

7. Intelligent Transport Systems Supporting Statement

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1. Setting the Scene

- 1.1 Intelligent Transport Systems (ITS) allow local authorities to contribute to tackling traffic congestion and improving accessibility through:
- Dynamic monitoring and control of road traffic.
 - Ensuring information systems disseminate traffic conditions widely to the public and stakeholders.
 - Using ITS to promote mode shift in support of broader transport policies.
 - It is important to recognise that combining ITS with transport projects can maximise the benefits of investment, for example, the provision of real time bus information can add significant value to bus priority measures and lead to high growth in bus passenger use.

2. Vision

- 2.1 To ensure that the effective provision of ITS across the JLTP area accelerates progress towards the shared priorities, in particular tackling congestion. ITS will add value to infrastructure and information provision, and contribute towards significant progress towards tackling congestion.

3. ITS and the Shared Priorities

Congestion and Air Quality

ITS measures have a significant role to play in tackling congestion through directly affecting traffic flows, monitoring the level and composition of traffic flows and delivering information to the travelling public to encourage modal shift and more informed travel choices. For example, technologies such as Automatic Number Plate Recognition [ANPR] will be considered in detail for the enforcement of bus and High Occupancy Vehicle (HOV) lanes in the JLTP area with the added

benefit of obtaining flow and journey time data for these lanes.

Reducing congestion and increasing the efficiency of vehicles on the network contributes to the improvement of air quality, particularly along key corridors and town and city centres.

Road Safety

The use of a range of ITS measures can assist in road safety projects. For example:

- fixed and mobile traffic signs to warn motorists of incidents.
- red light cameras to target dangerous drivers.
- upgrading older signalised junctions and crossings to comply with current regulations for the safety of both drivers and pedestrians; and
- installing speed reactive signs to inform drivers of speed limits.

Accessibility

Delivering information that can be easily accessed and understood by the travelling public, is a vital contribution to making public transport available to everyone. 'Smarter Choices' work has shown that the provision of quality information can play a vital part in achieving modal shift. ITS can be readily employed to ensure that information provided is up to date, accurate and consistent across a variety of media to assist in the planning of appropriate and integrated journeys.

Other quality of life issues

Expanding the use of ITS can affect the overall quality of life in the area, for example reducing street clutter through the integration of systems, and the provision of travel information.

4. Issues

4.1 Evidence shows that poor information provision can be a barrier to making informed travel choices. ITS can provide a powerful tool to encourage modal shift through the provision of quality, reliable travel information and the configuration of network infrastructure to favour public transport vehicles. By working together we can achieve much greater progress in this field and continue to achieve economies of scale in purchase and maintenance of infrastructure and hardware.

4.2 The two main ITS areas that have the opportunity for greatest impact in this JLTP period are: -

- Traffic Management Act 2004.
- Joint working through the JLTP.

Traffic Management Act 2004

4.3 Each local authority will retain individual Traffic Management Act responsibilities, but co-operative responses to common issues can add value to the approaches taken. The co-operative deployment of ITS by each local authority can contribute to the fulfilment of their obligations to monitor congestion and facilitate the movement of people and goods, both in the JLTP area and within other authority areas.

4.4 Similarly, co-ordination with the Highways Agency and Avon & Somerset Police can expand skills and approaches available to address congestion and road safety in the JLTP area. For example, continued involvement in the Safety Camera Partnership can improve road safety at traffic signal junctions, and co-operative working with the Highways Agency can mitigate adverse network conditions during accidents or roadworks.

Joint Working through the JLTP

4.5 Co-operation between authorities to use ITS to monitor travel conditions, and target gaps in knowledge and information, is needed to provide a fully

integrated transport network. The successful installation and utilisation of ITS infrastructure can be dependent on many issues, including communication links, location and systems.

Communication links

4.6 Following the initial capital investment in a project, communication costs can form a significant part of the ongoing revenue costs associated with maintaining ITS infrastructure. Investment in good quality equipment and private circuit links will be essential to ensure effective delivery. As demand for travel information increases, and the ITS infrastructure expands to provide faster, more accurate and reliable information and facilities, subsequent maintenance will be of significant importance.

Specific site location

4.7 Determining the specific sites for installation of some ITS infrastructure is key to its success, both in terms of operation and use. Provision of information requires care and attention concerning location, with respect to the target audience and timeliness of provision (for example, the siting of Variable Message Signs). Co-operation between neighbouring authorities can ensure that complementary use is made of infrastructure. For example, the installation of VMS in all authority areas will allow messages to be shown across the JLTP area to encourage wider diversions around incidents.

Back office systems

4.8 Industry standards currently in use are Urban Traffic Management and Control (UTMC), Travel Information Highway (TIH) and Real Time Information Group (RTIG) protocols, all of which concentrate on facilitating standardised, quick and easy data transfer between individual systems and stakeholders in addition to easier integration and analysis. This facilitates easy, accurate and reliable use of data, all of which are essential to travel

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information provision. Adhering to these standards will allow each local authority to link ITS systems but does not commit them to particular technologies or systems and does not necessitate one central ITS hub. The benefits of formalising such infrastructure into a central hub will be investigated.

Data storage

- 4.9 The use of ITS relies on the capture, analysis and interrogation of a specific data set. The demand for real time, accurate information relies on this data being captured and processed as a continuous stream, for continuous update. Such data traffic is heavily reliant on the capabilities of back office systems to manage and process the data, a major component of which is adequate data storage facilities. Data can be very expensive and time consuming to manage, and the authorities of the JLTP area will co-operate in facilitating an efficient solution so as to benefit their communities and make effective use of the transport networks.

5. Delivery programme in the Plan Period 2001/02 – 2005/06

- 5.1 During the previous LTP period, the Councils have:
- Developed a transport information centre in central Bristol, the 'info centre', in partnership with First to provide a one-stop-shop for travel and transport information and tickets. This is complemented by a mobile travel and transport information centre, the 'info bus', to enable information to be targeted at particular communities across the urban area.
 - Installed a range of travel information facilities, including 5 Traffic Information Variable Message Signs (VMS), over and above 26 car park information signs, 10 on-street kiosks, 1 large travel advice

screen and real time passenger information both on-street signs, on-bus audio and visual displays and on the Internet. Also developed an Internet-based trip planner to plan walking and cycling journeys.

- Commissioned the imap project, using a map-based UTMC common database to integrate existing transport data sources and to allow the wide dissemination of consistent information to the Council officers, the public and other stakeholders via the Internet, email and fax.
- Upgraded and widened the Urban Traffic Control (UTC) system in central Bristol and introduced a new system to complement the introduction of HOV lanes on the busy A4174 Avon Ring Road corridor. Commissioned the COMET (specialist software) package to integrate Bristol and South Gloucestershire's UTC systems onto a common platform to enable easy sharing of information.
- Introduced MOVA (Microprocessor Optimised Vehicle Actuation) control at several heavily congested junctions to aid queue dispersal and allow quicker response times for pedestrians waiting to cross.
- Installed 80 vehicle-activated signs, targeted in support of Casualty Reduction measures, and 6 vehicle 'Speed Visor' signs, to increase speed awareness. Also installed over 50 wig-wags in the vicinity of schools.



- Introduced 27 Red Running and speed cameras, with a further 27 mobile camera sites.
- Implemented a new signal co-ordination technique 'DUSC' in the Kingswood Town Centre Regeneration project to provide significant journey time savings for bus services (2005 APR indicated journey time savings for bus services of 19%).

6. Good practice

The imap system currently being developed embraces the aspirations of this ITS strategy. The aim of the system is to integrate the wide range of data sources into one analysis and manipulation facility for dissemination to Council officers and users of the highway network.

The underlying imap system is based on the use of national data exchange protocols. This ensures that data inputs and outputs from the system are easily exchanged and cost effective, maximising its use at all levels. For example, members of the public seeking information to inform their travel decisions, and the emergency services needing information on the state of the network in order to undertake their duties.

Phase 1 of the project involves integrating the following sources of data, plus the presentation of the resulting information via the Internet:



- Road works as a result of development by private individuals and / or developers.
- Faults with traffic lights and pedestrian crossings.
- Locations and messages on Variable Message Signs.
- Bus stop locations.

Phase 2 will add data streams to provide a more comprehensive picture of network and service conditions:

- Vehicle flows at various points on the network.
- Journey times along key corridors into Bristol.
- CCTV images of traffic conditions and road works by utilities companies.
- Real time information at bus stops, where available.

The imap will be available via the Internet, with free access to members of the public. This will allow information to be accessed at all stages of a journey, for example, journey times and road works on a corridor before a journey to inform departure time and / or route choice. It is envisaged that comparisons of bus and private vehicle journey times will be presented, encouraging an informed mode choice to be made. This, in association with the public transport improvements and parking strategy, should encourage travellers to choose public transport for regular journeys.

7. Strategy

7.1 The strategy for ITS focuses on the following main areas:

- managing the highway network effectively through the provision of safe, and where practicable, convenient routes for all road users.
- Information provision – ensuring automated collection, collation and dissemination of all available data from

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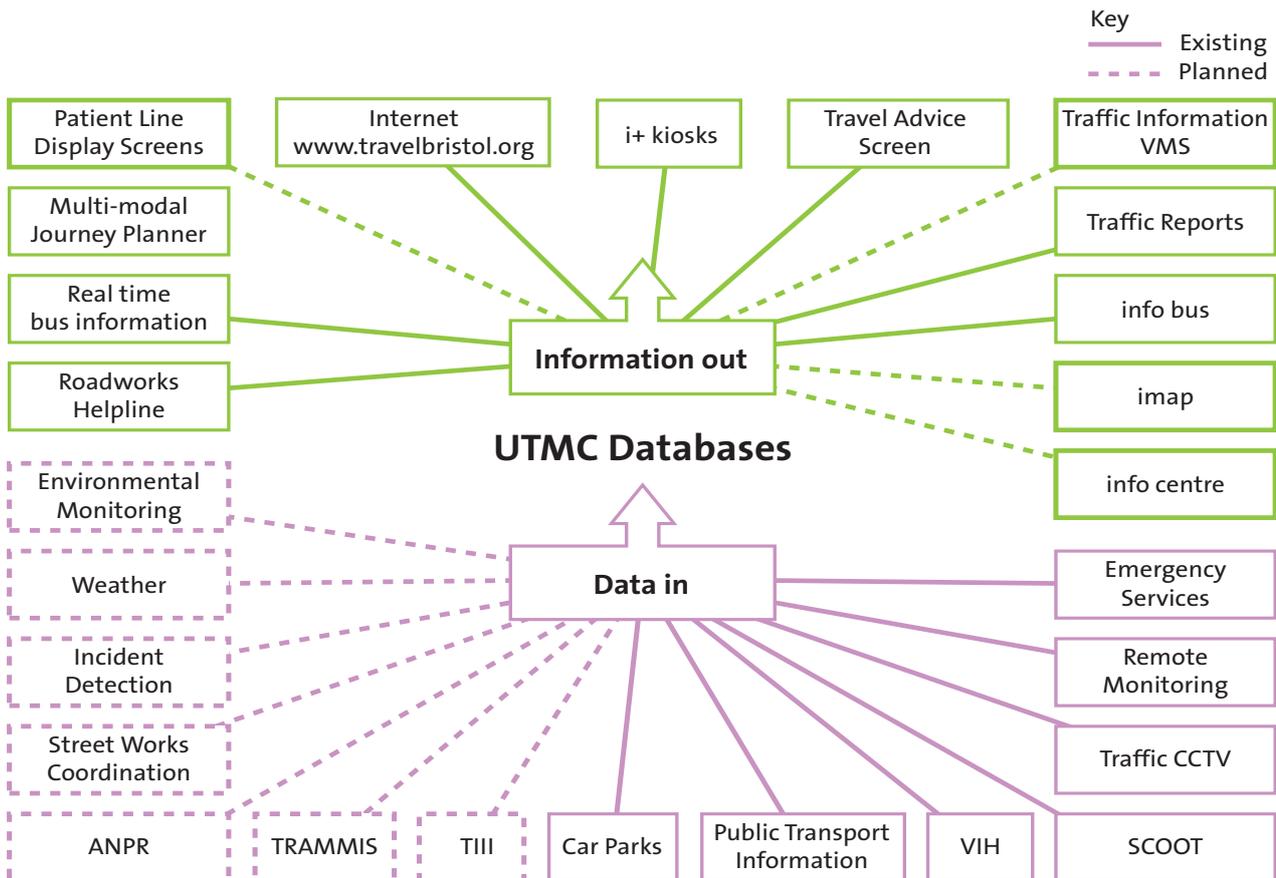
the transport network for the purpose of managing the highway network effectively and conveniently for all road users.

- Promotion dynamic information to the travelling public and service provider stakeholders via a wide range of information system.
- Promotion of informed travel choices and the use of sustainable transport modes.

7.2 Strategy Measures

- 7.2.1** The expansion of the info centre concept will be pursued throughout the JLTP area. The development and launch of the TravelBristol info centre has demonstrated the need for a clear source of information dedicated to the transport in Bristol. Monitoring has shown that the info centre and its various sources of information are well used. Potential exists to extend this idea throughout the JLTP area, with other info centres offering similar services and information located in other urban centres, for example, Bath and Weston-super-Mare.
- 7.2.2** The expansion of real time passenger information on bus routes serving the urban areas will be pursued, allowing a more efficient use of the public transport network.
- 7.2.3** Implementation of a network of Travel Advice Screens and travel information kiosks will be considered, locating infrastructure at prominent interchange locations, or those locations where travel decisions are typically made. For example, shopping centres and schools.
- 7.2.4** A pilot on the use of smartcards on park and ride services as part of the EC-supported VIVALDI project is currently underway. The outcomes of this trial are currently being analysed and further investigation will be held into the broader use of smartcards in the JLTP area.
- 7.2.5** Active traffic control will continue to be designed and installed at all junctions in the urban areas to assist in the prioritising of sustainable modes of travel. Key junctions will have traffic CCTV cameras at suitable points to provide real time monitoring. Within existing UTC areas, new and upgraded junctions will be added to the SCOOT system, allowing greater control and flexibility in periods of abnormal conditions as well as daily fluctuations. In other junction design, MOVA will be utilised to ensure intelligent and efficient use of green time and capacity throughout the network.
- 7.2.6** Given the close interaction between the city centre and the North Fringe / M32 corridor, South Gloucestershire and Bristol City Councils will consider the benefits of linking the SCOOT / UTC systems in each authority for wider, more effective control of traffic, especially at peak times. UTMC will also be introduced in Weston-super-Mare, where its flexibility will assist with managing not only the 'commuter' peak periods, but also those for visitors during the holidays.
- 7.2.7** Compliance with national standards will be pursued to further the aims of transfer of data both to and from the local authorities to assist in the provision of information and the achievement of the JLTP aims.
- 7.2.8** In addition to the control of the transport network, ITS will be readily employed by the authorities in the JLTP area to assist travellers through the expansion of the network of information services. This work will involve a number of initiatives including, but not limited to, those outlined below.
- 7.2.9** Expansion of the imap will form a key component of ITS development across the JLTP area, with the aim to integrate all transport data sources to provide information for local authority officers, stakeholders and the public through a single effective portal. The figure below illustrates the extent of the planned information integration, with new sources of data being integrated as projects are developed. The authorities will investigate the expansion of the imap to

Bristol City Council Integrated Travel Information Strategy



cover the wider geographical area for seamless information provision to the travelling public. The imap will be developed as a web-based interface to provide information direct to the public, which will then be accessed from Council buildings, such as libraries, schools, and the info centre and info bus, as well as commercial and private properties. This choice of tool allows access to be obtained outside urban areas to inform journey decisions into, or around, areas of likely congestion. It can also be accessed from outside the JLTP area to inform journeys from further away.

7.2.10 The installation of additional traffic information Variable Message Signs along key corridors and in strategic positions throughout the JLTP area will enable more influence to be exerted over the decisions made by the travelling public. Signs will be used to direct traffic away from road closures,

incidents or already congested areas, thus reducing journey times and improving air quality. These signs could be used to promote public transport through information provision, such as comparative bus and car journey times.

7.2.11 ANPR, identified earlier, is being investigated in detail as a tool to assist in the achievement of a number of the JLTP objectives, including congestion monitoring and policy enforcement. The four authorities will investigate the exploitation of ANPR and it is envisaged that these cameras will be linked to the existing UTMC database for ease of dissemination via the imap and could involve approximately 200 sites. The information obtained could be used for the following purposes:

- To gather speed, flow, traffic composition, journey time and reliability along key routes.

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- Before and after monitoring on the network to measure the impact of disruption caused by major developments and new transport schemes.
- Further investigation into the use of ANPR for High Occupancy Vehicle Lane and bus lane enforcement.

8. Targets

Relevant targets are:

LTP2 – change in area wide road traffic mileage

LTP3 – cycling trips

LTP4 – mode share of journeys to school

LTP5 – bus punctuality

LTP6 – changes in peak period traffic flows to urban centres

LTP7 – congestion (vehicle delay)

BVPI 102 – bus passenger journeys

BVPI 103 – bus information

BVPI 104 – user satisfaction

Local 1 – rail patronage

Local 2 – pedestrians

