Manager will be the “focal point of traffic issues in an authority”. However, with a council as large as Birmingham it is not practical for the Traffic Manager to examine all planning applications in detail.



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- 4.6.3 The Act does however place responsibility for managing traffic on the authority as a whole. This includes the Planning and Regeneration Department and it is incumbent on everyone to consider traffic implications. The only practical way to do this is through good communication.
- 4.6.4 There are three levels to communication on such issues within the Council:
- At a political level, the Cabinet Member for Transportation and Street Services and the Chairman of the Planning Committee;
 - At an officer level, the Traffic Manager is part of the Development Officers Group, which discusses major developments; and
 - At an operational level, between Planning Development Officers and Transportation.

4.7 Examining Critical Incidents

- 4.7.1 In order to look at the complexity of relationships involved in traffic management, the review group examined some 'critical incidents'. These were discussed with officers of the City Council, the Police and the NTCC.

A38 Bristol Road: Burst Water Main - 27 September 2000

- 4.7.2 The key points of this incident were as follows:
- The water main burst during the night;
 - The Police were the first on the scene and set up diversions which criss-crossed each other;
 - The City Council was not informed until the morning, by which time the roads were already congested;
 - Other, more practical diversions were then set up by the City Council.

Bristol Street: Closure Associated with Criminal Offence - 20 November 2004

- 4.7.3 The key points of this incident were as follows:
- The City Council was advised of the incident relatively quickly but there was no active traffic management to prevent traffic continuing to approach the closed section of the A38;
 - People sat in their cars in the Queensway tunnels for approximately two hours;
 - Conditions in the tunnels with regard to lighting, ventilation and escape routes are not conducive to vehicles and drivers being detained there for any length of time. These elements would not be part of a modern design;



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- It was eventually agreed with the Police to bring the traffic up to the surface;
- Traffic could not be diverted easily within the City Centre.

City Centre Closure, 09 July 2005

4.7.4 The key points of this incident were as follows:

- The incident occurred shortly after the 07 July bombings in London;
- The response to the incident did create some confusion as although buildings were evacuated, people were not told where to assemble;
- Local radio stations were also included in the evacuation zone, limiting the capability to broadcast information;
- The Police acted quickly and put a cordon around the City Centre;
- The NTCC used the VMS on the motorway to inform the public that the city was closed.

4.7.5 Under the Civil Contingencies Act, an Evacuation Plan for traffic is being developed and is due to be in place by mid-2006.

4.7.6 In general, better incident management and communication is required. This could be partly achieved by improving relationships between those involved and identifying processes and protocols where needed.



Poor incident management and communication can increase congestion following an incident.



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4.8 Improving Relationships

4.8.1 There are two main relationship interfaces through which the City Council (i.e. UTC) manages traffic:

- West Midlands Police and
- The Highways Agency.

Of these, the most problematic were cited as relations with the Police. These were described as “not very effective” and “inconsistent”.

The Police

4.8.2 Operationally, the first duty of the Police is to get an incident under control to their satisfaction. Communication with the Highways Authority and City Council therefore rates as a lower priority. For the City Council as a Traffic Authority, getting the Police to appreciate that their actions have a traffic impact is therefore important.

4.8.3 Part of the problem is how powers and responsibilities are divided and differing priorities between the Police and the City Council. Whilst Traffic Authorities have responsibility for traffic, they do not have the right to demand information about incidents from the Police. At times such information may also come down to a judgement call on the part of an individual police officer at a crime scene or road traffic incident. In such cases, the officer will only be able to make that call on the basis of the information they have available at that time.

4.8.4 Examples of effective relationships in managing traffic in the past have often been reliant on building relationships with individual officers. However, this relationship can be curtailed when those officers move on in their careers. Where relationships between organisations are as operationally important as this, they must be embedded at deeper than an individual level.

4.8.5 There are benefits for the Police of working with the City Council. Staff can provide assistance by advising the Police on road closures and diversionary routes. Whilst it is inevitable in such cases that some congestion or inconvenience will be caused, the early involvement of staff can reduce the amount of time and impact of this.

The Highways Agency

4.8.6 The addition of the NTCC is a new dimension to the City Council's relationship with the Highways Agency. Clearly, the new responsibilities for the Trunk Road Network have significant effects on relationships between the Highways Agency and the Police.



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- 4.8.7 These new responsibilities have limited impact upon the City Council as there were already established operational relationships with the Highways Agency through the RCC. Since the RCC has relocated from Perry Barr to Quinton, these relationships have continued.
- 4.8.8 Maintaining these good relationships is critical as work undertaken by the Highways Agency on the motorway network can have a significant impact on the city's roads. Major works need to be managed effectively to minimise disruption.



5 Future Opportunities

Key points in this section

- ⊙ The national policy picture
- ⊙ Future changes that will affect traffic management
- ⊙ Funding secured and available opportunities for funding

5.1 Introduction

- 5.1.1 A common accusation against governments (local and national) is that they respond to a problem by 'throwing money at it'. Many of the issues apparent in traffic management and control have 'solutions' for which there is complicated and technologically sophisticated equipment available as a potential remedy. Making fanciful recommendations as to how a great deal of public money could be spent on such systems would therefore be relatively easy for us to do.
- 5.1.2 Needless to say, as a review group we did not want to take this approach. However, in the course of the review, we did find that we were confronted with the fact that much of the equipment to manage traffic is old or insufficient in number.
- 5.1.3 Tackling this under-investment is one of the reasons why the Council is developing a Highways Maintenance Private Finance Initiative (PFI). Moving towards recommendations that will ultimately cost money was therefore a likely outcome.
- 5.1.4 What we sought to do was to examine this from the perspective of:
- The monies available to the West Midlands region;
 - Whether we are attracting our fair share of these resources from central government;
 - How we can best utilise public money and resources from the private sector; and
 - Whether the level of investment in traffic management systems befits the level of the problem that the city faces.



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5.2 The Highways Maintenance and Management Private Finance Initiative (PFI)

- 5.2.1 Birmingham's developing proposal for a Highways Maintenance and Management PFI encompasses many aspects of traffic signal maintenance and management. A key part of the PFI approach is that it provides a guaranteed level of investment and service in a long-term finance deal (25 years). The Core Investment Period (i.e. the first 5 years) of the contract includes for a substantial investment in the replacement of old traffic signal controllers and also upgrade of the current Urban Traffic Control system to Urban Traffic and Control (UTMC) standards.
- 5.2.2 There is still a long way to go before the City Council enters into any PFI agreement. However, under a PFI the bulk of investment would take place in the 'core investment period' (2007-12). This would result in significant infrastructure renewal in the City. No detailed assessment has yet been made of the impact this will have on traffic but any work would be co-ordinated to minimise disruption. The service provider will need to submit detailed programmes of work (including proposed road closures) for approval. These will cover 1, 2 and 5 year indicative programmes.
- 5.2.3 The current PFI proposal is a management and maintenance proposal. It is therefore orientated towards running (and upgrading where necessary) the existing highway infrastructure, rather than towards any new build of infrastructure. The PFI partner contractor will operate to an output-based specification, as the agent of the City Council.
- 5.2.4 Aspects included in the PFI include:
- Maintenance of traffic signals, including fault management;
 - Maintenance of traffic signs;
 - Maintenance of road markings;
 - Management of traffic signals (via the UTC);
 - Management of temporary traffic signals on the network;
 - Operation of car parking systems and electronic message signs;
 - Management of co-ordination of New Works and Streetworks activities on the highway;
 - Management of inspection and monitoring of Statutory Undertakers on the highway;
 - Management of issue of permits (such as for cranes, scaffolding, skips, etc.);
 - Input into MATTISSE/ Help2Travel site.
- 5.2.5 Of course, this does not mean that new build and infrastructure upgrades will not take place. These will be added into the PFI contract with additional maintenance costs per unit. Similarly, where existing infrastructure is decommissioned and is removed from the maintenance and management schedule, this will lead to lower maintenance costs.



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- 5.2.6 The particular advantage in this arrangement for the City Council is that there is greater certainty about costs. This is so that departmental budgets don't get squeezed to accommodate greater on going revenue costs. Any maintenance costs for new investments must be accounted for through the initial investment proposals and costings.
- 5.2.7 Additionally, risk is transferred to the PFI contractor and they are remunerated according to their performance in managing and maintaining the highway infrastructure. If their performance is unsatisfactory, then there will be appropriate payment deductions.
- 5.2.8 Part of the PFI proposal relates to the need to replace traffic signal controllers that are beyond their expected working life of 15 years. At present, more than 25% of the Council's signal controllers are older than 15 years. At the end of the PFI contract, no signal controllers should be more than 15 years old.

5.3 The 'Congestion Task Force'

- 5.3.1 The Congestion Task Force is an initiative that was announced by the Cabinet Member for Transportation and Street Services in February 2005. Since its formation, it has been gathering information and views from highway users on specific examples of congestion.
- 5.3.2 By the Autumn of 2005 the Task Force had received nearly 300 suggested problems. These were categorised at that time as shown in Fig. 4 on the following page.
- 5.3.3 At this stage, outcomes from these suggestions are not yet available. However, many of the solutions will form part of the Traffic Management Plan which should be developed in 2006/7. Work to address these issues is additional to that included in the city's Capital Programme.

5.4 UTC Annexe E Major Scheme

- 5.4.1 The current UTC systems operated by the West Midlands local authorities currently work essentially in isolation. The only common aspect is MATTISSE.
- 5.4.2 The Annexe E Major Scheme is proposed to join all these systems together with those of the Police, Highways Agency and public transport operators in a virtual environment, making it much more efficient. Within the context of the Network Management Duties of the Traffic Management Act, this makes a great deal of sense. It would allow the authorities to manage traffic across their boundaries and to co-operate with other authorities.



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Scheme Band		Number of Suggestions	Examples
Quick Win	Done	10	<ul style="list-style-type: none"> • Minor works • Signal timings / efficiencies • Enforcement
	Funded	36	
	Unfunded	2	
	Ongoing	7	
Medium Term		144	<ul style="list-style-type: none"> • Changes to TROs • Changes to junction layout or installing signals • Policy measures to support change of travel mode • Major signal timing changes • Major and minor works
Aspirational		18	Same as for medium term
Not BCC	Liaison Required	20	Other Highway Authorities
Further Information Required		3	
Programmed 2005/6 or 2006/7		37	Capital schemes already programmed
Sites Identified by BCC		2	
		279	

Fig. 3 Congestion Task Force: Breakdown of Suggestions
Source: Highways Department

5.4.3 This will be done through:

- More efficient traffic signals;
- A common platform for vehicle priority measures;
- More variable messaging signs;
- A technical platform to enable Intelligent Transport Systems to be deployed.

5.4.4 An additional control centre is intended to be provided at the Regional Control Centre in Quinton. This will also form a 'Centre of Excellence' for all UTC staff so that they can share best practice and undertake joint training.

5.4.5 A proposal for this, costing £25.3 million has been submitted to the DfT. This is now in its final negotiation stages. A decision is expected by 31 March 2006 with implementation to 2009.



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5.5 Planning Agreements

- 5.5.1 It was apparent from the experience in other local authorities that there might be a missed opportunity in the city regarding the use of Section 106 Planning Agreements. Among other things, these agreements may be used to fund both capital investment in traffic management infrastructure and the revenue costs of maintaining it.
- 5.5.2 The City Council has used these in the past such as the redevelopment of the Bull-Ring and introducing the Bus Mall. However, it was apparent that other authorities (for example, Wolverhampton City Council) appear to have used them more effectively. This is through recognising opportunities to extend the benefits that new developments bring, wider than the development itself.
- 5.5.3 Such use of Section 106 Agreements is easy to advocate, but much harder to practice as there are competing demands. However, the opportunities here lie in those dealing with development applications being aware of and able to recognise needs for traffic management infrastructure at an early stage in the development process. This would enable the need for the infrastructure to be included in negotiations. Such an outcome could be expected from more active involvement of the Traffic Manager.

5.6 Transport Innovation Fund

- 5.6.1 The *Future of Transport* White Paper (July 2004) outlined the Government's intention to establish a Transport Innovation Fund (TIF) to support:
- The costs of smarter, innovative local transport packages that combine more radical demand management measures such as road pricing with, modal shift, and better bus services;
 - Innovative mechanisms which raise new funds;
 - The funding of regional, inter-regional and local schemes that are beneficial to national productivity.
- 5.6.2 The TIF will become available from 2008/9 and is forecast to grow from £290m to over £2bn by 2014/5. The Government will give preference to schemes which go beyond 'soft demand management' (e.g. travel planning, car sharing) and include proposals for road user charging. Less priority will be given to schemes incorporating workplace parking levies and other forms of parking control.
- 5.6.3 All schemes seeking funds from the TIF will be subject to a value for money assessment which will look at:
- Practicality / deliverability;
 - Public acceptability;
 - Distributional and equity impacts;
 - Affordability and financial sustainability;



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- Contribution to central government, local and regional objectives;
- The amelioration of identified problems.

TIF schemes will need to provide 'high' value for money and have benefits that are at least twice the costs.

- 5.6.4 The West Midlands has won pump-priming funding for £2.6m to help assess the feasibility of schemes that combine demand management, such as road pricing, with better public transport, in order to tackle congestion.
- 5.6.5 This is more than twice the amount of money the sub-region bid for. This is seen by some as a clear indication that the Government is keen for road pricing to be piloted here. It does have to be remembered, however, that securing pump-priming money is no guarantee that an authority will be successful in bidding for the main TIF.
- 5.6.6 Another bidding round for the remaining £10m in the pump-priming fund will be held in 2006.
- 5.6.7 Phase 1 of the West Midlands Feasibility Study is due to be completed by July 2006. This has a number of aims, including to:
- Develop the philosophy, principles and locations of any West Midlands pilot demand management study;
 - Identify how trials would be complementary to other transport investments and local and regional strategies;
 - Develop demand management strategies considering all possible options;
 - Establish approaches to securing public and 'stakeholder "buy in" through information, consultation and involvement;
 - Assess the technical feasibility case for road pricing;
 - Exploring administrative arrangements for road tax, insurance, and any other financial incentives;
 - Define the 'supporting measures' to be developed in parallel to ensure that realistic travel alternatives are available;
 - Develop impact assessments on local and regional economies for competitiveness, environment, health and social equity;
 - Outlining the forward planning and timing of any arrangements associated with a full West Midland pilot study and of a national scheme.
- 5.6.8 Despite the result of these feasibility studies not yet being known, recent press coverage has left few in doubt that the Government is keen to introduce road pricing as means of tackling congestion. The only questions are where and when it will be implemented and what guise it will take. However, whilst no-one disputes the fact that congestion is likely to get worse, not everyone is convinced that road pricing is the answer.



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- 5.6.9 Road Pricing is not a new concept. In the 1960s the *Traffic in Towns* report put forward road pricing as a way of reducing travel demand. Nearly forty years later following the 1998 White Paper, *A New Deal for Transport*, Local Authorities were given powers to introduce road user charging by the Transport Act 2000.
- 5.6.10 In July 2003 the Government published *Managing Our Roads*. This document discussed various options for reducing the pressure on the road network, including road charging. At the same time, a feasibility study was commissioned to look into the viability of implementing a national road pricing scheme.
- 5.6.11 The study found that:
- Public support is critical if road pricing is to work;
 - People need to be confident that the scheme is designed to deliver transport and other benefits and is not simply a revenue raising exercise;
 - A well-targeted national road pricing scheme could potentially achieve £10bn worth of time savings a year (at 2010 traffic levels);
 - Such a scheme could reduce urban congestion by half, despite traffic only reducing by four per cent because some 20% of commuting traffic in peak hours could change either mode or time of travel relatively easily;
 - Road pricing has the potential to deliver significant environmental benefits, improving air quality, reducing noise pollution and lessening the impact of heavy traffic on local communities;
 - A fundamental reform of motoring taxation would need to be undertaken to establish a more transparent system of charging.
- 5.6.12 Current road pricing schemes, both in the UK and abroad fall into three main types:
- (i) Charges for crossing a cordon;
 - (ii) Charges for driving in an area e.g. the London Congestion Charge (see Appendix 4), which picks up internal trips and could be a variable rate;
 - (iii) Charging for the use of a linear section of infrastructure such as a bridge or motorway e.g. Dartford River Crossing and M6 Toll Road.
- 5.6.13 These schemes are effective for their current use but would not be able to deal with large complex urban areas without a large number of boundaries with infrastructure at each one. They are also rudimentary in the sense that they can not differentiate between short and long journeys or several journeys within a zone.



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- 5.6.14 The key to a national road pricing scheme is utilising technology which can charge by time, distance and place. The Transport Secretary, Alistair Darling, has said that road pricing should “piggy-back” on currently available systems such as those for satellite navigation and real-time information. However, estimates are that such a system will not be available in a mass-market, low-cost form, until at least 2014.

5.7 Summary

- 5.7.1 Any look to the future in transportation involves a high degree of dependency on the direction taken by the government. After all, it is they who hold the purse strings. In this respect, the outcome from the TIF Feasibility Study in July 2006 is going to be important for determining the long term direction of traffic management.
- 5.7.2 The proposed Highways PFI is also another significant factor in the future. It presents a unique opportunity for renewing and increasing the reliability of the traffic management infrastructure that the city has. However, it is worth remembering that the PFI itself will not add to the infrastructure base of the Council; it will only replace existing kit and equipment. Any additional infrastructure that is added has to be paid for separately. The cost of maintaining it is added to the overall cost of the PFI.



6 Conclusions and Recommendations

6.1 Introduction

- 6.1.1 In conducting this review, one of our intentions was not to focus upon the smaller, local impacts of traffic management. It was a deliberate step for us to look at the operational relationships of the City Council and the capacity to deliver in the future.
- 6.1.2 The most striking aspects of what we found centred upon the fact that the City Council has responsibilities for managing traffic, but lacks many of the established operational relationships for doing so. Part of the direction in which we suggest the Cabinet Member moves is therefore to continue to develop those relationships, both within and outside the Council.
- 6.1.3 Inevitably, elements of what we wish to recommend as a result of this review boil down to money. However, rather than dictate what money should be spent on, what we have sought to do is to set a framework of priorities and criteria for future spending.

6.2 Managing Traffic in Line with our Responsibilities

- 6.2.1 Our feeling in looking at how traffic is managed is that it is a relatively recent change that managing traffic is one of our duties as a City Council. The extent to which this responsibility has permeated beyond those responsible for transportation is limited. It cannot be the case that service areas of the Council operate in isolation of one another, with discordant objectives.
- 6.2.2 In this respect, the introduction of a requirement to have a Traffic Manager is welcome, but overdue. Now that we have this role through which to focus our efforts we must maximise the benefits from this.
- 6.2.3 The initial step is to build effective inter-departmental dialogue on traffic issues within the City Council. Our first areas of recommendation are about ensuring that there is better understanding of our responsibilities for traffic across the Council.



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Conclusions

1. *The role of the Traffic Manager is one that the City Council is required to have by law. However, the Council has obligations to manage traffic that are wider than those defined by statute.*
2. *These obligations must be taken seriously as they underpin the capacity for economic and social development in the city through the transport systems that serve communities.*
3. *The principles of the Traffic Management Act must be embedded into the organisation. All areas of the Council that can affect traffic must understand that the Act places obligations upon them.*
4. *The Planning Committee (and its supporting officers) are a case in point. There is a need to be cognisant of the authority's obligations to comply with not only the Planning Acts but also the Traffic Management Act.*
5. *Proposed changes that affect road capacity or volume of road use need to be subjected to rigorous appraisal for their knock-on effects in how traffic is dispersed.*
6. *Additionally, there is a need for the Planning Committee to be informed by expert opinion where significant new developments in the city may create adverse traffic consequences. Written views of the Traffic Engineers are considered for each application and an Engineer also attends each meeting to give Members expert advice.*

	Recommendation	Responsibility	Completion Date
R1	<p>A protocol should be developed setting out:</p> <ul style="list-style-type: none"> • How the traffic effects of proposed new schemes and developments will be evaluated. This should take account of effects on the immediate vicinity and the wider area; • When the advice of the Traffic Manager will be sought on the consequences for traffic of proposed significant new developments; • The process for developing any mitigating action that may be necessary. 	Cabinet Member for Transportation and Street Services and Director of Planning and Regeneration	31 December 2006
R2	The Director of Planning and Regeneration should (as part of the training undertaken with Planning Committee Members) ensure that training is provided regarding the responsibilities of the Council under the Traffic Management Act.	Director of Planning and Regeneration	31 October 2006



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6.3 Relationships with Others

- 6.3.1 Although the Traffic Management Act has been in place for nearly two years, many of the Council's relationships for managing traffic on an inter-agency basis are under-developed. This was evident particularly from our discussions with the Police.
- 6.3.2 There are and always will be competing priorities and objectives in dealing with congestion incidents between the Police and Traffic Authorities. However, there is also an important step to be taken in developing channels of communication with external organisations.
- 6.3.3 At the Regional Control Centre, liaison between the Highways Agency and the Police is clear. Here, there is not only evidence of working together, but also a very clear means of communicating across organisational boundaries.

Conclusions

- 7. *The working relationship between Traffic Authorities and the Police on traffic management is one where both sides must acknowledge that they have different priorities.*
- 8. *There are operational difficulties of different organisational boundaries between the City Council and the Police.*
- 9. *Having clear and dedicated communication channels on traffic incidents is critical for both Traffic Authorities and the Police.*
- 10. *We do not feel that communications are good enough at present and see this as a priority for the City Council in its role as a Traffic Authority.*
- 11. *There are hotspots on the city's highway network where any incident will clearly have implications for traffic build-up. We feel that there is scope to work with the Police to identify these as priority areas for early communication with the Council when incidents occur.*
- 12. *The Detailed Local Operating Agreement between the City Council and the Highways Agency is a positive step in setting out clear responsibilities between the two organisations. Seeking to have a similar type of protocol with the West Midlands Police would support the Council's relationship with the Police on traffic management.*



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	Recommendation	Responsibility	Completion Date
R3	The Cabinet Member should approach the Chief Constable with a view to achieving an agreed protocol for how the Police will work together with the City Council on managing traffic in the future (similar in principle to the DLOA with the Highways Agency). This should be at both a political and operational level.	Cabinet Member for Transportation and Street Services	31 December 2006
	This should:		
	<ul style="list-style-type: none"> • Identify clear means of communication between both organisations on incidents; • Acknowledge and create better awareness of the priorities of each organisation; • Facilitate clear management of incidents that create consequences for congestion; • Make best use of the expertise and resources in each organisation; • Be subject to regular review in the light of experience. 		

6.4 The Infrastructure for Traffic Management

- 6.4.1 Looking at the infrastructure in place for managing traffic in Birmingham and the West Midlands illustrates the scale of the issue. The West Midlands authorities spend an average of £6m per annum collectively on traffic management (£3m capital costs and £3m revenue costs). In comparison Transport for London spends £20m, Greater Manchester £3m and Merseyside £1.6m.
- 6.4.2 In terms of whether Birmingham is less congested than these cities, it 'fares well but could do better'. The 'Midlands Motorway Box' surrounding the city (the M42, M5 and M6) is the most congested area outside London. Commuter traffic causes the most congestion. The reality is that the road network is running well-over capacity at peak times.
- 6.4.3 There are clear needs for the City Council to invest in new traffic management technology:
- Systems to provide intelligence on traffic movement (such as CCTV cameras and sensors) do not even cover the key arterial routes;
 - There are not enough means of informing travellers in-journey (such as variable messaging signs or parking message boards);
 - The UTC Centre itself is nearly 14 years old and is in need of modernisation. It also operates an antiquated paper-based system for signal faults.
- 6.4.4 All of this does of course mean money. In comparison to London, expenditure in the West Midlands is low. The Congestion Charge pays for some of the investment in London, but TfL also has a budget for capital investment. In a portfolio that has considerable Revenue Budget pressures already, this isn't welcome news.



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- 6.4.5 Some investment can be expected through the Highways Management and Maintenance PFI. Here, there are opportunities to use modernisation investment to reduce operating costs. For example, trials on wireless technology have been commissioned to determine if this technology is suitable for the demands of the UTC system and would result in a cost saving. Draft conclusions are expected in September 2006. When we renew assets, we should be looking for achieving cost efficiencies.
- 6.4.6 We feel that a smarter approach in the future should also involve sharing of resources and assets. This is not just within the City Council, but also with other public organisations that have infrastructure that it would be beneficial to share. This is simply a way of making public money go further, irrespective of which part of the public sector holds the purse strings.
- 6.4.7 There is already a considerable amount of CCTV infrastructure in the city. Sharing use of cameras (or even just pylons or communications lines) should extend coverage at a lower cost. This can be done not only within the City Council, but also with agencies such as the Police.
- 6.4.8 Establishing priorities for investment in infrastructure is an important part of planning for the future. If we are able to set a clear and credible vision for where we need to be with our infrastructure for managing traffic, we can work on the means of delivering this.

Conclusions

- 13. *A significant proportion of our infrastructure for managing traffic is beyond its expected lifetime. We welcome steps to improve this position at an acceptable cost to the Council.*
- 14. *There is inadequate coverage of the key arterial routes in the city to provide information to manage the network properly. In comparison to many other authorities, our systems are insufficiently small and considerably older.*
- 15. *There is also a need to upgrade to newer systems to increase the capacity for handling and sharing information with our transport partners. This is a direction that we must take in order to progress, but there will be cost implications.*
- 16. *Equally, there is a great deal of infrastructure already in place with CCTV systems. We feel that there are opportunities to extend the infrastructure available for traffic management through shared use of existing CCTV sites.*
- 17. *We would like to see more ambitious proposals for upgrading the infrastructure for traffic management in the city to a standard that befits not only our size but also the size of the congestion problems that we potentially face. The costs involved may be difficult now, but they are small compared to the potential consequences of failure for the city as a whole.*



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18. *Highways infrastructure is often an important part of developments. Other authorities have successfully used means such as Section 106 Planning obligations to draw in capital and revenue contributions for any changes that need to be made. Whilst we have seen evidence that Birmingham does do this to an extent, our impression is that this is not as effectively utilised as it is in other authorities.*
19. *Opportunities to extend traffic CCTV need to be taken through (i) better use of the considerable CCTV infrastructure that already exists in the city and (ii) considering priorities for traffic CCTV as part of other highway infrastructure improvements.*
20. *It should be a matter of Council policy that opportunities to extend traffic CCTV are considered as part of changes to infrastructure on the highway network. Consideration also needs to be given to the ongoing revenue costs of additional CCTV cameras.*

	Recommendation	Responsibility	Completion Date
R4	As part of the Traffic Management Plan, a clear list of priority points on the city's road network for traffic management should be agreed. The Plan should: <ul style="list-style-type: none"> • Have wide ownership; • Encompass the expanding UTC and new technologies; • Prioritise the areas where the City Council expects to be informed of incidents that may affect traffic as a matter of urgency; • Be linked to parking enforcement priorities. <p>The Committee should be given an opportunity to comment on the draft Plan.</p>	Cabinet Member for Transportation and Street Services	31 March 2007
R5	A list of priorities for traffic CCTV across the city should be produced. This should identify where current traffic CCTV coverage is inadequate in the priority areas identified in R4 and be used as the basis of directing future investment.	Cabinet Member for Transportation and Street Services	31 January 2007
R6	Opportunities to extend CCTV available for traffic management through joint bids / funding should be explored with others, including: <ul style="list-style-type: none"> • Other areas of the City Council; • The Community Safety Partnership; and • West Midlands Police. <p>All proposed Traffic Control CCTV development should be notified to and co-ordinated with the CCTV Co-ordinator appointed by the Community Safety Partnership (as a result of the Scrutiny Review of CCTV).</p>	Cabinet Member for Transportation and Street Services and the Cabinet Member for Local Services and Community Safety	31 January 2007



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	Recommendation	Responsibility	Completion Date
R7	<p>Consideration should be given to how the UTC can be linked to other systems and can view images from other CCTV cameras. This should include the sharing of infrastructure, such as poles and communication cables.</p> <p>It should also identify:</p> <ul style="list-style-type: none"> • The steps that need to be taken to make this possible with other organisations (e.g. the Police and Centro); • Any costs or efficiency savings likely to be associated with this; and • The potential for sharing costs or benefits with partners. <p>The outcome of this consideration should be reported to the Transportation and Street Services Overview and Scrutiny Committee.</p>	Cabinet Member for Transportation and Street Services	30 November 2006
R8	<p>Opportunities for extending the CCTV available to UTC should be explored through new-build infrastructure paid for as part of Section 106 Planning monies. This should result in:</p> <ul style="list-style-type: none"> • Additional CCTV being available for use by UTC; • Subject to the availability of new developments in those areas, be in line with the priorities for traffic CCTV in recommendation R5; and • The Capital and / or Revenue costs of the additional CCTV being paid for through s106 obligations. 	Director of Planning and Regeneration	31 January 2007

6.5 Looking to the Future

- 6.5.1 As befits a subject that is about keeping things moving, things do not stand still in traffic management. There are many developments ongoing at any time, at both macro (national) and micro (local) levels. Having effective strategies means accounting for these emerging factors.
- 6.5.2 Some of the important emerging factors include:
- The regulations under the Traffic Management Act;
 - Phase 1 of the Transport Innovation Fund feasibility study on demand management in the metropolitan area;
 - Recent developments in Intelligent Transport Systems (ITS);
 - The Council may also embark upon a Highways Maintenance and Management PFI from April 2007.
- 6.5.3 These factors could have a range of implications for the City Council, including:
- Its responsibilities as a Traffic Authority;



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- How congestion is approached in the future;
 - What funding is available for improvements and how these are made;
 - The extent to which we are able to integrate systems.
- 6.5.4 One of our important roles as an Overview and Scrutiny Committee is in ensuring that we are planning for the developing situation as well as the immediate one. Too often Local Government is caught unprepared by change. It is important that we are prepared for changes when they occur.
- 6.5.5 Our remaining recommendations therefore cover looking to future developments and preparing for the impact that they might have upon us.

Conclusions

21. *The Council currently manages streetworks well. However, this will need to develop in line with the changed ways of working that the Traffic Management Act will offer.*
22. *Some of the powers under the Traffic Management Act, such as those relating to permit schemes, have yet to be finalised. However, the Council needs to ensure that it has proposals ready to implement when these powers become available.*
23. *Results of Phase 1 of the Transport Innovation Fund Feasibility Study are expected by July 2006. It would be premature to predict the outcome but the findings will no doubt have a significant effect on future policy in the West Midlands region*
24. *The City Council needs an overall policy to co-ordinate the direction on Intelligent Transport Systems.*

	Recommendation	Responsibility	Completion Date
R9	<p>Proposals for a combined permit scheme for streetworks and other works / obstructions on the highway should be developed. This should:</p> <ul style="list-style-type: none"> • Meet the requirements of the TMA and the revised powers that will be available; • Ensure that streetworks are carried out to the required standard; • Operate efficiently, with a single source of information on all highway permits; • Provide for adequate enforcement arrangements; • Cover the Council's costs in administering the scheme through permits. <p>The scheme should be ready to implement in time for when the new powers are available.</p>	Cabinet Member for Transportation and Street Services	Within 12 months of the regulations being produced by the Government.
R10	The Transportation and Street Services Overview and Scrutiny Committee should be briefed on the outcome of Phase 1 of the Transport Innovation Fund feasibility study examining demand management in the region.	Cabinet Member for Transportation and Street Services	31 October 2006



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	Recommendation	Responsibility	Completion Date
R11	<p>A policy should be developed for Intelligent Transport Systems.</p> <p>This should cover:</p> <ul style="list-style-type: none"> • A strategic framework for what systems are needed for the future; • Priority areas for their development and introduction; • Requirements for compatibility, to ensure that different elements contribute to the overall strategy. 	Cabinet Member for Transportation and Street Services	30 June 2007

6.6 Monitoring Progress

6.6.1 To keep the Committee informed of progress in implementing the recommendations within this report, the Cabinet Member for Transportation and Street Services is recommended to report back on progress periodically. This will be carried out through the established tracking process.

	Recommendation	Responsibility	Completion Date
R12	The Committee is to be kept informed of progress on the UTC Annexe E Major Scheme. Reports to be brought to the Committee as deemed appropriate over the next two years.	Cabinet Member for Transportation and Street Services	31 March 2008
R13	<p>Progress towards achievement of these recommendations should be reported to the Transportation and Street Services Overview and Scrutiny Committee in December 2006.</p> <p>Subsequent progress reports will be scheduled by the Committee thereafter, until all recommendations are implemented.</p>	Cabinet Member for Transportation and Street Services	31 December 2006



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Appendix 1 Jargon Busting

Jargon / Abbreviation	Explanation
ANPR Cameras	Automatic Number Plate Recognition Cameras.
ATM	The M42 Active Traffic Management Project.
CEPOG	Chief Executive's Planning Officers Group.
DLOA	Detailed Local Operating Agreement. The partnership working arrangements between the City Council and the National Traffic Control Centre.
HATO	Highways Agency Traffic Officer.
HGV	Heavy Goods Vehicle.
ITS	Intelligent Transport Systems. ITS are a range of diverse systems designed to help authorities manage transport networks and provide information to transport operators and travellers.
LHA	Local Highway Authority.
LTP	Local Transport Plan.
MATTISSE	An information database system developed between the urban areas in the Midlands which collects and disseminates traffic and travel information from various sources. It also provides incident strategy advice and information.
MOVA	Microprocessor Optimised Vehicle Actuation. Traffic signals at isolated junctions can be operated using either vehicular actuated control or the MOVA algorithm that assess the best signal timings depending on conditions.
NTCC	The Highways Agency National Traffic Control Centre, located at Quinton, Birmingham.
OCU	Police Operational Command Unit – the management / operational area of Police within a force. There are 10 OCUs within Birmingham. These areas do not necessarily align neatly to Local Authority boundaries.
PTA	Passenger Transport Authority.
PPG13	Planning Policy Guidance Note 13 – Transport. Government advice on transport considerations for planning for development changes.
PRISM	Policy Responsive Integrated Strategy Model. One of the traffic models available to the City Council. See 3.4.3 for more details.
RCC	The Highways Agency Regional Control Centre. The West Midlands RCC is located at Quinton, Birmingham.
Regulatory	An Act of Parliament states that a matter is subject to regulations produced by a Secretary of State in the Government. Such regulations are called a Statutory Instrument. The essential difference is that Regulatory matters are specified quicker through Parliamentary procedure and are easier to amend.
SATURN	Strategic Assessment Tool for Urban Road Networks. A traffic modelling system used by the City Council, used particularly to model local changes to the road network. See 3.4.5 for more details.



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Jargon / Abbreviation	Explanation
SCOOT	Split Cycle Optimisation Offset Technique. Traffic signals can be managed through an advanced traffic control system called SCOOT. SCOOT controlled signals work in small area groups where timings adapt automatically to suit local changes in traffic volume and direction. Obstructions or badly parked vehicles can make the SCOOT model invalid, operator intervention can be effective. To operate successfully, SCOOT depends on good traffic data. The underlying traffic models therefore need to be regularly reviewed to ensure the system does not lose some of its benefits as the network's characteristics and use change.
TfL	Transport for London
Trunk Road Network	The network of motorways and trunk roads within the responsibility of the Highways Agency.
UTC	Urban Traffic Control.
UTMC	Urban Traffic Management and Control System - As well as being stand alone systems, benefits can be gained by integrating ITS into a UTMC system. In these systems, a common database is used to share relevant information between individual systems. NB Stratford-upon-Avon has operated a pilot UTMC for the DfT.
VISSIM	Visual Simulation Traffic Model.
VISUM	Visual Urban Management Traffic Model.
VMS	Variable Message Signs located on the side of the carriageway.
WMPTA	West Midlands Passenger Transport Authority.



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Appendix 2 The Traffic Management Act 2004

Highways Agency Traffic Officers

- A2.1.1 HATOs are uniformed Traffic Officers will operate on the 'Strategic Road Network'. The Strategic Road Network comprises those roads managed by the Highways Agency (motorways and trunk roads – around 4% of all roads).
- A2.1.2 HATOs are there specifically to manage the traffic, keeping it moving and responding to incidents such as breakdowns, obstructions, debris and accidents. They have special powers to stop and direct traffic and place and operate traffic signs. These were activities principally expected to be conducted by the Police prior to the Act.

Network Management Duty

- A2.1.3 The Act places a network management duty on 'Traffic Authorities' to keep traffic flowing, reduce causes of congestion and to co-operate with other authorities to the same end. This applies to all traffic, including pedestrians. All Traffic Authorities are required to appoint a 'Traffic Manager', responsible for exercising all the functions that have an impact on traffic flows.
- A2.1.4 Given this conferred duty, the Secretary of State additionally has powers to require Traffic Authorities to explain their actions or to intervene. This includes the ability to appoint an external Traffic Director in extreme cases.

Permit Schemes

- A2.1.5 The regulations for permit schemes have yet to be put in place. However, the principle is that they will give greater ability to authorities to control works and obstructions on the highway that will have an impact upon traffic. Examples of this are work being conducted by developers and the placing of skips on the highway.
- A2.1.6 A guiding principle of the TMA is that it was proposed to be 'cost-neutral'. Therefore, the cost of introducing and operating a permit scheme would need to be met by the fees charged for permits. The City Council will also be able to fine contractors if the conditions are not adhered to.



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Street Works

- A2.1.7 Similarly to permit schemes, details of powers relating to streetworks have yet to be finalised. However, these are likely to be an extension of existing powers contained within the New Roads and Streetworks Act (1991), with an emphasis on giving Traffic Authorities greater control over works that may cause congestion.
- A2.1.8 Such controls are expected to include greater ability to determine when and where utility companies can conduct streetworks. They will also include more robust measures to inspect the quality of work conducted, in order to protect the structure of the highway and to prevent (with the exception of emergencies) repeated works being carried out on roads.
- A2.1.9 The TMA also makes enforcement measures tougher. The fines that can be imposed upon utilities for failing to heed instructions will be increased and the ability to issue Fixed Penalty Notices added.

London and Highway Matters

- A2.1.10 More authority is to be given to the Highway Authority in terms of fly-tipping and fines for blocking the highway.

Civil Enforcement of Contraventions

- A2.1.11 The TMA extends the scope for Local Authorities to take over enforcement of traffic contraventions from the police. It enables authorities outside London who already have decriminalised parking enforcement powers to be given civil enforcement powers to cover a number of moving traffic offences (such as obstruction, ignoring the rules at box junctions and prohibited turns).
- A2.1.12 The Act extends to authorities outside London the power to issue parking Penalty Charge Notices by post, use cameras to detect parking contraventions and issue penalty charges for parking within the limits of a pedestrian crossing.

Parking Surpluses and Blue Badges

- A2.1.13 The Blue Badge Scheme for disabled parking permits is widely perceived to fail to prevent certain abuses (such as using others' passes). To tackle this, the Act gives the Police, Traffic Wardens and Local Authority Parking Enforcement Officers the power to physically inspect Blue Badges.
- A2.1.14 The Act also gives local authorities the additional freedom to spend surpluses from their on-street parking account on 'local environmental improvements' as well as parking facilities, road improvements and provision of public passenger transport services.



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Failure to Manage the Network

- A2.1.15 If an authority is failing with regard to its network management duties, the Secretary of State for England can intervene. While the Act includes two clauses outlining an authority's duty, there are 13 clauses stating what will happen if the authority fails.
- A2.1.16 The first stage would be a notice of intervention requiring the authority to explain what is happening and how it will improve. If the Secretary of State is still not satisfied, they can appoint a Traffic Director to monitor what is being done or actively intervene if necessary.
- A2.1.17 The criteria for this intervention are yet to be agreed and could be at least six months away.



Appendix 3 Planning Considerations for Traffic

The Unitary Development Plan (UDP)

A3.1.1 The UDP contains policies relating to traffic management (6.19(b)). These relate to:

- Re-allocating road space to priority uses and more sustainable transport modes;
- Diverting City Centre traffic to the Ring Road and improving conditions for pedestrians in the City Centre;
- Limited construction of radial roads to create environmental relief and divert traffic away from environmentally sensitive areas;
- Improving accessibility for and safety of vulnerable road users and pedestrians, developing a network of cycle routes and Safer Routes to School;
- Using (where necessary and appropriate) traffic calming techniques to improve the environment overall.

A3.1.2 The UDP also has further references to traffic management measures:

- *“6.46: Traffic Management Measures are often a cost effective way of improving highways. They have a strategic role in ensuring that maximum use is made of limited road space, protecting environmentally sensitive areas, and assisting buses and vulnerable road users. Low cost schemes can be introduced to reduce congestion at critical points in the highway network and alter the function of local streets as well as to improve road safety and reduce road accidents.*
- *6.47: Urban Traffic Control will play a major role in ensuring that efficient use is made of the main road network, and the newly developed facilities of Urban Traffic Management Control should allow the City Council to use this flexibility to give priorities at different locations to particular types of vehicles, cycles or pedestrians.*
- *6.48: Traffic Management and Highway Schemes covers a host of initiatives such as bus priority schemes, pedestrian facilities, facilities for people with disabilities, road safety, cycle routes and facilities and car parking. Priority will be given to:-*
- *Improving safety, particularly for vulnerable groups.*
- *Improving traffic flow.*



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- *Improving the environment, especially in the inner city.*
- *Improving access for industry and commercial premises, especially in the inner city.*
- *Producing a high economic rate of return.*
- *Ensuring the efficient operation and attractiveness of public transport services.*
- *Contributing to reduction in crime.*
- *Improving access for emergency vehicles.*
- *Reducing pollution levels."*

Other Material Considerations

A3.1.3 Specifically these include advice from Central Government and the views of statutory consultees.

A3.1.4 Planning Policy Guidance Note 13 – Transport (PPG13) sets out Government advice on traffic management as it relates to the planning process. PPG13 notes that traffic management can contribute to planning objectives in a number of ways, including:

- *"Reducing community severance, noise, local air pollution and traffic accidents;*
- *Promoting safe walking, cycling and public transport across the whole journey;*
- *Improving the attractiveness of urban areas and allowing efficient use of land;*
- *Helping to avoid or manage congestion pressures which might arise in central areas from locational policies;*
- *Resident parking schemes and controls to avoid on-street parking in areas adjacent to developments with limited on-site parking."*

A3.1.5 It goes on to make a number of points about traffic management:

- Local Authorities should address the needs of all users, but that in town centres and other areas of mixed land use, priority should be given to pedestrians.
- Local Authorities should actively consider traffic calming, reallocate road space to promote safer walking or cycling, and gives priority to public transport.
- Traffic management can promote the quality of local neighbourhoods, but Local Authorities should consider the effects of measures on surrounding areas.
- New residential areas should be designed to encourage low traffic speeds.
- In established residential areas there should be "creative" use of traffic management to allow traffic calming.



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Appendix 4 What Others Do Well

A4.1.1 An examination of the traffic management systems of a number of different local authorities found that the City Council is following best practice in a number of areas. Examples of where other authorities are operating different systems are as follows:

Transport for London (TfL)

A4.1.2 Transport for London has introduced many active traffic management initiatives and systems to help achieve the objective to "Get London Moving". The four main initiatives are:

- (i) **London Traffic Control Centre (LTCC)** - the central operations hub of Traffic Management. It collects intelligence on actual or potential congestion, intervenes where appropriate and informs the public via the media, internet or VMS.
- (ii) **London Traffic Information System (LTIS)** - the principal information tool for the LTCC, a custom-built database used to log information on congestion and the effectiveness of remedial action. The TfL uses this system to provide public with information.
- (iii) **Signals** - Over 60% of London's 4,700 traffic signals can be adjusted remotely from LTCC to suit changes in traffic demand.
- (iv) **COMET** - a computer system that combines information from several sources, including 1000 CCTV cameras and SCOOT traffic signals, to build a real time picture of road conditions. Any escalation in congestion creates an alert at the LTCC.

A4.1.3 TfL has benefited from being able to implement the new powers given to local authorities in the Traffic Management Act prior to other councils. For example, traffic wardens are already providing on-scene traffic management.

A4.1.4 The capital and revenue costs for implementing and running these initiatives are high. In the future, however, this may be the route that other Local Authorities have to go down if traffic is to be managed effectively.

Congestion Charging

A4.1.5 Congestion charging is a 'hard' demand management strategy, which was introduced in Central London in February 2003 to address the burgeoning difficulties with traffic in the capital. Since its



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introduction, congestion inside the zone has reduced by 30% and traffic levels have decreased by 18%.⁵

A4.1.6 There are a number of factors that have made congestion charging successful in London:

- The existence of extensive public transport infrastructure into the central area;
- The ability of Transport for London to control public transport in the capital in a way that regional Passenger Transport Authorities (PTAs) are unable to (with five times the subsidy);
- In London before the congestion charge was introduced, 90% of the journeys into the charge zone were made by public transport or people walking or cycling. In Birmingham, this figure is around 50% in morning peak hour for the City Centre and so any charging zone would have a much greater impact and not be at the margin.

These characteristics mean that a strategy such as congestion charging would not necessarily work in Birmingham or the West Midlands or to the same extent.

A4.1.7 There have also been consequences for areas bordering the charging zone in London. For example, parking problems in residential areas on the edge of the congestion zone have been exacerbated since its creation.

Sheffield City Council

A4.1.8 The network operates with short traffic signal times to maximise the capacity of approaches and provide frequent pedestrian crossing opportunities. Timings are varied throughout the day so that a greater priority is given to pedestrians outside peak traffic periods.

A4.1.9 CCTV cameras are installed in over 30 locations in and around Sheffield. These images are available on the internet, in contrast to 'help2travel' MATTISSE's website, and are updated every minute. The resolution and size of the images have been specifically chosen so that it is not possible to identify individuals or vehicles.

Leeds City Council

A4.1.10 A four-year project is underway to reduce the delays for people crossing the road at signalled pedestrian crossings. Historically timings have been biased towards minimising delays for vehicles. Results to date show that at the 100 crossings targeted so far, there has been an average 35% reduction in waiting time. 100 more sites will be assessed over the next two years.

⁵ *Congestion Charging: Update on Scheme Impacts and Operations*, DfT (February 2004).



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Bristol City Council

- A4.1.11 An 'Integrated Travel Information Centre' has been launched in Bristol and Nottingham which brings together all sources of travel and transport information to:
- Improve traffic management;
 - Improve access to information;
 - Encourage greater use of public transport.
- A4.1.12 This information can be accessed through the information centre, ten i-kiosks around the city and an information bus.
- A4.1.13 Other authorities are also going down this route, for example Nottingham. Something similar is not yet planned for Birmingham.

City of York

- A4.1.14 York was one of the pilot projects in the DfT's Urban Traffic Management Control (UTMC) Programme. This programme was launched in 1997 and was designed to support efficient and effective network management by developing ITS.
- A4.1.15 A UTMC system was set up in York that collects the following information in a common database:
- Car park occupancy;
 - Road network conditions;
 - Bus operation; and
 - Air quality data.
- A4.1.16 This data is then used to provide real time and historical information to users, drive displays on on-street equipment (e.g. Parking Guidance and Information systems) and update the Council's website.
- A4.1.17 Staff have access to the system from their PCs and so can analyse and control the on-street equipment without the need of a costly, dedicated control room.

Wolverhampton

- A4.1.18 Particular aspects of Wolverhampton's geographical position are important when looking at the way they manage traffic as they differ considerably from Birmingham:
- There are no motorways or trunk roads;
 - The City Council manages its own highways;
 - Its boundaries are more defined than other areas which makes it easier to manage;



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- There are relatively distinct Police Operation Command Units within the area.
- A4.1.19 Organisationally, Wolverhampton City Council is smaller than Birmingham and virtually all highway matters are managed within the same department. The UTC is run by 10 staff.
- A4.1.20 There are 90 CCTV cameras in Wolverhampton for traffic management purposes. The UTC would like ten more and then the whole network will be covered. Effort is taken to ensure that there is no duplication of cameras. In fact, the Police only have three, all of which are maintained by the UTC. The Police have access to all the cameras and the UTC can view them despite not being accredited.
- A4.1.21 The UTC manages 300 signal sites and 70 in Dudley. All signals, apart from 10, have been refurbished, mostly through capital schemes. 25 signals are monitored remotely, but this system will soon be replaced. Only five signals are not on the system. A full asset management database is kept which records maintenance issues and the efficiency of the signal.
- A4.1.22 Wolverhampton City Council effectively uses Section 106 agreements to fund signalling and CCTV improvements.
- A4.1.23 There are currently 22 VMS in Wolverhampton. Their effectiveness is difficult to judge as there has not been a recent survey of motorists, but drivers do seem to pay attention to them. The mobile connection to the VMS is very reliable and the UTC is alerted when the sign has changed.
- A4.1.24 There are eight car parks on the ITS system. They are not, however, as effective as other VMS. Drivers tend to ignore them and queue even if they say 'full' because they know that cars leaving should free up spaces. Their reliability is also not as good and there have been problems with the counters and the low frequency radio signals used.
- A4.1.25 There have been issues about Police not informing the UTC when an incident has occurred. The situation has improved after the issue was raised directly with the police.

M42 Active Traffic Management (ATM) Project

- A4.1.26 In November 2005, the Highways Agency's £100m ATM project was completed. It covers a 22km section of the M42 from junctions 3a to 7 and is designed to tackle congestion, deliver journey reliability, make the road safer and improve information to drivers. The scheme has a number of features:
- Upgraded hard-shoulder so that it can be opened to traffic at peak times. When there are four lanes open, traffic will be restricted to travelling at 50mph;
 - Lightweight gantries with lane-specific signals and signs – used to open and close lanes, control speeds and provide information;



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- Emergency refuge areas every 500m for use in a breakdown. These are equipped with SOS telephones and monitored by CCTV;
- 128 fixed cameras;
- Road sensors every 100m (rather than 500m which is the usual distance) to measure traffic flow;
- Digital speed enforcement equipment;
- Rapid incident response teams to remove obstructions, assist with traffic management and repair roadside equipment;
- Controlled use of the hard shoulder as an additional running lane for incident management and during heavy periods of congestion;
- Emergency Refuge Areas, for use in case of breakdown, and equipped with emergency telephones, automatic detection loops, lighting and monitored by CCTV.

A4.1.27 A similar system already in use on the M25 between junctions 10 and 16 has resulted in a number of improvements:

- 10% decrease in injury accidents;
- 30% reduction in minor, damage only incidents;
- 2-8% reduction in emission levels depending on the type of emission measured;
- 6% decrease in stop-start traffic.

EMPreSS (East Midlands Partnership Regional E-government Spatial System)

A4.1.28 EMPReSS is a web-based road works finder that is being implemented by Local Authorities in England and Wales, following an ODPM sponsored pilot in the East Midlands. EMPReSS displays information from utility companies, highway authorities and the Highways Agency. It aims to help authorities to fulfil the requirements of the Traffic Management Act by managing street works more effectively and working across authority boundaries. It does not, however, have any real-time capability.

A4.1.29 The West Midlands system, MATTISSE, holds some of the same data, but not all of it. Road works that have a potential impact on the travelling public are currently entered but the rest of the data could be also imported. It would have to be displayed to operators on dedicated pages so as to stop the system being swamped with information.

A4.1.30 There could however be a potential problem with creating a data exchange in the future. This is because EMPReSS and MATTISSE run off different systems and so may not be compatible. MATTISSE and most other systems of its type follow standards set up by the UTMC programme, EMPReSS does not. It therefore goes against the idea of creating a national ITS framework to ensure that all systems can work alongside each other.



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Appendix 5 CCTV Cameras

A5.1.1 The table below shows the location of the 17 CCTV cameras that the UTC operates and maintains throughout the city.

Camera	Location	Coverage
1	Lancaster Circus	A38M
2	Thornton Tower	Newtown
3	Canterbury Tower	Springhill
4	Lancaster Circus	Vesey Street
5	Haddon Tower	Belgrave
6	Wilmcote Tower	Highgate
7	Prichett Tower	Bordesley Circus
8	Tyburn Road/ Wheelright Road	Erdington
9	Lancaster Circus	James Watt
10	Hagley Road/ Wolverhampton Road	Quinton
11	Bristol Road/ Oak Tree Lane	Selly Oak
12	Gyratory North Side (Bromford)	Erdington
13	Coventry Road/ Holder Road	Yardley
14	Gyratory South Side (Bromford)	Erdington
15	Walsall Road/ Tower Hill	Perry Barr
16	Queensway North	City Centre
17	Queensway South	City Centre